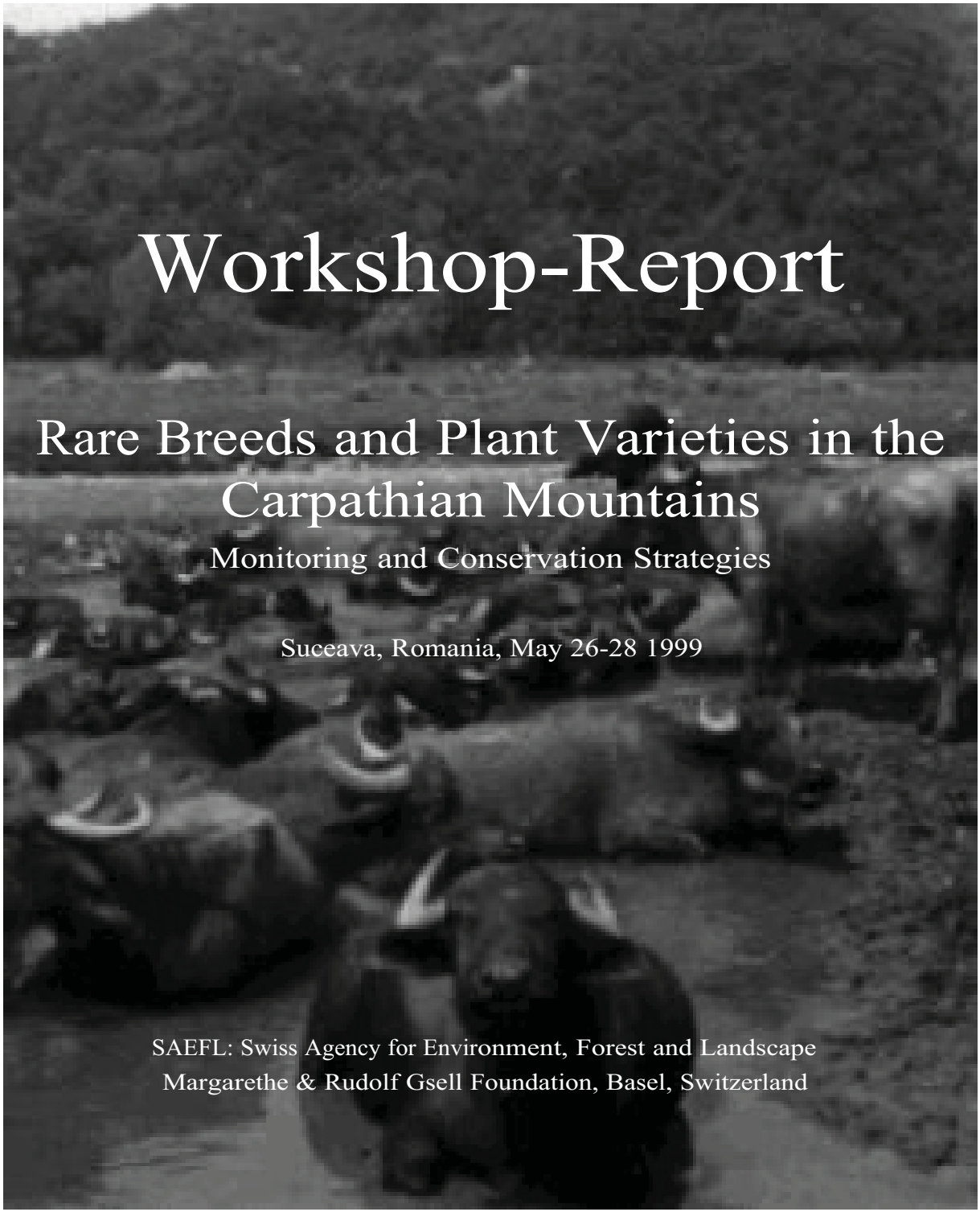
Monitoring Institute

for Rare Breeds and Seeds in Europe

in collaboration with

SAVE foundation



Workshop-Report

Rare Breeds and Plant Varieties in the Carpathian Mountains

Monitoring and Conservation Strategies

Suceava, Romania, May 26-28 1999

SAEFL: Swiss Agency for Environment, Forest and Landscape

Margarethe & Rudolf Gsell Foundation, Basel, Switzerland

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Content

Synthesis of the Workshop "Rare Breeds and Plant Varieties in the Carpathian Mountains"

Crops

Fruits

Synthesis of the Workshop "Rare Breeds and Plant Varieties in the Carpathian Mountains"

Hans-Peter Grunenfelder and Nadia Hungerbuhler, St.Gallen, Switzerland

Mountainous regions, made up of a variety of different topographical regions and various hindrances to production, have developed a great diversity of agricultural animal breeds and plant varieties. This is now in danger of ousting by modern performance methods in agricultural production. It is possible that numerous breeds and varieties in these mountainous regions will vanish completely — and with them, their valuable genes for survival in such conditions. The Carpathian mountains represent an important retreat for biological diversity, spread over several countries in Europe. In the Central and Eastern European countries, in addition to the general threat to diversity from modern techniques, the rapid economic transformation in agriculture resulting from privatization poses further dangers. To obtain an accurate picture of the needs for action, representatives of SAVE Foundation have undertaken a number of expeditions to monitor different areas of the Carpathians. This has included a number of tours to Poland and Slovakia between 1991 and 1995; Romania in 1997 and Carpathian-Ukraine in 1998.

In May 1999, SAVE Foundation assembled experts and persons familiar with the most remote areas of the Carpathians at a workshop to determine the current situation and to analyse the needs and required actions. Some 30 experts of the four neighbouring countries of Poland, Slovakia, Ukraine and Romania met in Suceava, Romania. Organized by SAVE Foundation, in co-operation with the Vegetal Gene Bank Suceava and the Monitoring Institute St.Gallen, the workshop was financed by the Swiss Agency for the Environment, Forests and Landscape.

The goals of the workshop were:

- to size the remaining populations of rare breeds and plants in the Carpathians
- to study the problems of breeding, endangering and extinction
- to determine the priority needs for action

Roundtable and small groups discussions developed a list of cultivated and useful wild plants which are the most endangered and should be conserved as a priority. These include malus, perennial rye, perennial vegetables, pyrus, sorbus domestica, sorbus torminalis, small fruits, Triticum dicoccum, T. monococcum and vitis.

An analogus list for livestock breeds showed the necessity for urgent actions for the Red Mangalica pig, the Walachian sheep (Beskidis), the Walachian Dwarf cattle (or Mocanitsa cattle), the old indigenous type of the Carpathian buffalo (especially in Transcarpathia), the Huzul horse in the place of origin (and establishment of an international studbook). Further monitoring work is necessary for other mountain horse breeds as Sikul and Bikaz, primitiv old types of international cattle breeds as Simmental, Brown and Pinzgau/Dorna cattle, donkeys, goats, poultry, sheep dogs and bees.

Participants also stressed the importance of common action in several regions of the Carpathians, specifically in the Apuseni and the Maramures mountains of Romania and neighbouring Transcarpathia (especially the Rakhiv region) in the Ukraine. The partcipants agreed to become network partners of crossborder cooperation to rescue endangered livestock breeds and plant varieties. They stated their readiness to make available their facilities and knowledge, and will also raise awareness in their countries on the need to conserve the endangered agrobiodiversity in the Carpathians.

The international co-operation in the Carpathians is running, further workshop meetings shall be organized periodically in the countries in alternation.

Podsumowanie warsztatów roboczych:
" Rzadkie rasy zwierząt i odmiany roślin w Karpatach"

W rejonach górskich, często zróżnicowanych topograficznie, z rozmaitymi ograniczeniami, rozwinęła się duża różnorodność ras zwierząt i odmian roślin. Znalazły się one obecnie w niebezpieczeństwie wynikającym z nowoczesnych metod produkcji rolnej. Prawdopodobne jest, że wiele ras i odmian powstałych w tych rejonach zaniknie zupełnie, a razem z nimi cenne geny, te które umożliwiają przeżycie w trudnych, górskich warunkach.

Karpaty, leżąc w obszarze kilku krajów Europy prezentują dużą różnorodność biologiczną. W krajach Europy Środkowej i Wschodniej istnieją dodatkowe niebezpieczeństwa wynikające z szybkich przemian społecznych i gospodarczych, w tym transformacji ekonomicznej wynikającej z prywatyzacji. W celu uzyskania dokładnego obrazu, przedstawiciele fundacji SAVE podjęli kilka wypraw w różne rejony Karpat: do Polski i Słowacji w 1991 i 1995r., Rumunii w 1997r. i Ukrainy w 1998 roku.

W maju 1999r. fundacja SAVE zaprosiła ekspertów i osoby posiadające szeroką wiedzę o najbardziej niedostępnych miejscach Karpat na spotkanie robocze, aby omówić obecną sytuację i przeanalizować potrzeby i kierunek koniecznych działań. Spotkanie odbyło się w Suceavie w Rumunii z udziałem 30 osób z czterech sąsiadujących krajów: Polski, Słowacji, Ukrainy i Rumunii. Spotkanie, finansowane przez szwajcarską Agencję Środowiska, Lasów i Krajobrazu zorganizowała fundacja SAVE we współpracy z Vegetal Gene Bank, Suceava i Monitoring Institute z St. Gallen. Celem spotkania było:

- określenie wielkości populacji rzadkich ras zwierząt i roślin w Karpatach,
- przeanalizowania problemów hodowli ginących i zagrożonych wyginięciem ras,
- określenie kolejności niezbędnych działań.

Dyskusje między uczestnikami pozwoliły sporządzić listę roślin użytkowych i dzikich, w największym stopniu zagrożonych wyginięciem, które należałoby objąć ochroną w pierwszej kolejności. Lista ta obejmuje: jabłonie, grusze, jarząb brekinia i domowy, rośliny jagodowe, wieloletnie warzywa i winorośl, żyto wieloletnie, pszenice płaskurkę i samopszę. Podobna ochroną należałoby objąć następujące zwierzęta: świnia czerwona (Mangalica), owca beskidzka (Walachian), bydło karłowate (Walachian / Mocanitsa), stare, miejscowe typy bawołów karpackich i koni huculskich w miejscach ich powstania (utworzenie międzynarodowej księgi stadnej). Niezbędne jest stałe monitorowanie górskich ras koni (Sikul i Bikaz), starych ras bydła (Simentalerów, Czerwonej Alpejskiej i Pinzgauer / Dorna), osłów, kóz, drobiu, psów pasterskich i pszczół.

Uczestnicy spotkania podkreślili wagę wspólnego działania w kilku rejonach Karpat, zwłaszcza w Apuseni i Maramureszu w Rumunii i okolicach Rakhiv w Ukrainie. Uczestnicy zgłosili gotowość służenia swą wiedzą i doświadczeniem w celu ochrony ras i odmian zagrożonych wyginięciem. Niezależnie od granic państw, uczestnicy postanowili stać się orędownikami idei zachowania agro -biologicznej różnorodności w Karpatach.

Międzynarodowa współpraca trwa, kolejne spotkania będą odbywały się okresowo w różnych krajach.

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Резюме практичного семінару
"Рідкісні види тварин і рослин в горах Карпатах"

Ханс-Петер Грюненфелдер і Надія Хунгербулер

Гірські регіони, створені багатством різноманітних топографічних районів та різними умовами виробництва, мають в наявності велику кількість сільськогосподарських порід тварин та видів рослин, які знаходяться зараз під загрозою витіснення через використання сучасних технологій сільськогосподарського виробництва. Багато порід і видів під загрозою повного зникнення – їх цінний генетичний фонд є також під загрозою. Карпатські гори являють собою важливу зону збереження біологічного різноманіття, яка пролягає через декілька країн Європи. В центральних і східноєвропейських країнах на доповнення до існуючої загрози біорізноманіттю з боку сучасного виробництва, додаткової небезпеки додають швидкі зміни в сільському господарстві, насамперед процес приватизації. Щоб отримати реальну картину щодо необхідних дій, представники фундації SAVE (Збереження сільськогосподарських різновидів в Європі) провели ряд експедицій – моніторингів різних районів Карпат: в Польщу і Словаччину в період з 1991 по 1995 роки; у Румунію в 1997 і в Україну в 1998.

В травні 1999 року фундація SAVE зібрала разом експертів та людей, які добре знають проблеми найбільш віддалених районів Карпат, для проведення практичного семінару, метою якого було визначення сучасної ситуації та аналіз потреб та необхідних дій. 30 експертів з чотирьох країн-сусідів (Польща, Словаччина, Україна і Румунія) зустрілися в Сучаві, Румунія. Практичний семінар був організований фундацією SAVE у співпраці з Рослинним Генобанком, Сучава та Інститутом Моніторінгу, Сент-Галлен та фінансований Швейцарським Агентством з навколишнього середовища, лісу та ландшафту.
Цілі практичного семінару були:

- визначення наявних популацій рідкісних видів тварин і рослин в Карпатах
- вивчення проблем племінного тваринництва, загрози знищення та вимирання
- визначення пріоритетів щодо дій

Дискусії за круглим столом та в маленьких групах визначили список культурних та корисних дикорослих рослин, які перебувають під загрозою і потребують першочергового збереження. До них належать малус, довголітнє жито, дозголітні овочі, пірус, сорбус доменстіка, сорбус терміналіс, малі фрукти, тритікум дікоккум та виноград.

Аналогічний список домашньої худоби свідчить про необхідність термінових дій для збереження червоної мангалицької свині, валахської вівці (Бескди), валахської карликової городи худоби (або Моканиці), для старого місцевого типу карпатського буйвола (особливо в Закарпатті), гуцульського коня в місці походження (та заснування міжнародної племінної ферми). Подальший моніторинг є необхідним для інших порід гірських коней, таких як Спікул і Біказ, первинних старих видів міжнародного розведення домашньої худоби, таких як Сіментальска, Бура та Пінтауська/Дорна, для осла, кози, птиці, вівчарської собаки та бджоли.

Учасники також наголосили на необхідності спільних дій в деяких регіонах Карпат, а саме, в горах Апусені та Марамуреш в Румунії та в сусідньому Закарпатті (особливо в Рахівському районі) в Україні. Учасники домовилися про встановлення міжкордонного партнерства – сітки для співробітництва для рятувальних заходів видів домашньої худоби і різновидів роспин, які знаходяться під загрозою знищення. Вони підтвердили свою готовність надати необхідних належних засобів та знання, а також висловили намір проводити просвітницьку природоохоронну роботу в своїх країнах з питань охорони агробіорізноманіття Карпат, яке знаходиться під загрозою.

Міжнародна співпраця в Карпатах проводиться; подальші практичні семінари будуть проходити в країнах - учасницях в черговому порядку.

Resumé
Praktického seminára Zriedkavé
druhy živočíchou a rastlín v Karpatoch

;Horské regióny, vytvárané množstvom rozmanitých topografických celkov a rozličnými výrobnými podmienkami, disponujú veľkým počtom poľnohospodárskych živočíšnych a rastlinných druhov, ktoré sú v súčasnosti na ústupe z dôvodu využívania moderných technológií poľnohospodárskej výroby. Mnoho druhov a čeľadí je priamo pod hrozbou úplného zániku, ohrozený je tiež ich vzácny genetický fond. Karpatské hory predstavujú dôležitú zónu zachovania biologickej rôznorodosti, ktorá sa tiahne cez niekoľko európskych krajín. V krajinách strednej a východnej Európy sa k jestvujúcemu ohrozeniu biologickej rôznorodosti zo strany moderne-výroby pripájajú aj týchle zmeny v poľnohospodárstve, predovšetkým proces privatizácie. Na vytvorenie reálneho obrazu vzniknutej situácie uskutočnili predstavitelia nadácie SAVE (Záchrana poľnohospodárskych druhov v Európe) rad munitoringových expedícií do rôznych oblastí Karpát: do Poľska a na Slovensko v období rokov 1991-1995;do Rumunska v r. 1997 a na Ukrajinu v r. 1998.

V máji 1999 nadácia SAVE zorganizovala stretnutie odborníkov a zainteresovaných ľudí, ktorí dobre poznajú problémy najodľahlejších oblastí Karpát.

V máji 1999 nadácia SAVE zorganizovala praktický seminár za účasti odborníkov a zainteresovaných ľudí dobre ovládajúcich problémy najodľahlejších oblastí Karpát, cieľom ktorého bolo pomenovať súčasnú situáciu, analyzovať problémy a nevyhnutné kroky. 30 odborníkov zo štyroch susediacich krajín (Poľsko, Slovensko, Ukrajina, Rumunsko) sa stretlo v rumunskom meste Sučava. Praktický seminár pripravila nadácia SAVE v spolupráci s Rastlinnou genobankou Sučava a Inštitútom monitoringu v Saint-Gallene, s finančnou podporou švajčiarskej agentúry pre životné prostredie, lesy a krajinu.

Cieľom praktického seminára bolo:

-- vymedziť jestvujúce populácie vzácnych živočíšnych a rastlinných druhov v Karpatoch;
– preskúmať problémy živočíšneho plemenárstva, nebezpečenstva zničenia z vymierania;
-- vymedziť primerané opatrenia.

Diskusie za okrúhlym stolom a v menších expertných skupinách vymedzili okruh kultúrnych a úžitkových divorastúcich rastlín, ktoré sa nachádzajú v ohrození a vyžadujú si prvoradú pozornosť zameranú na ich záchranu. Patrí k nim : malus, raž trváca, trváca zelenina, pyrus, Sorbus domestica, Sorbus torminalis, drobné ovocie, Triticum dicoccum, Triticum monococcum a vinič.

Analogický zoznam domácich zvierat potvrdzuje nutnosť opatrení na záchranu červenej mangalickej svine, valašskej ovce (Beskydy), valašského trasličieho druhu statku (alebo Mocanice), starého miestneho plemena karpatského bývola (zvlášť na Zakarpatsku), huculského koňa v miestach pôvodu (založenie medzinárodnej plemenárskej farmy). Je nevyhnutný ďalší monitoring iných druhov horských plemien koní, ako spikul, bikaz, pôvodných starých, medzinárodne rozšírených plemien domáceho dobytka ako simentálske, hnedé a pinsgauské / doma, ďalej osla, kozy, vtákov, ovčiarskeho psa a včely.

Účastníci tiež zdôraznili nevyhnutnosť spoločného postupu v niektorých oblastiach Karpát, najmä v pohorí Apuseni a Maramureš v Rumunsku, ako aj v susednom Zakarpatsku (zvlášť v Rachovskom rajóne) na Ukrajine. Účastníci sa dohodli na vytvorení medzinárodnej partnerskej siete zameranej na spoluprácu pri záchrane jednotlivých druhov domácich zvierat a rastlín, ktoré sa nachádzajú v ohrození. Potvrdili svoju pripravenosť poskytnúť nevyhnutné prostriedky a znalosti, a taktiež vyjadrili ochotu viesť vzdelávaciu prácu v oblasti ochrany prírody vo svojich krajinách, ochrany agrobiologickej rôznorodosti Karpát, ktoré je rovnako v ohrození.

Medzinárodná spolupráca v Karpatoch sa realizuje: ďalšie praktické semináre sa uskutočnia v zúčastnených krajinách v dohodnutom poradí.

1. Seminary Work and Roundtable

Report of the afternoon workshop of 27 05 14.00 – 16.00 Team: Big Animals (horses, cattle, buffaloes)

Prof. Dr. Imré Bodo, Budapest, Hungary

1.1: Hutzul (The ponies of the Carpathian mountains)

1 Horses

a) the estimated population:

	stud mares	unknown pedigree mares
Romania	40	100
Poland	230	
Hungary	20	10
Ukrain	100	
Slovakia	35	
Other countries	80	

The globally estimated number for the Carpathian region is about 500 and all over the world about 800 Hutzul mares.

The existance or extinction of the other Carpathian horse types described in the literature is unknown.

The problem is the lack of an international stud book, the advantage is the existance of an activee international breeder`s association.

Actions planned

Hutzul, Sireline Prislop, Hergelie Sulina

Monitoring the whole pony population of the Carpathian region. The extinction or existance of other native horses (Sicule, Bicaz) must be investigated by in situ expeditions.

Organizing the maintenance of other existing types within or besides the Hutzul breed should be the next step or confessing the extinction of those breeds.

Creation of an international stud book for all the breeds found is also necessary.

Gidran, Nonlus, Furioso-North Star, Lipizzan, Shagya Arabian

Other local not typically mountain horse breeds

The most important task is to organize national breeders` associations, an international cooperation, and in the framework of an umbrella organization, may be, also a common stud book for these breeds can be created.

The donkey population of all the participant countries is nearly unknown and unregistered. A monitoring programm would be necessary.

Cattle

Mokanitza

It is important to organize a short expert consultation on the characteristics of the breed, which is on one hand historical on the other hand its existence and traits are uncertain. After such studies an international monitoring program should be organized in situ, whether it exists or not any more. If the answer is yes. then other measures of preservation should start.

Other rare cattle breeds

Grey Steppe varieties, which were typical local breeds of the region hundred years ago and now they can be found in Moldavia and on the Hungarian Lowland. The short study of their characteristics, their existence or only some traces of their traits (a possible gene pool) and the present situation. The excursion can be joined ti the search of Mokanitza.

International cattle breeds

Study of the international breeds living nowadays in the region like Simmental, Braunvieh, Pinzgau etc. Description of primitive local types within these internationally improved breeds would be important and interesting

Buffalo

In Romania there are about 80000 buffalo cows and most of them (70000) live in Carpathian region. In Hungary the population counts 160 cows.

There are three different buffalo types in Romanian population.

The Carpathian type, (valuable gene resource, well adapted to the for buffalo cold climate), the Danubian buffalo and the by the Indian Murrah improved one.

The first step of action can be a conference on clarifying the characteristics of the different types and to create a national and international association for herd book keeping. It is important to make a distinction of the ancient valuable gene resource and of the new improved types.

The Hungarian population can be considered a good reserve stock in cooperation with the Carpathian type breeders.

Roundtable discussion on small domestic animals in the Carpathian region

Berthold Traxler, Vienna, Austria

Introduction

Due to the lack of information and knowledge of specialists there is an urgent need for **monitoring** the following domestic animals:

Goats, donkeys, poultry (geese, ducks, fowls), bees. Also further investigation on sheep races and their varieties in Rumania and the sparse remainders of the Ukrainian region generally.

Breeds per Country

In the following, countries and their breeds will be treated in succession; the following numbers and abreviations will be used:

1. How many are left and where are they?

2. What is the problem and why?

3. Where is action needed and how?

Pigs

Romania

Stodi pig

1. Purebreds are supposed to be extinct, crossbreds fairly certain not in the Carpathians, but surely in the Danube delta where they are endangered by cross breeding (mainly with Mangaliza). On Trachler's excursion three yeary ago he met fairly (typvolle) animals. Professor Draganescu will visit this region.

2. Cross breeding and displacement, no care at all

3. Search for animals

Red Mangaliza pig

1. Turda: conservation programme, stock: 35 females and 6 males (3 lines), opportunity for further (Ind) in the western region of the (Apusen) mountains.

2. Few animals. Arguments between the Hungarian participant and Mr. Nagy about the Red Mangaliza. Their difference in opinion will not make co-operation easy. Hungarian animals may be a cross breeding between Salontaer and Blond Mangalizas.

3. Search for animals. After investigation there will be a co-operation between Rumania and Hungary.

Saddleback pig

1. Turda region (north of Clausenburg): Several thousand individuals are expected. Onsmall farms mainly saddleback pigs were found, frequently with intercrossings (.175 25 males (7 lines)).

2. Amount of intercrossings with (Anglern) unknown.

3. Conservation programme to be continued.

Hungary

Mangaliza

1. Blond: Main group, 500 in conservation programme, some hundreds in private hand. Swallowbelly: 50 in conservation programme, few in private hand. Red: 50

2. Discussion about the Red Mangaliza as mentioned above.

3. Co-operation between the countries and conservation programme.

Ukrainia

No information available

Mangalita rosu - red Mangaliza, breeding boar in the breeding station Turda

Poland

No information available

Slovak Republik

No information available

Sheep

Romania

1. 45% of the Romanian population, 2 mio animals, many local populations. Tsurkana (Valachian Sheep)

2. Too little investigation in and analysing of the various populations, no danger for the race but for the varieties. Analysis of the status quo is important.

3. See above, not very important.

1. 20% of the Rumanian population, (Transhumanzschäfereien) Brasov and Covasna. Various head and leg colours (brown, red, white) are only poly-morphisms, also varieties, the black heads should be considered an own population (are not bred in the Carpathians, but in Banat and Vojvodina). Tsigai (Cigaja) Sheep

2. See Tsurkana

3. See Tsurkana

Ratska Sheep

1. 500 pure bred in the Banat hills, not in the Carpathians.

2. See other Rumanian sheep.

Slovakia

No information available

Ukraine

1. This Mountain Sheep is a new cross breed between Cigaja and Zackel. Stock 2500. Found in the Putil district, Chernivtsi. Carpathian Mountain Sheep

2. Decreasing stock. Sheep breeding is generally in financial problems.

3. Conservation programme.

1. 100 – 200 animals found in North-Bukowina, Putil district and Chemivtsi, in the fron - tier area to Rumania. Zackel Sheep

2. No information

3. Monitoring, investigation to find out whether they differ from Tsurkana.

Poland

Polish Mountain Sheep (Valaska Sheep)
1. 2% of the Polish population. 50000 individuals.
2. Not endangered, there is an improvment programme.

Olkuska Sheep
1. only very few left.
2. Conservation programme.
3. monitoring

Hrzosowka Sheep
No participant knew whether this race lives in the mountains at all.

Hungary

Racka Sheep
1. 4500 individuals. (herdbook).
2. No problem at the moment.

Gyimesi Racka Sheep
1. 600 females; herdbook

Tsigai Sheep
1. 600 individuals; herdbook.

Cikta Sheep
1. 350 individuals. (herdbook).

Goats

Romania

Carpathian Goat
1. 700000 individuals in the Carpathians.
2. No information at all concerning race, varieties etc. Not taken care of at all.
3. Monitoring, analysis, conservation programme.

White Banater Goat
1. 20000 individuals. In the Banat, not in the Carpathians. On his trips Trachsler did not see any purebred stock anywhere. There are white individuals with all flocks, strait or tufted hair. Trachsler guesses that this race does not exist purebred, unless the white individuals are imported Saanen.
2. No herdbook.

Ukraine

No information about autochthone goats. Total number of goats in the Carpathians is 1500.

Donkey

Romania

Transhumanz Donkey
1. 5000 to 10000, in the mountains with sheperds, 1 donkey per 300 sheep.
2. No information or care.
3. Monitoring, conservation programme.

Agricultural Donkey
1. North-western area
2. See above
3. See above

Dogs

Romania

60 - 70% of the sheepdog breeds are living in the Bukowina.

Ciobanescul Romanesc Mioritic dog
1. Some 100 in breed programme. Bukowina, Moldowa, Sibiu.
2. In Traxsler‘s personal view breeding animals for exhibitions, i.e. for their exterior and not for their original task, such as (Herdenschutz), is problematic. The Rumanian sheepdogs belong to the few remaining dog breeds in the world that are not bred according to wishes of canophiles lovers.

1. Some 100 in breeding programme; area Bistritz, Bukowina, Maramuresch and Moldowa.
2. See Mioritic

Ciobanescul Romanesc Carpatin dog

No information available

Transsilvanian Dog

Poland

Polskiowsczarek Podhalanski dog

No information available

The romanian Carpatin from Maramuresh region

Slovakia

Slowenski Cuvac

No information available

Ukrain

No information available. Finding out if this population is an own race or if it was only lately imported from Slovakia would be of use.

White Carpathian Dog

Hungary

The last three races are not sure to belong to this geographical area. Nevertheless all races are taken care of.

Kuvasz, Komondor, Pull, Puml, Mudi

Geese

Romania

Private farmers seem to breed original types of geese. No information or literature. Monitoring and investigation necessary.

Poland

1. 200 individuals. Ex situ.
2. No more in the Carpathians. Collected in this area for 70 years.
3. Monitoring, transfer back in the area of origin.

Podkarpackich (Subcarpathian) Goose

These geese are a crossbreed between Podkarpacka and an unknown race.
1. 200 – 500 individuals. Close to Cracow.

Zatorska Goose

Ukraine

New breed, crossbreeding between three races.
1. 186 individuals.
2. Drastic decrease of stock.
3. Urgent need for conservation programme.

Obroshyno Grey Goose

A herd of Carpathian Geese in Poland.

Ducks

In Romania but also in Ukrainia, original (Landenten) are bred. No information available.

Fowl

Romania

Git Golas (Nackthals)

1. Some 1000 are found with hobby breeders. On his trips Trachsler did not see any purebred (Zuchtstamm). The Nackthals factor is dominant, therefore many mixed population found. Until 1998 the Genebank on the Black Sea kept all (Farbschläge). The red coloured, collected in the Ulcea area, are remarkable. They are of large size and lay heavy eggs.

2. Not taken care of. Where are the individuals of the Genebank gone?

3. Reorganiziation of the Genebank. Monitoring.

Negru de Banat (Schwarzer Banater)

See Git Golas. Three years ago Traxsler transferred about 20 (Bruteier) from the Genebank to Austria. This population counts now about 20 females and 3 males. Continuation is problematic without new bloodlines. No information about this race in the literature.

Hungary

There are preservation breeds of Git Golas in white, black and stripy (Farbschlag).

Bees

Romania

According to Professor Draganescu the Carpathian bee stands between A.m. caucasica and A.m. carnica. Since twenty years no official imports of other races.

Carpathian bee

1. No information available

2. No information about the many varieties

3. See above

Hungary

No information available

Ukraine

Carpathian bee

1. There is a department for bee breeding; there ought to be more information.

2. Supposedly no organized pure breed.

3. monitoring.

PolandNo information available

Slovak Republik

No information available

Final discussion about the needs for future actions in the area of animal genetic resources conservation

Prof. Dr. Imré Bodo, Budapest, Hungary

Priority list of future actions

a) To study the literature in order to clarify the characteristics of different breeds which lived more than hundred years ago.

b) To invite the possible experts for a meeting in order to have training on the characteristics of these breeds.

c) On the basis of this knowledge to organise in situ excursions in order to collect information on the following breeds:

- Mokanitza cattle
- Varieties of different mountain horse types of the carpathians (Sicul, Bikaz)
- Description of the present status of breeds which can be found also somewhere else, like Mangalitza or Bazna pigs.
- Different types within the not endangered international breeds (Pinzgau, Simmental, Braunvieh etc. and the sheep breeds like Tzurkana, Cigaja)

d) In order to estimate the genetic distance between the breeds, also DANN investigation can be organised with different laboratories in scientific level.

e) A conference on the different buffalo types

f) Establishment of breeders' associations where they are not existing yet.

The excursions should be organised together for different purposes, collecting data not only on the animals, but also on breeders' situation. The experts of these excursions should be selected from all the Carpathian countries and the tasks should be internationally fulfilled.

The role of different institutions

Romania

Ministry of Agriculture, Bucharest

Anarz, Romanian Agency for Animal Production and Breed Improvement

Romanian Academy of Agriculture and Forestry Sciences

Romanian Academy of Agriculture and Forestry Sciences, Institute for Animal Biology and Nutrition

Agency for Technology and Innovation and its Experimental Stations

National Society for Horse Breeding, Bucharest

Poland

Committee for Animal Diversity, Ministry of Agriculture Warsa

Ukraine

Institute of Agriculture and Animal Biology UAAS, Lvov

Zarkarpatian Institute of Agroindustrial Production, Bakta

Chernivsti State Agricultural Experimental UAAS

Ivano-Frankivsk State Agricultural Experimental UAAS Kolomya

Hungary

Ministry of Agriculture, Budapest

Hungarian Association of Animal Breeders, MASZ

National Institute for Quality Control in Agriculture, OMMI

Regional

Danubian Countries Alliance for Conservation of Genes in Animal Species, DAGENE

International

Safeguard for Agricultural Varieties in Europe, SAVE-Foundation

The task of Ministries and other central institutions is to finance and to control the activities on the national level. Establishing a legal basis of preserving ancient domestic animal breeds by law is also important, where it is solved not yet.

The research institutions or universities have to organise the meetings mentioned above; they have to give experts to the excursions.

DAGENE can undertake the job of collecting literature in this respect.

SAVE has given already a good start in Suceava. Hopefully there is a continuation of this work.

Fundraising

This is one of the most difficult tasks. All conservationists taking part at the monitoring programme have to inform their governments about the EU system of subsidies and have to ask for something similar to them. The 5th EU Framework programme seems to give also some possibilities for financing. It is important to decide for small and realisable projects and to ask for money for them. It seems the only way to get some financial basis for the activities.

Proceedings

The role of such Proceedings like to Suceava Workshop is important to inform all the possible future participants of the programme. Therefor the distribution has a crucial importance.

Participants of the Workshopafter Visiting the Suceava Genebank

Discussion about state of the conservation programs, problems and possibilities

Team Crops, Maize and Vegetables

Dr. Wieslaw Podyma, Poland and Nadia Hungerbühler, Switzerland

To size the still growing plant varieties, the group compiled the following list, subdivided in field crops and vegetables for the Carpathian countries Ukraine, Romania, Poland and Slovakia.

How many are left and where?

Still growing field crops and vegetables in the Carpathian Countries

Country	Field Crops	Vegetables
Ukraine	Triticum dicoccum!	Turnip
	Triticum spelta	Rutabaga (syn. Swede)
	Hordeum (naked	Parsley)
	Oats (naked)	Scorzonera
	Potatoes (local forms)*	
	Rye (perennial)*	
	Local varieties of Flax,	
	Poppy, Hemp and Maize	
Romania	Triticum aestivum	Cucurbit
	Triticum monococcum!	Onion (red)
	Avena sativa	
	Secale montanum*	
	Hordeum distichon	
	Fagopyrum esculentum	
	Maize	
	Potatoes (landraces)*	
Poland	Rye (perennial)*	Rutabaga
	Avena strigosa	Cabbage
	Triticum sp.	Kohlrabi
	Hordeum vulgare	Carrots
	Pisum sativum (local varieties)	Spinach
	Vicia (local varieties)	Root Parsley
		Persnip, Onion*
		Rhubarb, Horse Radish,
		Shallots, Potato Onions
Slovakia	Triticum dicoccum!	
	Lens culinaris	
	Triticum dicoccum!	Cucurbit
	Lens culinaris	Shallots
	Cicer avretinum	Spinach

Legend: * no varieties found until now

! these varieties should be on a red list

In Romania there are more vegetables endangered then listed but there is no data available or known at the time of the workshop. Perennial Vegetables (as Cabage or Carrots) are said to be more endangered than annual vegetables.

What is the problem and why?

On one side it can be said, that the rapid agricultural development in these four countries is taking place. Horsepower will soon be replaced by modern tractors and old varieties are already and will be more and more replaced by new and advanced cultivation. Breeders have in general a low interest in the economically low rated old varieties. The amount of harvest of these old varieties is often smaller and the cultivation time longer but they might be resistant to certain diseases and ask for a lower input of pesticides. Old varieties are often perfectly adapted to mountain conditions and can be the source of regional products and good tasting specialities. But then there is a lack of their promotion and market.

On the other side it can be said that there is not much known about the local landraces and an inventory involves great expense and is difficult. Ecological catastrophes especially in mountain regions can destroy any long-term effort in one single day.

In the end it can be said that law regulations can hinder the distribution of local landraces. An example is the prohibition of hemp. Ownership and registration laws don't benefit the distribution of certain plants.

How is action needed and where?

It is necessary to have a systematic inventory of existing local varieties in the Carpathians. This inventory should include the geographic distribution of plant varieties, the indigenous knowledge and an inventory of farmers that are growing old varieties. A publication of global results would be even better. A characterisation and evaluation of plant material will add value to the most interesting varieties. The cultural, historical, culinary value and the value for marginal areas should be defined. Local committees "pro Carpathian varieties" are important for valorisation of Carpathian varieties and as a organ of public opinion. In this respect it might give a problem of financing such local groups but benefits should be shown and emphasised and par example a magazine is good for the promotion. Changes in the country legislation, that are taking these concerns serious, is a slow but continuous process. On farm – indigenous plant material should be maintained and an on farm conservation system established. Genbanks should secure the collection of germplasm.

During the workshop it was possible to focus the need of action on certain regions for these three countries:

Ukraine:	Verkhoryna district
	Yaremcha
	Transcarpathian region (Rakhiv)
	Chernivtsi region (Putyla district)
Romania:	Apuseni mountains
	Bucovina region
	Maramures region
Poland:	Carpathians and their forelands

Seminary work conclusions: Problems of rare fruit verieteis in the Carpathian Monutains

Dr Nelu Orlaie, Cluj-Napoca, Romania

Problems, needs of action and possibilities

Traditional varieties of fruit trees represent a genetic treasure which must be conserved.

Old fruit varieties in Carpathians were selected against harsh environments, and they are adapted to pedo-climatic conditions specifics to mountains, possess good quality, tasty and diseases and parasites resistance. Rural people are using fruits of about 20 species.

Conservation of apple

On Czechoslovakian territory, according estimations from the end of last century were cultivated 1000-1500 introduced and original genotypes. Since 1991 till 1999 in Slovakia were preliminary evaluated more than 5000 samples (including duplicates) and about 350 were described as original spontaneous genotypes.

In Romania there were identified almost 200 local varieties only in the Western Carpathian, and in Ukraine are mentioned enough local varietieswhich are productive, good in storage and diseases resistant.

Malus sylvestris Mill lives wild in Carpainus - Fagus forests. Number of stands is reduced much M. dasy-phylla Borkh., individuals can be found extremely rarely.

Conservation of pear

In the Fruit Research Station - Cluj collection, Romania, are conserved 85 old local pear varieties collected in Carpathian area.

In Slovakia collections are 120 genotypes. More than 65 pear varieties cultivated in Easter Romanian Carpathian were extinct or threatened in the last 30 years.

Walnut and Chestnut

In Ukraine, Poland and Romania special attention should be given to the local walnut and chestnut varieties. Populations of trees with different quality of nut kernel, time of blooming, tolerance to bacterial diseases and plant vigor are distributed on the edge of Danubian valley and on the foothills of Carpathians. Many old and young chestnut tree were discovered in a forest near the town Mukachevo (Ukraine).

Cornus mass, Sorbus domestica and Coryllus avelana atropurpurea, only small populations were observed in the Carpathian mountains and hills. Specially Coryllus avelana atropurpurea in Ukraine is under danger of extinction.

Some varieties of Cornus mass and Sorbus domestica are preserved only in some private farms.

Smlaa fruits

There are some unknown local gooseberry varieties found in Maramures area and black currant varieties were recorded in Apuseni mountains. Small colonies of Ribes species sometimes less than 10 plants were dotted among the natural vegetation.

The Carpathian mountains are exceptionally rich in Rubus species and could be considered to be a center of diversity for the genus. There are reported to be in Romania more than 100 species and 75 intraspecies hybrids and many are mentioned only in Carpathians in small populations.

Others species which only exist in small plant numbers are Fragaria moschata, Vaccinium myrtillus var. leucocarpus, Vaccinium oxyccocum var. microcarpus, some local varieties of Vaccinium vitis-ideea which are extinct or threatened, Rosa damascena and Rosa pendulina.

Problems, needs of action and possibilities

During the last 50 years Biodiversity has been dramatically reduced. Many of local valuable genotypes of fruit plants were lost because of the collectivisation in agriculture, development of pasture or modern farming and changes as western technology flooded into these areas.

Old populations of fruits are consisting now mainly of old trees, sometimes more than 100 years.

The fact could be mentioned that a great number of local varieties resist at an altitude superior to 800 m and they represent important resources in improving quality, disease resistance of varieties for mountain regions and not only there. Some of these varieties can be directly reintroduced to gardening, used in breeding programs or kept "in situ" conservation in order to prevent their losses for future generations.

In Slovakia and Poland exist national programs for conservation and protection of germplasm of obsolete cultivars and landraces.

Scientist must continue to be able to draw upon this genetic diversity for next generations.

Urgent actions for rescuing rare plant varieties in Carpathian mountains are necessary:

initiating an international programs for researching and preserving fruit three genofund;

setting of a regional network for monitoring and conservation strategies in rare fruit plants varieties;

propagation and return of local varieties to the area of their former dissemination;

scientific expeditions are necessary for evaluation of the plant material. In this expeditions will joint scientists from a group of Carpathian countries;

participation of local communities in this projects;

partnership between the authorities at international, national, regional and local level;

co-operation with forest responsible and a red book or list of all endangered species and varieties in Carpathians; establish a red book or list.

Acknowledgment

Information of this report proceed from scientists participant in Seminary work in fruit team of Workshop "Rare Breeds and Plant Varieties in the Carpathian Mountains" and from Draft Reports of the Participants.

Final discussion about the needs for future actions in area of plant genetic resources conservation

Wieslaw Podyma, Poland; Nadia Hungerbühler, Switzerland

Priority list

Participants of the discussion prepared a short list of the cultivated plants and wild useful plants which are the most endangered and should be primarily conserved:

Triticum diccocum
Triticum monococcum
Perennial rye
Perennial vegetables
Apples (Malus)
Grape (Vitis)
Pyrus
Sorbus domestica
Sorbus torminalis
Small fruits

The action which should be undertaken is systematic inventory of existing local varieties in the Carpathian Mts. which would be focused on geographic distribution of selected taxa, collecting indigenous knowledge, and inventorying of farmers still growing old varieties. The publication of global results would be very important part of the action. The common action which should be also undertaken for plant genetic resources is establishment database on existing resources in situ and ex situ. The action in area of field crops needs additional activities documenting potential value of the indigenous material by evaluation for cultivation, and promotion of their historical, culinary value and value for cultivation in marginal areas.

The current status of fruit trees is less known than other plants so in the first step should be done inventorying and description of distribution of the most endangered taxa. Establishment of nurseries of fruit trees and multiplication of unique accessions are necessary. The action can be undertaken by regional agricultural universities, institutes and genebanks using existing facilities. The collected information could be the basis for applying to the local authorities for establishment of new genetical reserves with special focus on selected taxa.

Partners

All participating organizations expressed their willingness for participation in the programme, and availability of their facilities and knowledge according with their specialization. The problem which has been recognised is low activity of non-governmental organization especially in area plant genetic resources. The action, to be successful, needs strong participation of local authorities, non-governmental organizations and private persons. Special attention should be put on establishment of local committees for evaluation and promotion of the material.

Finances

The participants identified the following international and national potential sources of financial support:

International funds

5th Framework Programme of European Union for Research, Technological Development

and Demonstration 1998-2002
Global Environment Facilities

National funds

Bilateral agreements on cooperation
Environmental Foundations
Some of the participating countries are in a very difficult economcal situation and external support is considered to be the most real source of funde for the initiation of the activities. However country environmental sector should be considered as potential partner for cooperation.

Needs for common actions

Besides actions undertaken on the territory of the countries, the participants strongly stressed the importance of common action in selected areas of the Carpathian mountains. The Maramures (Romania) and the neighbouring Transcarpathian region (Rakhiv) in Ukaine have been selected for international cooperation.

During the discussion, other important topics have been raised for common cooperation:
1. Periodical organization of workshops in different countries

2. Standardization of methodology of research

3. Availability of digitised maps of the Carpathian region.

Also better knowledge on „Alps programme for conservation of genetic resources“ would be very useful for the development of an international cooperation in the Carpathian region.

The participants expressed their acnowledgements for the organizers of the meeting. The workshop waqs the first attempt for further join collaboration of the Caroathian countries in the field of genetic resources conservation.

2. Introduction and Aknowledgements

Opening Speech

Dr. Silvia Strajeru,Director Suceava Genebank, Romania

Distinguished guests
Distinguished audience

Allow me on behalf of the Genebank's staff and my own behalf to address you all our traditional "welcome to the upper country of Moldavia" on the occasion of your attending the workshop "Rare breeds and plant varieties in the Carpathian Mountains".

I would like to express our gratitude to SAVE foundation and Monitoring Institute for choosing Suceava as host of this meeting, being strongly convinced that in the context of increased international involvement and cooperation regarding genetic resources, Romania has an important role to play.

Also I would like to especially welcome Mr. Lorenzo Maggioni, ECP/GR coordinator, and to point out that his presence here is a clear proof of the importance of this event.

Furthermore I thank all the experts which present the scientific contributions as lectures and last but not least we thank the delegates from abroad and from our country for their interest and for participating in this workshop.

This meeting is taking place at a time of a rapid changes in the scientific, social, political and legal environmental surrounding genetic conservation and use- an environment more complex than even before in the history of the biodiversity protection.

The Suceava Genebank was established in 1990, in part, as a response to those developments.

Plant genetic resources- resources which are essential to the work and existence of the Genebank are the prime elements for food security and modern agriculture.

We are today in a moment in which all recognize the importance of proper and sustainable conservation and utilization of genetic resources, but the recognition is not enough. A real, concrete and closer collaboration at regional or international level is of great necessity.

n this view meetings like this one play a catalytic role in bringing together partners from both formal and informal sectors so as to harmonize the different systems that are currently in operation across the Carpathian countries and to help create easy and safe access to information on vegetal and animal genetic resources.

And if we think that no country has all of genetic resources required to develop and to maintain a high level of agricultural productivity we realize that we need each other. I assume that Suceava Genebank needs you, and you, at least these days, need us.

I invite all the participants not only enjoy their stay in Suceava but to use this meeting as a god opportunity to make new contacts with scientists present here.

Finally I should like to thank dr. Mihai Cristea the former and the first director of Suceava Genebank for the professional and responsibility way in which he understood and operated for us to be able today to have a genebank in Suceava.

I wish success for the meeting and I hope it will generate positive effects for all people in this one world.

Thank you for your attention.

Silvia Strajeru

Welcome words of the inviting body, the SAVE Foundation

Hans-Peter Grunenfelder, Chairman SAVE-Foundastion and Head of the Commisssion for Animal Projects, Switzerland

Dear Silvia Strajeru, thanks for opening this workshop

Dear Vasile Cojocaru, local Consiler of the Government

Dear Constantin Sofronie, Mayor of Suceava

Dear Ilie Gaspar from the National Committee for Plant Genetic Resources

Dear Colleagues

I welcome you in the name of SAVE Foundation and the Monitoring Institute for Rare Breeds and Seeds in Europe. I'm very pleased that it was possible to assemble so many experts for agrobiodiversity in the Carpathians and I hope, this knowledge may be transferred in a successful workshop.

The goals of the workshop are:

•to list the endangered agrobiodiversity

•to determine the need for action in a priority list

•to appoint the further procedure to rescue the most valuable items.

You got a lot of papers, which you may have red already. First I have to apologize for some mistakes with the papers: The printing of some letters of Slav languages - especially the Cyrillic ones - was not possible, you just got hieroglyphs. We bought now new software and hope to correct this for the booklet we will publish after the meeting.

This workshop was possible due to:

- the financing of the Swiss Agency for Environment, Forests and Landscape

- and the active collaboration of the Vegetal Genebank Suceava

I would like to thank these two institutions, especially the directress of the Genebank, Dr. Silvia Strajeru to have agreed to host the workshop and additionally to have sponsored the dinner for Thursday. But my thanks are also to Dr. Danela Murariu, who made all the organization here and Nadia Hungerbühler, scientific collaborator of the Monitoring Institute, who prepared the workshop from our side.

Then I will present you Natalya Potapova from LIK centre Uzhgorod/Ukraine. She is here to solve translation problems, if we should have some.

- Who is SAVE Foundation

- What is SAVE Foundation doing

- Why is a Non-Governmental Organization (NGO) working in this field.

Now just a short presentation (introduction)

SAVE Foundation is an European umbrella organization of national NGOs working professionally for in situ- or on farm-conservation in different European countries. It was established 6 years ago as association and transformed in a foundation 2 years ago.

The Foundation is wide anchored in Europe. The Board of Directors consists of ten members out of eigth countries. The chairman for 1998/99 is me from Switzerland, the two vice chairmen are Prof. Bodo from Hungary (he is present at the workshop too) and Prof. Georgoudis from Greece (The list of Board members and the list of the SAVE policies see in appendix .....).

SAVE-Foundation

Now: What may be the role of a non-governmental organization in the field of on-farm conservation? You got the copy of the paper " The role and the possibilities of NGOs -

examples of in-situ conservation", presented at a symposium in Benevento, Italy, 1995. Essential in this paper is the "Sharing of Duties":

State
- Remuneration of co-operative economy services (co-operation with private sector, Art.10 Convention on Biological Diversity "CBD")
- Financial assistance for breeders (incentive measures, Art.11, CBD)
- Removing legal restrictions on breeders
- Label protection, D.O.C.

Research
- Basic research (scientific documentation)
- Recommendations (for breeders, strategy proposals)
- Cryoconservation (security doubles)

NGO's
- Monitoring of breeds and their endangerment status
- Public work and fund raising
- Livestock brokerage
- Assistance to breeding and breeders
- Management of herdbook (if not governmental)
- Presentation of cultural heritage
- Sales of products

You may ask, why should science and governmental bodies co-operate with NGOs?

The states and universities are normally well ready for ex-situ conservation but for live or on-farm conservation they have only few possibilities: some state farms or research stations, so only a few herds or plants can be placed. The NGOs may mobilize a wider scale of conservationists and breeders. NGOs

- act with more flexibility
- have fewer bureaucratic restrictions
- expend less energy on co-ordination
- take easily decisions

So NGOs function generally more efficient and cost effective! As project funding is limited on both sides, the formal and informal sector (GOs and NGOs) should co-operate in a good way. We try it on this workshop.

You already have done a lot for the workshop. We got a plenty of very interesting papers from you and you made a long trip to get here. Thanks for your engagement and thanks for your collaboration in the workshop. For myself I will step back to the role of a normal participant and I have to confess that I'm coming from the animal breeder side, but interested in plants too.

The Project Work of SAVE Foundation in the Carpathians up to now, Introduction

Hans-Peter Grunenfelder; St. Gallen, Switzerland

Targets of SAVE Foundation

SAVE is an European umbrella organization for the promotion and co-ordination of activi-ties for the conservation of endangered breeds of domestic animals and plant varieties in the form of live populations. SAVE is a foundation according to the Dutch legislation with the head quarter in Germany and a project office in Switzerland.

Breeding oriented on the performance only, being induced by economic considerations and pressure, has dramatically reduced the biodiversity of domesticated animals and cultivated plants. Less efficient breeds and varieties lost their value and became extinct, others only exist in small numbers. The traditional breeds and varie-ties, however, repre-sent an important and valuable genetic and cultural-historical heritage. They possess qualities such as sturdiness, fertility and resistance against diseases and parasites, which could be very important in a different economic envi-ronment.

In order to be able to conserve animal species and cultivated plants at least in small num-bers,

- the former diversity has to be known and recorded
- action has to be taken in time

To record and monitor the continuously changing situation the "Monitoring Institute for Rare Breeds and Seeds in Europe", active across borders, has been built up as an in-dependent project of SAVE Foundation. This institute acts as a service centre for organi-zations and offices in the respective countries, and it co-operates closely with the SAVE Project Office.

Monitoring in the Carpathians

It is precisely the mountain regions, with their variety of separate topographical regions and various hindrances to production that has developed a great diversity of agricultural animal breeds and plant varieties. These have adapted, over many generations of bree-ding, to both the needs of people and the conditions of their surroundings. They present a valuable genetic and cultural legacy that is now threatened by modern production oriented breeding. The danger is considerable that numerous breeds and varieties in these mountainous regions now also will vanish completely — and with them, their valuable genes for mountain survival.

At the initiative of CIPRA (International Commission for the Protection of the Alps) an international monitoring study on "Agricultural Genetic Resources in the Alps" has been carried out. In the process, the breeds and varieties still found between the French Maritime Alps and Slowenia, the conservation efforts and the not yet addressed needs for action were deter-mined. In the Alpine regions of the seven countries bordering the Alps, about 100 endan-gered breeds with a population of less than 1000 animals have been catalogued — for which no conservation initiatives exist in 40% of the cases. It is a priority assignment for SAVE to become active in those cases. The realization is done via local organizations co-ordinated by SAVE Foundation..

The following procedure has given good results for the monitoring work:

=> Listing of the former variety (national, regional):

- Evaluation of agricultural literature of the turn of the century
- Search for old veterinary dissertations and other special reports
- Interviews with specialists, old farmers, chroniclers, etc (eg. with photographs).

=> Specific search (especially in animal projects):

- in former sites (according to research)
- indications from interviews
- in places, where other relicts have been found.

=> Random search (especially for plants):

- with ethnic minorities
- in remote, inaccessible regions
- in borderline locations (altitude, topography, exposed positions etc.).

Conditions similar to those in the Alps dominate in the Carpathians. They also represent an important retreat for biological diversity. Like the Alps, they spread over several coun-tries. In the Central and Eastern European countries, in addition to the general en-danger-ment of diversity, the rapid economic transformation in agriculture as a result of privati-sation poses further dangers.

To get an accurate picture of the situation representants of SAVE Foundation and the Monitoring Institute organized in the last years several monitoring tours to different parts of the Carpathians (Slovakia and Poland: several tours between 1991 and 1995; Romania 1997, Transcarpathia 1998). In the form of scouting trips they went from village to village and sometimes even from farm to farm. A first assessment of the still existing traditional breeds could be made. In this process, the last remnants of the Valachian Dwarf Cattle (previously believed to be extinct) were sought out and SAVE Founda-tion went into action with a project for conser-vation of the last purebred Podgorska Red Cattle in the Polish Beskids (pur-chase of 20 of the last 51 animals). See workshop paper "Endangered Livestock Breeds in the Northern Carpathians".

Organization of the Workshop

To determine the situation and to analyse the need for action SAVE Foundation likes to assemble experts and persons familiar with the most remote areas of the Carpathians in a workshop. These experts of the four neighbouring countries of Poland, Slovakia, Ukraine and Romania will meet in May in Suceava. The workshop will be organized in cooperation with the Vegetal Gene Bank and mainly financed by the BUWAL, the Swiss Environmental Ministry.

The goals of the workshop shall be:

- size the still living populations of rare breeds and plant varieties in the Carpathians
- show the problems of breeding, endangering and extinction
- determine needs for action in a priority list

The workshop should initialize further researches, conservation measures and cross border cooperation within trans-national breeds. The target should be to preserve at least remaining stocks of endangered breeds and varieties for longterm survival in the form of on farm live populations.

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Carpathian mountains genetic resources: potential area of collaboration between IPGRI and the Monitoring Institute

Lorenzo Maggioni
International Plant Genetic Resources Institute (IPGRI)
Rome, Italy

IPGRI: International Plant Genetic Resources Institute

The European Co-operative Programme for Crop Genetic Resources Networks (ECP/GR), founded in 1980, is a collaborative programme involving most European countries, aimed at ensuring the long term conservation and facilitating the increased utilization of plant genetic resources in Europe (1).

The Programme, co-ordinated by the International Plant Genetic Resource Institute (IPGRI), has entered its sixth phase of activity (1999-2003), and is characterized by the following objectives:

- to facilitate the long-term in situ and ex situ conservation of plant genetic resources in Europe;
- to facilitate the increased utilization of plant genetic resources in Europe;
- to strengthen links between all plant genetic resources Programmes in Europe and promote the integration of countries which are not members of ECP/GR;
- to encourage cooperation between all stakeholders, including NGOs and private breeders;
- to increase the planning of joint activities including the development of joint project proposals to be submitted to funding agencies;
- to encourage the sharing of conservation responsibilities for PGRFA in Europe;
- to increase awareness at all levels, of the importance of PGRFA activities including conservation and sustainable use;
- to seek collaboration with other relevant regional and global initiatives.

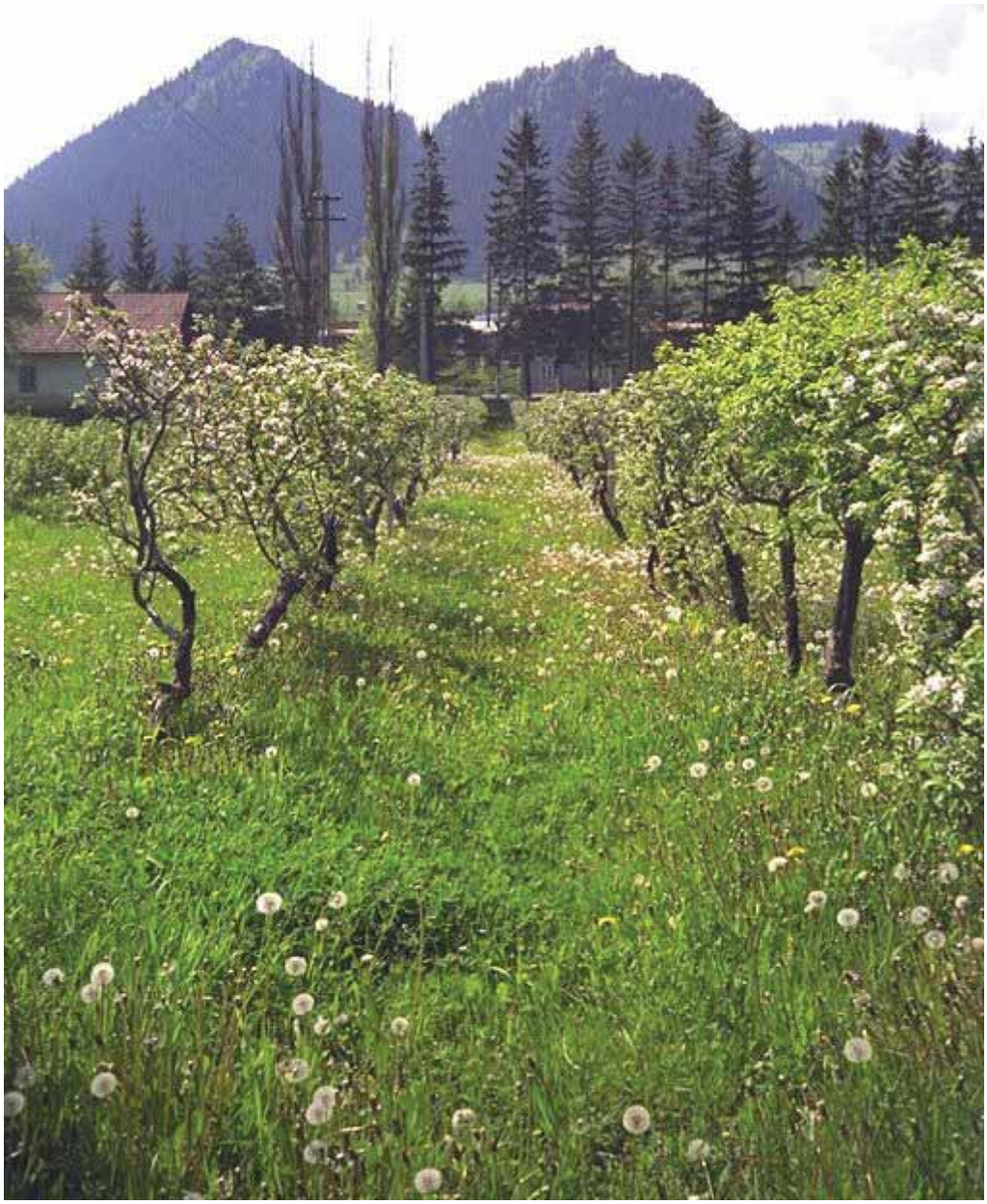
Evidently, several of the above objectives are in line with the aims of the Monitoring Institute to promote the implementation of conservation strategies for plant varieties in the Carpathian mountains.

ECP/GR operates through crop and thematic networks, within which activities are carried out by Working Groups or as ad hoc actions. It is suggested that a linkage is maintained between the Carpathian project of the Monitoring Institute and the ECP/GR "In situ and on farm conservation Network". This Network, currently under development, will be planning to link resources for in situ conservation in Europe and to serve as a hub for information exchange and collaborative project development.

IPGRI is interested in the continuation of a regional initiative for the systematic monitoring and integration of data regarding local varieties of the Carpathian mountains. The following are potential contributions to this initiative in the future:

- Review of project proposals to be submitted to donor agencies.
- A contribution from ECP/GR towards the organization of a small technical meeting at any stage of the Carpathian mountains project development could be considered, upon approval of the Steering Committee of ECP/GR.

IPGRI is interested in the continuation of a regional initiative for the systematic monitoring and integration of data regarding local varieties of the Carpathian mountains and to keep such beautiful Orchards of fruit as it is shown on the picture



- Co-operation in the region could promote an integrated collection of data on plant genetic resources in the Carpathian mountains. The publication of these results and the coverage of the related costs could then be taken into consideration by IPGRI.

Reference

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NGO's for the Preservation of Domestic Animals

Prof. Dr. Imré Bodo, Budapest, Hungary

The situation in the Central and Eastern European Countries before 1989

Before political changes also the financial power was uniquement in the hands of the govemments concerning the whole agriculture. lt was true, more or less, in all the countries of the region. Thus, the maintenance and subsidies of the ancient and non commercial varieties of agriculture, domestic animals included, depended on the decision of the Ministries of Agriculture. The dir ection of the market,thie determination of prices, the permission to breeding etc. were state directed as well. In sonie respects it was advantageous, e.g. if a state farm got the task to maintain a population of a rare breed, the director of the färm could not decide to stop with. However, the conservation activity of the govemments in the different countries was not the same.

Now die the development of the new, market oriented stucture of animal breeding is well advanced in Hungary, therefore it seems usefull to present the new structure of animal breeding and the tendencies, with respect to the preservation policy i.e. the maintenance of endangered rare breeds of domestic animals.

The present danger

In Hungaiy the preservation policy was more or less satisfactory, it results in the maintenance and survival of all the domestic animal breeds, which were existing after World War II. lt was due to some subsidies, to some enthusiasm and nostalgy of breeders, directors and specialists of cooperative and state farms. Now the govemment wants to withdraw more or less to the economic Iife and so the breeders must become more and more independent and they must take the responsibility of the endangered rare breeds as well. The problem is that they are poor, and therefore they must produce profit as well and not to do something in an uneconomic way. So, now it is the danger, that the state protection stops but the rich conservationist breeders and sponsors do not yet exist. The market does not yet prefer the lower production, and special products of the local breeds are not well payed in these countries (there are of course some exceptions).

The present NGOs and their role

After 1989 in Hungaiy it becanie possible for the breeders of different breeds to establish Associations. Thus, they are already legally recognized and registered institutions. The president, vice presidents and auditors of the Associations are elected by the breeders. The number of employees depends on the financial basis i.e. the number of members and the poplation size : the subscription and the amount of membership fees and the results in the different tenders. In order to discuss the most important and urgent problems also a Breeders Commission (5-10 persons) is elected. For the creation of such an organization a minimum of 10 members is needed.

The tasks and rights of these Associations are as follows:

- to establish and keep the herd bocks,
- to provide the breeders with officially signed pedigrees,
- to organize exhibitions and scoring of animals,
- to make propaganda and popularization of the breeds,
- to give certficates to the breeders für taking part at competitive tenders,
- to organize the performance test, progeny tests, selection programmes,
- to publish the results,
- to defend die interest ofthe breed and breeders everywhere,
- to take the contact with the similar breeders associations of other countries and international organizations.

Such associations are already active für nearly all the commercial animal brees and more or less also for the ancient animal breeds threatened by extinction, however, the Ministry of Agriculture and the National Institute for Agricultural Control (OMMI) takes care of these breeds in some extent. So there are already working associations for the Hungarian Grey cattle, for the Mangalica, Lot all the traditional horse breeds. The sheep and poultty breeders are working together with the breeders of other breeds.

The Associations created a Society of Hungarian Brecders for safegarding of their interests. The rare breeds are also well represented there.

Agricuitural Cameras are working as well but not specialized for animal breeding,

DAGENE and other international organizations

Ten years ago the DAGENF, the Danubian Countries Alliance for Conservation of Genes in Animal Species, was created for the preser vation of genetic diversity of animals in the whole region from Switzerland to Bulgaria. Within the frarnework of this organization succesfiul conferences were or ganized (Bugacpuszta, Krems, Kosice, Üll1ö, Zagreb.-Pag, Sibiu, Budapest), and the effect of its acitvity was advantageous for tbe maintenance of genetic diversity in the given countries. DAGEINE, however, was not a legally recognized organization, so it was a "working but not exisüng company".

This situation changed in 1998, when DAGENE was legally established in Budapest. So after die burocratic procedure it can work easier and take part in some tenders etc. and to ask für some subsidies from the goverments and other sponsors. In posession of some money it will be possible to help the programmes of the members, to publish interesting documents, to organize more workshops and conferences and even some meetings of breeders and specialists.

DAGENE should bild up an effective cooperation with the well known and very active European organization, with SAVE- Foundation. In legal status it will be easier then it was before. SAVE started to run some important programmes (Walaska shehp, Turopolje pig Suceava meeting, Carpathian monitoring etc.) also in Central European region. The exchange of technical experiences with the oldest NGO, die British Rare Breeds Survival Trust (1973) is also planned für die future. The contact with the global society (Rare Breeds International) is also important.

In the future, when this region will live togetter in closer relation with the other countries of Europe, the role of this organizations will be more important, because die value of our rare breeds will incr ease as parts of genetic diversity and European heritage.

The tasks and possibilities of NGOs are increasing all over the world. It means of course the increasing responsibility as well.

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The Conservation of Breeds and Cultivated Plant Varieties in Biosphere Reserves, National Parks and other Protected Areas in the Ukrainian Carpathians

Prof. Dr. Stephan Stoyko, Romania

Introduction

The distinguished genetic and selector N.I.Vavilov (1965) attached great importance to mountain regions in the process of cultural plant varieties differentiation. In 1940 he organized a special expedition in the Ukrainian Carpathians with the purpose to study the wild parents of cultural plants. In Bukovina Vavilov was arrested by Stalin regime and than died in Saratov camp in 1944.

With the increase of present day's technical impact on natural and cultural landscapes, the protected territories must promote preservation not only of biodiversity of wild flora and fauna, but also save genetic resources of rare breeds and varieties of cultural plants. In the Ukrainian Carpathians (UC) (37000 sq km, average height of mountains 1000 m a.s.l., 6 mountains are over 2000 m a.s.l., (highest mount Hoverla 2061m a.s.l.), such ecological task obligates to carry out the system of natural protected fund. This system includes 8 big protected objects (biosphere reserves (BR), national (NP) and regional (RP) parks, zapovidniks (strict reserves) (244557 ha) and 446 smaller objects (natural monuments, natural reserves) (122258 ha). The total territory of protected objects is 366815 ha or 7.1 % of UC.

Conservation of buffalo population (Bubalus domesticus L.)

In Ukraine the dug buffalo remains where discovered in the stratums 1-5 centuries in Olvia in the Black See coast zone (Buffalo asiatic, 1960). At present this breed is retained only in the warm regions of the Crimea and Transcarpathian. In Transcarpathian the buffaloes were spread in 5 villages - Kritchevo, Kolodne, Steblivka, Bushtino and Veliatino (300-400 m. a.s.l.) near the Ukrainian-Romanian state border. Therefore it is possibly supposed that this breed was introduced from Romania. The buffalo population number was about 500 heads before 2nd World War. They where used as milk animals (milk has medicinal significance) and as drawpower. As a result of agricultural collectivism and private farms disappearing the buffalo population was essentially reduced. At present there are now only 50 heads. This breed is found only in Kritshevo (40 heads), Kolodne and Veliatino villages. The population continues to decrease due to the extinction of the old farm generation.

Conservation of Hucul Horse population (Equus caballus L. var.hutsulensis)

This breed appeared in the Hucul region by crossbreeding of small mountain Carpathian horses with analogous ones in the Hungarian Tisa lowland. The Hucul horses where broaden in many mountain villages of Transcarpathian and Galizien (Rakhiv, Yasinia, Mizhhiria, Turka, Kolomia, Nadvirna etc. (600-800 m. a.s.l.). The popula-tion was fully extinct as the result of collectivism. The Direction of Forestry of Ivano-Frankivsk region obtained in 1989 5 Hucul horses from Hucul Club in Prague. But in the cold mountain conditions tof the Carpathians the females from Prague brought no vital generation forth. The population still exists in Carpahians NP (Kreminci) and in farm of the Forest

Direction (Nadvirna). Through present privatisation process and development of the private farms, the Hucul horses become a great economical importance.

Conservation of the sheepdog (Canis canis L.) population

During centuries pastoral period Carpathians shepherds created a specialized breed of mountain dogs named "Romanian vivtcharka" (Romanian sheepdog) (big, strong with warm white wool). They are very well adopted to guard the livestock from wolves and bears in the Alpine meadows (poloniny). After collectivism the number of sheepdogs was reduced. At present this breed remained and is very popular among shepherds in the Carpathian mountain settlements (Rakhiv, Yasinia, Yaremche, Vorokchta etc., 600-800 m. a.s.l.) (map 1).

Conservation of rare plant varieties

On the territory of the Ukrainian Carpathians there are over 2020 vascular plant species (46,6 % of Ukrainian flora), inclu-ding 92 endemic taxa (Annual, 1977; Stoyko, Tasenkevich, 1991-93). Native flora includes more than 90 species fruits and seed of which are used in food. We give the list of native wild parents of cultural plants and introduced (intr.) taxa, population of which are protected (+) or not protected (-) in the system of natural protected fund of UC.

Pinus cembra L. (+), Juglans regia L.intr.(+), J.nigra L.intr. (+), J.cinerea L.intr. (+), J.mandshurica L.intr. (+),Corylus avellana L. (+), Castanea sativa Mill. Intr.(-), Morus alba L.intr.(-), Malus sylvestris Mill.(+), Pyrus communis L.(+), Sorbus torminalis (L.) Grantz. (+), Prunus spinosa L.var.macr ocarpa L.(+), Cerasus avium L.var.picro-carpa, var.glicocarpa (+), Cerasus vulgaris Mill.(+), Cydonia oblonga Mill..intr.(+), Mes-pilus germanicus L.intr.(-), Padus serotina Ehrh.intr.(-), Armeniaca vulgaris Lam.intr.(-) ,Persica vulgaris Mill.intr.(-),Viburnum opulus L.(+),Sambucus nigra L.(+), Vitis sylvestris C.C.Gmel. (+), Cornus mas L. (+), Trapa natans L. (+),Berberis vulgaris L. (-), Ribes alpinum L.(+),R.nigrum L.(+), R.carpaticum Schult.(+), R.petraeum Wulf (+), Grossularia reclinata (L.)Mill.(+).

Measures of rare breed and plant varieties protection

The vVillage of Kritchevo, where the biggest buffalo population (40 heads) persists, it is planned being included in the transition zone of Carpathian BR (34159 ha). In the Uzhanski NP (39159 ha), which is a part of trilateral BR "Eastern Carpathians" (196850 ha), is planned to introduce the Hucul horse population from Polish Beshchady NP.

The natural beech-cherry (Ceraso-Fagetum) community is preserved in the forest reserve "Holania" (89 ha), in Uzhanski NP. Near Nadvir na Village forest reservei "Potoki" (1 ha) was created for protection of natural Sorbus torminalis Grantz population.

In the system of natural-protected fund of UC it is necessary to register all wild fruit and berry species of trees and bushes. In this system there should be organized the ecological monitoring of vitality and reproduction of rare breed and plant varieties.

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Problems of Taxonomy and Conservation of Pyrus, Vitis, Cerasus mahaleb, ev. Prunus, Cerasus, Malus Ribes

Prof. Dr. András Terpó, Budapest, Hungary

Our research made since 1951 comprised the following topics:

- Verification of origin of wild-growing species (parents)
- Frequency of hybridization between wild-growing species and cultivars being produced
- Studying of process of run wild of cultivated plants (being escaped)
- Investigation of crossings between cultivars of alien origin and native wild-gro wing species (can be found pollution of genetic material?)
- Possibilities of utilization both wild-growing populations and local cultivars

Activities for protection of survived taxa: developing of conservation. Ways of this process:

Conservation in situ, that is in fields of occurence, in gardens of wallies and mountains

Foundation of living plant collections of taxa found rarely and have importance for practice (breeding, bioproduction)

Original habitats are well-known by me and co-workers due to research work made since long time

Registation of plants is perfected, collection and planting started. However continuing of works is hindered by financial reasons.

Most common species in territory are:

Pyrus

1. Pyrus pyraster (Burgsd.): Populations and cultivars (landraces) with large fr uits of species are also frequent. P.pyraster is able to cross by numerous

1. Species as follows.

2. Pyrus nivalis (Jacq.): distributed in middle ages in southern slopes of the mountains. It's local cultivars can be found in gardens yet.

3. Pyrus austriaca (Kern): it was cultivated only in this landscape. However it is finished recently

4. Pyrus communis (l.): it is a cultivated species (specioid). It's cultivars, living in Europe and western Asia originated from 12 species (Terpo 1960, 1985). All the cultivars in production have this name as mane of the species.

Hybrids of Pyrus

Pyrus X pannonica TERPO (Nivalis X pyraster), P. amphigenea DOMIN (communis X par

Vitis

Vitis sylvestris (C.C.Gmel.) is a really original and native species. It stands are in forceless condition, individuals are in extinction. The species can make crossbreedings with Vitis vinifera, V. Labrusca, V. riparia. Conservation of hybrids is very urgent. Relicts of cultivation: Vitis ruprestris, V. berlandieri, V. aestivalis.

Prunus

1. Prunus domestica (L.): is a cultivated species (specioid). It's cultivars are sensitive to numerous infectios, as Polystgma rubrum and some viruses. It is necessary to con serve the spontaneous (naturalized!) populations.
2. P. institia (L.) is a native specie of wide variability. Many local cultivars belong to it.

Conservation is urgent necessary.

3. P. spinosa (L.): it is a frequent species, has large fruits. Therefor the species and it's hybrids (P. fruticans WEIHE; P. italica BORKH., P. syriaca BORKH.) are of great impor tance for breeding.

4. P. cerasifera EHRH. Is a naturalized species of wide variability in Hungary. It is often applied as rootstock and ornamental plant.

Cerasus

1. Cerasus fruticosa (Pall.) Woron. Is a native species. It's role is of big importance for breeding.
2. Cerasus acida (Dum.): (P.cerasus subsp. Acida). It also lives wild.. Numerous landra ces are valuable.
3. Cerasus vulgaris (Mill.): it is a cultivated species (specioid). Some cultivars are of limi ted fertilization.
4. Cerasus avium (L.) Moench: it is a native forest species. Local cultivars can be found in a few number in the gardens.
5. Cerasus mahaleb (L.) Mill.: it is a frequent native species. Applications are rootstock, consumption and ornamentals. There are four subspecies, from which subsp. Simonkaii lives in Hungary.

Hybrids of Cerasus

Cerasus (Prunus) eminens Beck (fruticosa x vulgaris), Cerasus (Prunus) mohacsyana (Karp.) (avium x fruticosa).

Malus

1. Malus sylvestris (Mill.): it lives wild in Carpinus-Fagus forests. The number of places is very reduced.
2. Malus dasy-phylla (Borkh.): Individuals can be found extremly rearely. These two spe cies occasionally are able to cross by Malus domestica (Borkh.).

Ribes

1. Ribes grossularia (L.): it is a native species. Two subspecies are living in the higher mountains: ssp. Grossularia, which can be found in colder biotops, ssp. Uva-crispa however in southern slopes. The later is parent of more cultivars.
2. Ribes petraeum (Wulf.): Local cultivars of var. Carpaticum (Kit. Jancz.) are of great im portance making new cultivars.
3. Ribes rubrum (L.): it is a cultivated species (specioid). A native status of it's parent-species is not authentic.

The fruit of the following species is edible: S. domestica, S. aucuparia, S. torminalis

Sorbus

1. Sorbus domestica lives in southern slopes, however it is cultivated even in gardens. Two forms (cultivars are known: S. domestica pomifera and S. domestica pyrifera
2. Sorbus aucuparia (LJ: it is a native species. In mountains it is frequent. Two concul tas (cultivar-group) arecultivated in gardens for edible fruits: S. aucuparia edulis or moravica and S. aucuparia rossica.

Cornus

Cornus mas (LJ is native. Two concultas can be found in gardens: C. mas pyriformis has fruit of pearshape, C. mas macrocarpa has elliptic fruits (cv. Csaszloi). Both concultas ha-ve large fruits, therefore are preferred in home-gardens.

3. Rare Breeds

Endangered Livestock Breeds in the Northern Carpathians (Beskidy)

e.g. Efforts in Safeguarding Valachian Sheep, Podgorska Red Cattle and the Tatra Dwarf Cattle

Hans-Peter Grunenfelder, Pavel Beco; Waltraud Kugler
SAVE Project Office, St.Gallen/Switzerland

Flashback

After the fall of the iron curtain, contacts between Western European NGOs and dedi-cated people, conserving rare breeds and plant varieties in Central Europe became closer. With the radical restructuring of the agriculture in this countries conservation projects got into enormous problems. Thats why several NGOs became engaged in foreign projects. One of the reasons then to build up SAVE as an European umbrella organization, co-ordinating cross border projects.

SAVE Foundation tried and still does support the continuation of this running conservation projects. To get an overlook on the former domestic animal diversity, an inventory of historical confirmed breeds was made for Czech Republic, Poland and Slovakia. Then the need for action was assessed. On the occasion of visit tours to project partners, several search tours to remote areas with the target to replenish endangered breeds with further relict herds have been undertaken. A surprising discovery on such a search tour for Valachian sheep: a few of the red- or brown spotted Tatra dwarf cattles (or Valachian dwarf cattle) are still around, in a secluded corner of the Car-pathians. Grown up animals withers just reach up to an average human‘s hip!

In the Carpathians SAVE Foundation got involved in the following projects:

Tatra dwarf cattle

Podgorska Red Cattle

The Polish Red Cattle are the only breed of cattle that originated in Poland. Within this breed, there are two different types - a flatland and a hill type (Podgorska). The flat-land type is already extinct.; in the 1960s, it still made up over 20% of the total cattle population in Poland. In Hanczowa, a former state farm in the Polish Beskid moun-tains a last remnant of a purebred herd of Podgorska Red cattle (hill type) that still numbered 123 animals in 1990 has managed to survive. Originally, this herd was maintained on Polish state farms as a conservation herd and a gene reserve; the state paid the farm a premium as compensation for the difference between the Red cow's milk production and that of more productive modern breeds. With the political shift in Poland, the state-supported conservation breeding program was shut down. The head of the former state farm became a private tenant farmer and attempted to keep as many of these cattle alive as possible. However, within two years the herd had to be cut drastically - from 123 to 50 animals. The critical economic situation of this farm makes further conservation of this Red cattle herd questionable.

Podgorska Red cattle, the only breed of cattle that originated in Poland

SAVE was able, in collaboration with the German Rare Breeds Society (GEH), to pur-chase 20 animals that would otherwise have been slaughtered as a result of a farm bankruptcy. The animals remained with the previous owner, who continued to use the animals. The farmer committed himself to keep the cattle in accordance with SAVE's instructions and to fertilize the cows with purebred semen as arranged with SAVE. Loss in value resulting from increasing age of the cows will be made up with shares in young replacement animals for as long as the farmer maintains the herd. SAVE has first purchase rights on any offspring.

Data on the individual animals purchased were recorded in a herd book so that the conservation breeding program could go on. It was possible to arrange for the Zootechnic Institute (Prof. Jan Trela) in Balice/Krakow and Prof.Dr. Zygmunt Reklewski from the Genetics Institute in Mrokow to assume responsability for the onsite scientific and technical supervision and the preparation of available Red cattle sperm.

Valachian Sheep

The Valachian sheep (Valasska sheep) is the westernmost of the Zackel breeds of sheep. The Zackel sheep travelled, between the 13th and 16th centuries, in the migratory herds of Valachian herders, from the Southern Carpathian mountains in Romania to the High and Low Tatra and Beskid mountains. Here, the Valachian sheep developed, without further contact to its region of origin, to a separate breed. Traditionally this breed has been used as a milk sheep.

Last remains of the pure Valasska sheep are scattered today over Slovakia, Czech Republic and Germany (where they were introduced by conservationists). SAVE - as European umbrella organization - has taken on the co-ordination of conservation breeding across esta-

Last remains of the pure Valasska sheep are scattered today over Slovakia, Czech Republic and Germany

tual borders. This is especially important with regard to the adjustment of breeding records and the definition of breeding lines as well as the specialization of breeding. Personal contacts and regular exchange of experience are essential for successful co-ordination work. Therefor, SAVE Foundation invites from time to time breeders and members of the respective organizations to co-ordination meetings. To avoid inbreeding SAVE has organized monitoring trips to remote areas to find more relict groups of this breed - with some success. The exchange of rams and/or ewes should be done in the near future.

The Valachian sheep is, in its purebred form, "rarer today than the Siberian tiger".

If this breed shall survive, all responsible people have to co-operate. SAVE is active!

Outlook

The work done till now is in many parts just a firefighting exercise. It needs more systemati-cal engagement. The fragmentary knowledge should be supplemented and com-posed to an entirety. The Suceava workshop should lead to a first synopsis. More (re-)search will be necessary and many monitoring tour will be needed to find further relict populations. At the workshop we will discuss the best proceeding and the neces-sary action.

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Rare and Dispersed Varieties of Sheep, Cattle, Horses and Geese in Ukrainian Carpathian Mountains.

Dr. Rostyslav Fedoruk, Liviv, Ukraine

Sheep

In Ukrainian Carpathian Mountains were bred aboriginal rough wool sheep of Tsakel type. This is a universal wool-dairy-beef variety. This is small quick animals with strong limbs, hoofs and muscles. They are very adaptable for mountain regions, moist and cool climate; rather stable to different kinds of diseases. They use highland pastures and are not capricious to the food.

The live weight of the ewe does not exceed 30-35 kg, and of the ram – 45-60 kg.

As to the aboriginal live-stock of these sheep, it is practically extinct. Some species are preserved only in some private farms in Lviv, Chernivtsi and Transcarpathian regions of Ukraine. The number of the animals is less than 100.

To save Tsakel type of sheen we must take stock of them and pedigree estimation in private sector, to form separate herds with financial support of international organizations and "Ukrplemobyednanya". We must make data base of rough wool sheep in these regions and maintain the number of the animals on genetic safe level.

This is only one breed in Ukraine that produces white wool of high quality. Lately the live-stock of the sheep suddenly decreased.

Ukrainian Carpathian breed should be taken under state protection, new pedigree farms must be formed in Chernivtsi, Ivano-Frankivsk and Transcarpathian regions. If money is available one or two based farms-clients must be created in these regions, they may become supporting basis of our institute.

Goose

The grey goose variety Obroshyno was selected after crossing local white breed, Chinese and greybreed of geese. This variety combined good meat qualities of grey geese and good adapted qualities of local white geese.

The live-weight of goose is 6-7 kg, 9 week of age goslings – 4-4,5 kg. Obroshyno grey geese variety has high reproductive and adaptable capacity and growth intensity.

Selected flocks of geese in our institute are used to raise new varieties of white geese. To save Obroshyno grey geese variety we must increase their live-stock but financial and economic problems in Ukraine are in our way. We need the support of some international organizations that are interested in conservation of valueble and high-productive varieties of poultry.

Symentalsk breed of cattle was brought in Ukrainian Precarpathian regions from Switzerland in 60s-70s of 19 century. This breed was intensively raised in peasants' and landowners' farms and was crossed with local grey breed of cattle. On the exhibition held in Lviv in 1894 Symentalsk breed took the first place, then it was mostly spread in Stanislavsk (now Ivano-Frankivsk) region.

In 1883 the association "Molochna Kooperacia" that controlled the utilization of Symentalsk breed in Lviv and Stanislawsk regions was organized.

According to the data of this association the annual yield of milk from one cow was 2377-2775 kg. The live weight of these animals is less; the live weight of cows is 520-530 kg with average poductivity 2500-3500 kg of milk. But they are rather resistant to tuberculosis and parasite diseases; and adaptable for moist climate of the region.

In the recent years the economic and financial problems in Ukraine the state-supported conservation breeding program was shut down. The population of Symentalsk breed decreaseds though there are some private farms that intensively raise this unigue breed of cattle. To improve pedigree-value in 1994 in Lviv were brought 63 pureblood heifers from Austria.

Pizhow breed of cattle preserved only in Chernivtsi region (600-700 cows) and in Ivano-Frankivsk region (300-400 cows). It was brought in Precarpathian regions in 50s to improve varieties of local cattle. The live weight of cows is 460-480 kg, their productivity – 2000-2500 kg of milk per year. This breed is adaptable for climate of the region and was used in selection to breed new genotypes.To save genotype of these varieties of cattle we must conduct the registration and analysis of available live-stock. Taking into account financial and economic problems in Ukraine we must create international programs of conservation and utilization of Symentalsk and Pizhow breeds of cattle in Ukraine.

Horse

Hutcul horse is almost extinct. The number of the animals is very small. But their unique genetic – biological properties and great demand on international market determine the creation of international programs for conservation and intensive breeding of this valuable variety of horses in Carpathian regions of Ukraine. For the time being the whole population of Hutsul horses in Ukrainian Precarpathian region is about 102 animals. They are located in Kolomyisky district Ivano-Frankivsk region (22); Putylsk district Chernivtsy region (26); Uzhorod and Mizhirsky districts Transcarpathian region (50); Horodok district Lviv (4).

The population of endangered breeds of livestock and poultry in Ukrainian Carpathian regions

Periods (óears)	Regions	Mounta-tion breed of sheep (Precarpathi an type)	Precar-pathian Symen-talsk breed of cattle (cows)	Pizhow breed of cattle (cows)	Hutsul horses	Obroshy-no grey geese
1980	Ivano-Frankivsk	56.200	67.100	2.840	-	-
	Lviv	17.000	13.950	-	-	20.000
	Chernivtsi	22.600	62.800	3.100	-	-
	All	95.800	143.850	5.940		
1990	Ivano-Frankivsk	43.810	42.600	1.750	-	1.123
	Lviv	9.438	4.140	-	-	9.448
	Chernivtsi	20.224	59.300	1.860	-	-
	All	73.472	106.040	3.610		10.570
1998	Ivano-Frankivsk	Liquidate in 1995	1.840	350	22	-
	Lviv	27	200	-	4	186
	Chernivtsi	2.520	3.000	630	36	-
	All	2.547	5.040	980	62	186
in % 1998 to 1980	Ivano-Frankivsk	-	2.7	12.3	-	-
	Lviv	15.9	1.4	-	-	-
	Chernivtsi	11.1	4.8	20.3	-	-
	All	2.6	3.5	16.5		0.93
in % 1998 to 1990	Ivano-Frankivsk	-	4.3	20.0	-	-
	Lviv	0.3	4.8	-	-	-
	Chernivtsi	12.5	5.0	33.9	-	-
	All	3.5	4.7	27.1		1.7

Relict Populations of rare Breeds in the Romanian Carpathians

Prof. Dr. Condrea Draganescu, IBNA, Bucuresti, Romania

Relict Population of fowl in the Romanian Carpathians

Geogpraphy

The Carpathian Arc is generally regarded as a sinuous easterly continuation of the Alpline belt, passing from the eastern Alps in Austria (Vienna) through Moravia, northern Slovakia, southern Poland, throuht Ukraine and then swinging in a great arc throught Romania. In Romania, the arc surrounds the Transylvanian Basin, which on its western side is separated from Panonian Basin by the Apuseni Mountains. The arc continues in a reversed S bend and passes int Stara Planina of Bulgaria, then carries on to the Black Sea coast (Fig. 1). In Romania there lie about half of the Carpathians and approximately 1/3 of the Romanian teritory is mountains. In the mountains there were no cooperative farms.

History

The Romanian Carpathians used to be inhabited in old times. They were the main hiding place of local populations from the migratory ones. The Dacians hand up on mountains ("Daci montibus inhaerent") told the Latin writer L. Annaeus Florus. For the Transylvanian Saxons, the Romanian peasants and their sheep were "Zackel" (mountain peasants). On some 12 high mountain zones (1000-1400m in high) there have been identified ancient agricultural terraces (Fig. 2). In the last 500 years, the high mountains have been left, but even now there are some 250 villages placed between 800 and 1620m altitude; some of them are now absolutely isolated, without mere access cart roads. The isolation of villages and some traditional animal production systems (transhumance, transterminants-local grazing, but also out of village area grazing) which remove the isolation, bear to the complex formation of large local breeds, sometimes dispered over a very large territory of Central, Eastern an Southern Europe, but with an island structure, with many subbreeds or related breeds (Walachian or Zackel breeds; Tzigai sheep) and without heard book. Some breeds have been in the Carpathians from immemorable times (some Tsurcana-Zackel populations from early Scythian sheep; the word Tsurcana originates from a Sanscrit word); some breeds were brought by the Roman colonists (Walachian corkscrew horns, Tzigai etc.) and some by migratory people (buffaloes by the Avars etc.).

Cattle

The relict cattle of the Carpathians (table 1) are the Romanian-called "Mocanitsas" (transhumant sheperd`s cows), with well-found international name "Walachian dwarf cattle"

(Grunenfelder 1995). They had perhaps and island structure with many genetic subbreeds (Dinca 1956). They have some similarities with the Brown Swits cattle (the Brachiceros group), but according to Major (1898), they are included in a different taxonomical group (the Brachycephalus). The breed is practically extinct, but some individuals are still pointed out in the Meridional Carpathians. The cranial influence of the Mocanitsa seems to me to be visible on some Gray Steppe cattle breeds. The Grey Steppe cattle are in Romania in the same situation as the Walachian Dwarf cattle. Pinzgauer, an endangered breed imported in the 19th century from Austria, still persists in the Apuseni and Bucovina (N. Oriental Carpathian) mountains. Besides the red variety, there is also a black variety, which can be interesting for conservation.

Horse

The old Carpathian horse was the so-called "mountain horse" (Radulescu 1956). It was used by shepherds (some Sibian transhumant shepherds used be also horse breeders), by agricultural peasants and by forest workers as a saddle and riding horse. Perhaps it had many genetic populations (110..130cm heigh of winters). One of these populations is the Hutsul horse, selected at the Lucina stud, organized in 1856 by Austrians in the Bucovina mountains (fig. 2) and dispersed after 1918 in Slovakia, Poland, Hungary etc. Its name is the name of an ethnic group, but only two stallion families ("Blood line") –Hroby and Goral – are originary from this region; the other two, i.e. Pietrosu and Ousor, originated from the middle of the Orientl Carpathians. It is not clear if there are or there are not relicts of other old mountain horse populations.

Donkey

The main donkey population of the Carpathians is the transhumant sheep-master`s donkey of the Meridional Carpathians, also used by many professional shepherds. There are no research works or published papers on it. It seems that it is and old cross between the European and the African donkey, maybe a little different from the agricultural donkey of southern Romania (the Teleorman, Tulcea, Constantsa districts). There is some information that in northern Romania (the Salaj hills), there are also not noticed agricultural dunkeys.

Sheep

The best preserved old breeds in the Carpathians are the old sheep breeds: (1)Tigai, related with Merino, the shee breed of Brasov-Covasne transhumant shepherds; (2) Tsurcana (=Walachian=Zackel), the sheep breed of Sibian transhumant shepherds, (possibly related with Spanish coarse-wooled breeds) but also the sheep of peasants from all Romanian Carpathians, except for the Brasov and the Covasna districts; (3) Corkscrew horns Walachian (Serbian name, Buffon`s "Walachian", "Ratsca"-Serbian sheep), the sheep of peasants of Southwest Romanian hills, the descent of the old Egyptian sheep. Actually in Romania, there is not just one Tsurcana breed, but many breeds (Banat, Hatseg, Novaci, Bistrita, Maramures, the Moldavian Gray Tsurcana, Tsuska etc.). The same problem is for Tsigai (Brasov Tsigai, Covasna Tsigai, Black-head Tsigai etc.) A new taxonomical approach is necessary in the next future, some 20 years ahead, before the moment when many Tsurcana and Tsigai breeds will become endangered. For the time being, only the Corkscrew Horns Walachian, the Moldavian Tsuska, the Grey and the Black Tsurcana are endangered.

Goat

In Romania there are some 1 million goats a scientifically neglected species. They are grouped into two local breeds: (1) White Banatian (S-W) with some Saanen blood, and (2) "Carpathian Goat", a mixture of local populations without clear morphological and productive differenciations.

Buffaloes

On the mountain valley of the Transylvanian depression, especially Olt and Somes, as well as on an area of the Danubian valley, buffaloes can be encountered, still as non endangered species. They are accepted as a single breed, but perhaps there are at least two-three breeds, reproductively isolated from a long time.

Poultry

Besides the Transylvanian Naked-Neck poultry breed, there are no other known relict poultry breeds of the Carpathians, and it seems very difficult to find any. Up to 1998, it was conserved in a poultry breeds bank; now we hope that it will be preserved by hobby breeders.

Risk status breed	No. F-M	Extinction time without any action (years)	Needful actions	Success possibly
Stocli pig	-	**Extinct**	Monitoring	little chance
Valachian dwarf cattle	-		Monitoring to organize population	subsidy for breeders
Grey Steppe cattle	40683	40665	see above	see above
Mountain horse variety	-	-	Monitoring	any
Corkscrew horns Valachian sheep	500 - 20	**Endangered** 15-20	propaganda against Tsurcana subsidy	chance to conserve
Hutzul Horse	40-4	20		
Red mangalitza pig	35-5	20	induce economic efficiency	
Romanian saddleback	150-15	20		
Pinzgauer cattle	3000-50	20		
Tsurcana, Tsigai, Goats, Donkey, rare Buffaloes	? ? ?	20	discourage crossbreeding identify rare populations	see above

Pig

The native pig of the Romanian Carpathians was Stocli descent of the European wild boar; in the Danube vally, its name was Baltarets. It is now extinct. From Serbia, in the 18th –19th centuries the Mangalitsa penetrated. As an endangered breed, its red variety is conserved at the experimental station of Turda and some individuals, more crossbred, are noticed in the Apuseni mountains. By a cross between Mangalista and Berk (I suppose Wessex), the Romanian Sadleback (Bazna) was created in the 19th century. Now it is endangered, still raised by the peasants and conserved at the experimental station of Turda.

The Hucul Horses Breeding in the Carpathians

Dr. Maciej Jackowski; Krakow, Poland

Summary

The Hucul horses have been bred in the Eastern Carpatian Mountains. This is a primitive breed raised in the south-eastern part of Poland. They are noted for remarkable resistance, perfect feed conversion, endurance and for being very effective draught- and saddle-horses. In Poland we have about 60% of the world population of Hucul mares. Besides our country, they are bred in Romania, Slovakia, Czech Republic, Hungary, Austria and without documented pedigrees in Ukraine.

It was found that through the years the basic measurements of the Hucul horses, both mares and stallions, are increasing. The Hucul horses undoubtedly constitute the least numerous and, at the same time, they are the most inbred population of all Polish breeds.

In 1984 the program of Hucul horse breeding, organized by the Agricultural University in Cracow in co-operation with breeders, was introduced.

According to the program, 7 leading stallions (6 sire lines) were assigned to 7 groups of mares. Used up to now, a detailed plan of mating, were elaborated as well as methods of perfomance testing.

Hucul Horses are noted for being very effective draucht and saddle-horses

Introduction

Huculs, not large primitive mountain horses are one of the oldest Polish race with consolidated genotype. They have been bred in the Eastern Carpatian Mountains, so called Woody Carpatians, in region Bukowina, in the sources of the rivers Czeremosz, Prut, Putilla, Moldawa, Suszawa and Tissa / 2 /.

Probably they derive from different types of horses: e.g. Tatar, Oriental, Arab, Turkish, Przewalski horses and also horses with Noric blood / 3 /.

Their name comes from the Ruthenian highlanders – Huculs, people with specific culture, from whom horses were very important in their everyday life / 5 /. Breed in Hucul region always was kept very primitive. The great part of the year the horses spent at mountain pastures and only in case of freezing and snowing they stayed in the mountain shed or they were taken to the farm stables. In the summer they were fed only with grass. But in the winter they were gone to some haystacks standing free at the mountain pastures by the night and day opened stables. Only in case of hard work the horses were fed with some oat and maize. Staying in the open air in the hard mountainous conditions, permanent movement on the slopes and long walk with hard pack – all that made those horses through generations healthy, resistant, easy to please and great vital / 4 /.

Number of Hucul horses in the world (mares)

POLAND	**317**
ROMANIA	**40**
SLOVAKIA	**35**
HUNGARY	**30**
AUSTRIA	**25**
CZECH REPUBLIC	**25**
GERMANY	**some**
FINLAND	**some**
UKRAINE	**without pedigree**
TOTAL	**about 500**

Hucul, Sireline Prislop, Hergelie Sulina

Although Hucul horses are bred in many Central European countries the population of this breed is rather small and in under danger of extinction. For the time being the whole population is about 500 mares – 317 in Poland (60 %), 40 in Romania, about 35 in Slovakia, 30 in Hungary , 25 in Austria, 25 in Czech Republic and some in Germany and Finland. There are not pedigree Hucul horses in Ukraine, so it means also in Hucul region.

In consequence of extinction of this race in 1984-86 the Agricultural University of Cracow prepared the program of polish Hucul horse breeding. Thanks to it number of Hucul mares in our country increased for several times (from about 45-50 mares in 1984 to 317 for now). And also on the basis of exported from Poland mares many foreign Hucul horses-breedings have developed.

Original forms of utility of Hucul horses belong to the past. Nowadays nobody in Poland uses in mountains pack transport. There are no Hucul horses working in mountain farms, on the soil, in forests and in transport any more. The character of Hucul horses utility has changed. First of all, they are used in recreation. They are great in mountain horse rally and in trekking. They are also very popular in agricultural tourism and in hippotherapy.

On the basis of analysis of these days population of Hucul horses and by the documented data there was prepared the model of Hucul breed horse / 3 /.

Characteristics of the Breed

Rather heavy head with straight or ram-headed profile, wide forehead, but dry; medium long neck, rather thick, never set high; strong, long and wide thorax with long and well-sprung ribs; not high withers but pronounced and well muscled. Long, straight or a little saddle-backed but strong back; long, wide and strong loin; rounded or a little sloping croup, very strong, often overbuilt. Wide chest. Straight shoulder. Short, bony and very strong legs with large knee. Wide and strong hocks. Hoofs with very hard and elastic horn, but not large. Strong dentition with slowly wiping of teeth. Both stallions and mares characterizes with strong constitution, lively temperament and docilely nature. The main color is bay with different tints and others colors are: dark mouse-gray, skewbald, black and dun colored. Dark eel stripe is well come for bay, mouse gray and dun colored horses. Shoulders and legs can also be striped. There shouldn't be any markings / 4 /.

Model of Hucul Horse

The main measures are:

The size (at withers): stallions 135-145 cm, mares 132-143 cm (rigid stick measure);

Girth's circumference: more at least about 30 cm than size at withers (concerns stallions and mares);

Cannon's circumference (measured at left fore leg under the knee in the thin segment): stallions 17-20 cm, mares 16-19 cm (exact to _ cm);

Colors: all colors without: roan, albino, gray and leopard

This model is obligatory in whole Hucul horse breeding in the world. It was confirmed by Hucul International Federation in 1996 /4/.

Utility

In the whole Hucul horse population you can differentiate several types of them, but there are different points of view: e.g. Hackl /5/ differs three types of Hucul horses: Tarpan-hucul, Bystrzec-hucul, Przewalski-hucul and also Hollander and Skorkowski are of familiar opinion: Noric, Tarpan-looked, Oriental and Mongolian /4/. Nowadays we have in Polish breeds two main types of Hucul horses: the first one is taller and strongly built, more vulgar than the second one, that is smaller, more angular and dry, but more noble /6/.Huculs are intelligent and endurance at work /1/. They have had always contact with men, what have influenced their character. Usually huculs are clever and docilely. If they are well treated they are grateful. They are often going by trot with the same speed as large horses. They are very good walkers under the saddle /7/. Jumping over natural obstacles is their inborn trait and in primeval conditions they behave in characteristic way /6/. Without trouble they can take pack for about 150 kilograms on the back. Hucul horses are braver than noble horses, what is very useful by the movie production . Thanks to their intelligence they can afford to conquer fences (to over-jump, to crawl, to go round) /2/. Hucul is strong, brave-hearted, resistant for diseases and atmospheric conditions, easy to please both for food and bad living conditions. As a hucul is friendly and calm, willingly to cooperate with rider or driver he become an excellent family horse – the best saddle-horse for elderly and young people and also for children. He is also one of the best races used in Poland for hippotherapy. He is very good both in short excursions as in long mountain rallies. Hucul horse is very good in trekking and in qualified tourism, that become more and more popular not only in Poland /7/. He is often kept in agricultural tourism farms because of his friendly character, proficiency and low living costs. Hucul horses are very good in pulling carriages of different type, but some of them can jump without any training over fences of 140 cm. Hucul horse or his cross-breeds are very useful in special agricultural farms as his small weight he compensates with smartness and the muscle force. For the last years hucul is more often used in sport at pony category, also in horse endurance and in special for that race competition – "the hucul path".

Characteristics of Hucul Horses in the Carpathians

The greatest part of Hucul horses breeding in the Carpathian mountains is in Poland. The Hucul horse stud in Gladyszow by Gorlice is the greatest stud of Hucul horses in the world. With the help of pasture-stable system there are bred there 65 mares and the whole number of huculs there is 200. The whole stud area is about 750 hectares, mainly meadows and pastures. Utility of Hucul horses in agricultural tourism is also very important form of activity of this stud. For100 mares older than 1 year the stud receives not large allocation from state found to support preservation breeding. In this stud the mating stallions comes from the Stallion Depot in Klikowa. The program of preservation of Hucul horse breeding prepared by Agricultural University of Cracow is used in breeding the horses from Gladyszów. Also with the help of stable-pasture method the Hucul horses are bred in the Faculty of Animal Science (Odrzechowa farm – 28 mares, Zabierzow – 7 mares). Some another

Characteristics of Hucul Horse Breeding in the Carpathians

POLAND	**280**
SLOVAKIA	**35**
HUNGARY	**30**
ROMANIA	**40**
TOTAL	**385**

Sire Lines of Hucul Horses; :six lines (including branches = 10)

1. GORAL I	- GORAL III	- PRISLOP IX-80		
		- GORAL XIII-4	- MARMUR	- REWIR
		- GORAL X	- ELF - LEMIESZ	-RYGOR
		- KORMORAN		
2. GURGUL	- ZEFIR	– JASMIN	- SZAFIR	
3. HROBY	- HROBY V-22	- HAWRA		
		- DIORYT	- SONE	
	- HROBY XXI-50			
4. OUSOR	- OUSOR I	- NESZOR		
	- OUSOR VIII-51			
5. PIETROSU	- PIETROSU VI-111	-MARGIEL	- PIAF	
6. POLAN	- AFEKT	- LUZAK	- LEN	

Hucul Horse Breeding Programme

system of Hucul horses breeding was introduced in summer time in preservation breed in Bieszczady National Park. On the pastures there are grazing all groups of horses without stallions and colts over 1 year old. The horses on their own chose pasturing time and place and decide, when they should come back to the stable. Both the Faculty of Animal Science and the National Park use the same kind of allocation like Gladyszow stud and both of them run horse recreation /4,9/.

Some more huculs are breed at the farms of the Agricultural University of Cracow, where they are used for lessons with students. There are lots of private Hucul horses breeders, too. Their largest farms have studs of more than 20 mares and some of them in breeding the horses use the herd method (Polana, Nielepice) /7,8/

Sire Lines in the m ain Hucul Horses breeding Countries

AUSTRIA	G, Gu, Po
CZECH REPUBLIC	H, G, Gu ,O
HUNGARY	G, O, Po
POLAND	H, G, Gu, O, Po, Pie
ROMANIA	H, G, O, Pie
SLOVAKIA	H, G, Gu, O

Legend: H – HROBY G – GORAL
Gu – GURGUL O – OUSOR
Po – POLAN Pie - PIETROSU

The greatest private studs are in Izby (30 mares), Polana, Nielepice, Czarna, Korbielów, Sraszydle, Kozy, Bujaków – total with small farmers breedings about 150 mares, that's mind, that in polish part of Carpathian mountains about 280 Hucul mares (today maybe more!) are breed .

In Slovakia there are two – three famous Hucul horses studs: in Topol'cianky Narodni Zrebcin, at Muran and in Janova Hora. Total about 35 mares.

In Hungary the greatest stud of that horses breed is in the Jósvafö National Park (near Aggtelek). There are there ca. 15 – 20 mares.

And a great breeding of Hucul horses is also in Romania. In the stud Lucina (the oldest stud of this breed in the world, organized at 1856) in the year 1996 there were about 40 pure Hucul mares, but in the last years some of them have been sold. There are also so-

me Hucul horses, but without documented pedigree in Transval, and also there are some Hucul horses in the origin Hucul region – in Ukraine (Kosov, Worochta, Wierchowyna), but without documented pedigree too.

Not to allow to inbreed in population, what in consequence is connected with inbreeding depression, it is purposed to preserve all Sire Lines (6 and with branches 10). Only in Polish breed all of them have the Leading Stallion. That's why it is necessary to provide for each of them a special mares group. According to the Falconer system /5/ it is necessary to use individual mating plan. And from the flock of progeny select sons – continuaters of each Sire Line. It should be obligatory to exam each stallion reproduction ability on basis of complementary proofs and laboratory tests of semen. Mares, besides breeding aspects, should be tested also on case of the reproduction ability with the help of clinical tests, by palpation method and scanning with USG.

In case of choosing some animals to further preservation breed it is necessary to carry out pedigree select before selecting with the help of "independent levels of lacking" method. What is more, during selection of huculs should be taken into consideration such their features as: type, health including fertility, biometrical standard, exterior, behavior (to the people, to other horses), utility tests (breeding value, utility value on basis of utility exams, use of the feeding stuff) and also in case of mares – maternity value, and stallions – exam of progeny.

Utility exams of Hucul stallions are taken during the Hucul Days and "Utility Championship" and they check: finish of coach driving or long distance endurance, "the hucul path", exterior and character exam, health and condition. During "Utility Championship" of huculs or as a little exam by exam of breed or regional competition there might be checked utility of the mares. These are the elements of the little exam: test for carriage and riding usefulness, discipline, movement by leading at hand and also health and character exam.

Resume

- the Hucul horses are under danger of extinction, that's why it is necessary to breed them

  with the help of the method presented above; perhaps such program should include breed

  of that race also in other countries;

- the Huculs are not used in agriculture or as pack horses any more; nowadays they are the family horses used in recreation, agrotourism, hippotherapy and also in pony sport;

- the most numerous population of huculs is in Poland and only in this country there are the representatives of all 6 Sire Lines and 13 Dam Lines, that's why Poland should be treat as the leading country in breed of Hucul horses;

Huculhorses: free grazing in the carpathians

- thanks to development of Hucul horse breeding in Poland there come into being the Hucul Horse Association, that promotes that horse race, the Union of Hucul Horses Breeders was reactivated and also was originated international organization - the Federation of Hucul Horses Breeders (H.I.F.).That kind of procedure shuld be done in each country in which the Hucul Horses are bred.

Hu^culmare Mede;Farm "Zolota pidkova" , Ukraine

Hucul "sea-gull, chayka" Farm "Zolota pidkova" Ukraine

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The Hucul and the Sicul Horse

Prof. Dr. Sandor Mihok; Prof. Dr.Imré Bodo
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The hucul horse in Hungary

The nick name of this horse breed is the "pony of the Carpathians". It is a native and to this region well adapted breed indeed. The region of the Hucul is First of all South Poland and the Carpathian region. There are Hucul horses in Romania, the Carpatian part of Ukraine, Slovakia, Czechland and Hungary as well, and some sporadic population can be found also in other countries, first of all in Austria.

In Hungary it is not considered as one of the internationally accepted modern horse breeds, therefore this breed is involved in a preservation programme.

Before the second World War the stud of Hucul Horses was bred in Bantapuszta and Tuijaremete (Hanko 1942a), now a small national stud is preserved in Josvafö near to Aggtelek in a National Park.

The Hungarian population is small. There are 28 Huculs (adult horses and foals together) at the Josvafö National Park. In possession of private breeders there are another 20 animals altogether about 50 Hucul horses.

The preferred coat colour of this breed is different for the different countries:

- In Lucina (Romania) bay and brown, scarsly chestnut (disliked),
- In Hungary bay or brown and sometimes also dun,
- In Slovakia bay and brown and many dun,
- In Poland among others, many piebald (painted), it is only in Poland popular (the origin is the stallion Jasmin)
- In Ukraine not yet registered.

In the Hungarian population the most important measurements are as follows: the height at withers 132 cm, the heart girth 161.5 cm canon girth 16.65 cm (see the table). A book in the English literature stated the height of Hucul horses 12.1-13.1 hh i.e. about 130 cm (Edwards 1993). The CV values are mostly under 10 % proving, that the population is homogenous.

The genetic basis is also homogenous, the population is inbred to Goral III, even some stallions belonging to Ousor line are inbred to Goral III. From the maternal side the genetic basis is going back only to two founder mares.

If we compare the measurements of the 34 year old and adult horses the difference in height at withers is 7 cm, proving the slow development of this native breed.

Old horsmen used to speak about a special trait of the horse expressing the compactness and condition of the horse. It is the so called "Spannung" (in German). It is the difference between the heigth at withers measured by stock and band. It is for The three populations as follows:

Romanian horses 8.4 cm

Slovakian horses 5.4 cm

Hungarian horses 7.3 cm (after Mihök 1996)

Concerning the body proportion there are some typical statements:

- Re height at the croup is higher than the height at withers (the difference is for the 34 year old mares, for the adult ones and for the stallions 2.55 cm, 1.18 cm and 3.67cm respectively).
- The Hucul horses are longer than high. The difference between body length and height at withers of young and adult mares is 7.31 and 10.2 cm respectively.
- It is an old horsmen's method to characterize the dumpy size of the body with the difference between the hight at withers and the hearth girth. This index of our Hucul population is 32 cm.
- The strong and hard wearing limbs and feet should also be mentioned. In hind leg structure one can find some cow hocked animals. It is considered as a defect in hyppological point of view, in work it is not very disadvantageous.
- The head of Hucul horses is medium sized, one could say it prinitive, but not wi thout some quality. lt is considered with the Polish Konik the direct derivate of the Tarpan (Edwards 1993), however some researchers mean some Przewalski genes' influence as weil (Hanko 1942b).

The willingness of Hucul horses is proverbial. They are well working and in proportion to their body size the Hucul is strong, and hardy, sensible and docile. They are used, first of all, in harness but under saddle one can use them as well and in the montaneous region they work also as pack animals transporting heavy loads over difflcult mountain tracks. It was appreciated during the war by the soldiers of different nations.

The other types of the Carpathian native horses (Sicul, Bicaz)

In the history there were not only pure bred Hucul horses in the Carpathians but other types of small sized horses existed as well. There are many references in the literature (e.g.: FiIip, Manolescu, 1912, Kovacsy, Monostory 1905, Ed.vards 1993). These horses belonged also to the small horse cathegory: in German literature Kleinpferde (120-147 cm "Widerristhöhe" height at withers). Hanko (1942b) described this native horses in two different cathegories Sicul, (Secuiesc, Székely) and Bicaz, (Békas) horses. The origin is discussed. Filip, Manolescu's (1912) opinion was a Romanian origin and Hanko (1942) wrote that the Hucul had more Przewalski horse influence and he supposed more Tarpan genes and even Arabian influence in these other Carpatbian horses. His opinion is based upon the shape of the head of the horses and upon the bigger body size. The problem of origin from Tarpan or Taki (Przewalski) is of course a problem which was, and is discussed in a little bit sophistic level (Hackl 1938).

The Sicul horse was bigger and more elegant compared to hucul horses. The head was finer and there were also grey horses in the breed. It is due to the Arabian influence. The body proportion, the willingness and the small requirement and usefulness is the same as that of Huculs. They were used first of all in harness and also wider saddle. A hundred years ago it was quite a common picture to see a team of such small horses far from the Carpathian even on the Hungarian Lowland drawing a carriage with the famous mineral water of Csik (Ciuc) or Udvarhely (Odorheu). The Bicaz type was smaller, a type between Hucul and Sicul horse. This horses served usually wider saddle but in slow gait, i.e. walking. Hanko liked to cal1 these horses all together as Carpathisan horses and he included also the Polish Konik into this breed group.

The official directions of horse breeding of the XIXth and XXth centuries do not recognize and appreciate this native horse populations and that's why the state owned stallions were distributed in the villages from other, bigger sized breeds (Lipizzan, Nonius, Furioso, Gidran etc). Even the fashion to increase the body size of horses was popular. That is the reason to the decreasing tendency and even the nearly extinction of this valuable horse breeds.

The table gives a comparison between this different types of horses based upon the literature. It is not a comprehensive data giving, only a look to the different types within this Carpathian horse breed group.

The question is the existence of that valuable horse type. It is not registered as a breed, but when travelling through the region one can see horses phenotypically belonging to this ancient native breed. It means that the reconstruction or resuscitation (Bodo et al 1984) can be the possible solution to save this varieties. The possibility of such a procedure can start only after a deep and intensive study. It is sure, the Hucul breed survives. An International Association takes the responsibility for breeding Huculs, but concerning these other Carpathian horse types, we are in the 25th hour. The requirement is not well expressed, the fashion to breed other bigger horses (e.g. Lipizzans or Light Draught horses) is existing among the breeders.

Table: Measurements of different Carpathian native horse mares

The population	height at withers		hearth girth		heigh at croup		body length		canon girth	
	cm	CV	cm	CV	cm	CV	cm	CV	cm	CV
Jósvafõ 3-4 ys * n=10	132.00	1.66	161.50	3.48	134.55	1.88	142.2	2.83	16.65	3.57
Lucina 3-4 ys * n=11	136.00	0.96	174.00	1.74	137.80	1.27	143.5	2.72	18.00	3.93
Dobsina 5 - 20 ys *n=7	135.71	1.77	171.74	3.10	136.50	1.38	148.57	1.60	18.50	2.50
Hucul* n=50	130.7	1.9	168.5	3.4	133.3		136.0		17.2	3.3
Sicul* n=80	134.9	2.0	165.5	2.5	137.2		141.7		17.8	3.9
Békás* n=150	127.6	12	156.2	3.2	129.3		134.6		17.5	3.2

From the point of view of preservation of genetic diversity of domestic aninials it would be desirable to resuscitate these varieties and to breed them in an adaequat way - if it is possible at all.

*Mihok (1996)

**Hanko (1942)

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Rare Cattle Breeds in Restrained Areas of Romania

Prof. Dr. Constantin Velea, Romania

Introduction

The main cattle breed from the Romania mountain area is Bruria (Schwyz type), with 33% weight from total effective followed by Pinzgau, with 2.7%, respectively a few very restrained nucleus of Nocanita breed (few thousands), but this already are in the process of cross-breeding with Bruna. In this corntext, the breeds with limited effective existent in rnountain and under-mountain areas of the country are Mocanita and Pinzgau, for which it is fit to initiate some measures which can avoid their extinction.

Mocanta breed (or mountain breed), is a breed with personals ethnical features, adapted to pedoclimatics conditions specific to mountain zone from eastern and rneridional Carpathians, at the 600-1200 m altitudes. Having a reduce bod.ily weight (250-400 kg) and individuals averages productions of 1200 kg milk and 52 kg pure fat (4.3%) in tirne the breed have been absorbed by Bruna and Pinzgau.

If in 1930 it was representing still 5% from countcy bulls effective, in present days it represent only few limited nucleus in the mountain area of some county like Gorj, Valcea and Vrancea. Practical, the breed is in extinction. Regarding the acclimatization capacity, resistance and external harmony, the keeping of these features by genetic conservation and their utilization in ameliorating purposes, using existent modern proceeding, it is important to urgent salvation measures from the total extinction of breed.

Pinzgau breed

Pinzgau breed from Transilvania is the result of absorption cross—breeding of Mocanita and partial of the Sure breed with Austrian Pinzgau, process which have started since 1860, especially in mountain area from north and west of the countrys

The weights of breed from total cattle effective raised in Romania wasn‘t to high, this evolving from 6.8% in 1935 to 9.4% in 1969, lower to 6.4% in 1977 and reduced to 2.7% in 1997. Although the zoning plan of bull was destined to be absorbed by Bruna breed, because of breeder preferences, this was maintained till now, being raised in three important centers-in Hateg depression towards Caransebes mountain, where it is raise 17.3% from breed effective;

- to the confluence zone of Sibiu, Alba and Bihor counties with 21.6% from total;
- in the north-west of Moldavian and Doma‘s mountains, where are the main weight of breed (61.6%). Adapted to geoclimatics conditions of molding zone, the bulls of this breed are characterized by ensemble harmony, intermediary conformation characteristic for production ability. The weight development is variable, marked by 126-131 cm waist and bodily mass of 400-520 kg, depending on the area.

Since 1970-1974, state administration didn‘t ensure production of sires, their obtaining and utilization remained at the breeder freedom, a situation which had felt and continue to be felt by now.

Among the amelioration actions realized in 1990 forerunner time it‘s important to mentioned utilization of Rotbuntes breed in same areas of Suceava.

Regarding production abilities these are variables. The age of first birth is about 32-34 months, milk production is between 2000-3000 liters with 3.90% pure fat. At fattening achieved daily means accumulations of weight is 0.8-1 kg, with slaughter efficiency of 50-52% to adults and 52-54% to youth. The breed record of milk production is 8272 l and 330 kg fat.

We have Dorna variety, which unlike the Mocnaita breed, have the color of black robe

with white. Raised in Vatra-Dornei area, this variety is characterized by a superior bodly development, and the morphoproductive features better with 15-18%.

In the next future, the breed will be maintained in the same spread area, but for its maintaining and especially for its amelioration special measures are necessary, in the way of production and ensurance of sires by great biological value, respectively gathering of seminal material from the recognized bulls from Austria.

Mocanita Breed

In 1939 it represented 5% from the bulls effective breeding in the country. In present days there are some restrained nucleus in mountain area from Gorj, Valca and Vranca

Zooeconomic features

Featue	**Limits**
Waist	105-125cm
Trunk length	113-150cm
Chest depth	138-160cm
Bodily weight	200-400cm
Milk production	1200kg
Fat content	4.3%

The main cause of the restriction was the lack of competitivness of improved local breeds; especially of "Bruna" breed with which it have been absorbed.

Special features are:

- adaptableness at the mountain conditions
- organic resistance
- ensemble harmony

Important flaws are: - reduced bodily development
- lowed production features

Pinzgau breed from Transsivania

Effective evolution (in % from bulls total effective)

1937 – 4.58% 1977 - 3.20%

1955 – 9.0% 1998 - 2.71% of which 52.68%in N-W Moldova

15.77% in Apuseni Mountains

31.55% in Hateg mountains

It is bred in 7 coutries, with 105 licalities of which 29 localities (27.62%) hold 50% of all.

The main morphological features of breed (grown up cows)

Features	**U.M.**	**N-W Moldova**	**Apuseni Mount.**	**Hateg**	**Average on breed**
Waist	cm	125.3	126.3	127	122-128
Trunk length	cm	150.8	150.7	151.1	145-153
Chest depth	cm	63.9	65.5	66.8	66-67
Body weight	kg	480	495	525	450-550

Age of first birth: 32 – 34 months

Economic life: 6 –7years (frequent 9 – 11 lactations)

Features for milk production:

1932	2662	3.44%	91.6 kg
1933	2750	3.52%	96.8 kg
1934	2684	3.53%	87.4 kg
1935	2532	3.70%	93.7 kg
1936	3232	3.60 %	116.4 kg
1990	2482	3.76%	116.4 kg
1995	2919	375%	108.6 kg
1997	3105	3.75%	116.4 kg

The breeding record

Suceava: 8272 l 3.98% 330 kg

Slaughter efficiency: 48 – 51% at the adult
53 – 55 % fatted youth

Pinzgau black: 22% of the N-W Moldavian effective (VatraDornei, Campulung Modovenesc and Gura Homorului)

Causes of restriction

- existing social-economic conditions
- the lack of any support measures (Subventions, credit with low interest)
- depopulation of rural areas
- substantial modifications of age structur of rural population
- lack of authochthonous production protection
- the main product is milk, meat is a product which is hardly to sell

Preservation Possibilities

Preservation possibilities are depending on the specific situation of each population.
The Mocnita breed is in the most serve situation :

cryopreservation of embryo and gamet

genebank organised on the basis of research programs and with foundation support

The most serve situation is for Pinzgau and Buffalo is:

at the Pinzagau breedthnree populations have been shaped, corresponding to the three breeding areas.

at the „Romaneasca“ breed several populations have been shaped , of which can be mentioned Carpatina of Cluj

of Salaj

of Maramures

of Fagaras

Pinzgau black (Dornei-cow) in Romania

Stimulation measures for breeders

- regime of disadvantageted area
- stimulus for production (entrance in C.O.P., I.A., V.M.T., testing of offspring)
- credit system with low interest, short and long standing (construction, biological material, fodder)
- achievement of some products and specific compounds (Mozzarella, products for diet, in areas propitious for tourism)
- free training system for breeders, with short and mean standing. Special pro gramme with specific theme.
- creating of support for creating of some example private farms, with agrarian tourism character, financed by one of the existing european programme
- all this can be structurated in an common programme Romanian - Swiss or Swiss-Romanian, with 4-5 years duration and specific programme

Breeding of Buffaloes in the Carpathians

Prof. Dr. Constantin Velea, Romania

Buffalo of the bubaline «Romania», which was homologated in 1987

Bubalines are breaded in Romania since the 5th century, when they have penetrated in the territory from eastern side in the same time with Huns and Avars migrations, respectively from the southern side, from Bulgaria.

In the course of time, the spread area have suffered a lot of changes, in the sense that given the first part of this century, when buffaloes weight was in the warmth and wet areas, at present over 94% from the total effective are raised in the north-west and center of the country, especially in interior of Carpathians arch and his north-west side.

It is interesting to mention that unlike the specific of molding zone, buffaloes has adapted very well to the conditions of present spread area, in some territories penetrating deep in valleys which climb till 600-800m altutude.

Concerning the effective, these have evolved from 170 thousand heads in 1925 to 180 thousand in 1970 and reach the maximum number of 228 thousand in 1980. In the present days, there are about 138 thousand.

The population was homologated like "Romanesca" breed in 1987. The only effective which belong to public domain may be found at the research and Production Station for Buffaloes Breeding – Seracaia.

Concerning production features, buffaloes are by universal kind, being exploited in equal measure for milk and meat production, respectively like drive force in execution of some agricultural works and transport.

Production performances are about 1111kg milk, 83kg pure fat for normal lactation and 200kg carcass.

It has been elaborated several studies and researches concerning genetic structure of population, to the main morphological, physiological and production features, on which basis it have been established national program of amelioration.

In the latest years, owing to present social-economic conditions and especially because of milk and meat capitalisation mode, it is noticed a diminution of effective. In this sense, it is mentioned that the main production it is represented by milk, with mention that owing to seasonal system of reproduction, principal weights of this it's accomplished in the middle half of year. The main form of capitalisation is the fresh milk and cottage cheese. To maintain the bred, the principal condition is represented by guarantee of some subventions and achievement of specific milk and meat products, with great value of capitalisation.

The Hungarian Buffalo

Dr. Béla Dunka, Hortobagy National Park, Simonyi, Hungary

Introduction

The ancestor of the buffalo population bred in Hungary was the Indian wild buffalo (Bos bubalus arni), which lives in the marchy regions of East India. The domestication of this species was carried out in old prehistoric times. The buffaloes were imported in Carpathian basin by the Avars in cca 560 AD.

The buffalo occupies only a secondary place behind cattle. It was bred first of all in the farms of the marchy pasture regions and second class hay. The most important purpose was to exploit the draught power of these animals , however in middle ages the milk production of buffalo was important and in county Szatmár the small holders used to milk it also nowadays.

The population has been small, because of its subordinate importance : the population size was in 1924 and 1928 - 8653 and 7072 respectively. During World War II the number of buffaloes decimated and it became unnecessary and nearly extinct because of the development of mechanization. Nowadays the government subsidies and some farms breed it as one of the valuable genetic resources. The population is as follows

The Hungarian buffalo population

The name of breeders	**cows**	**total**
National Park Balatonfenyves	39	96
National Park FertŒ-Hanság	29	37
National Park KHT Hortobágy	42	72
Somi 2000 Company	26	35
Other breeders	28	38
Total	**164**	**268**

This remnant population can not be maintained without the immigration of foreign genes first of all from Romania, because the bulls from Transsylvania are identic in their genotype and phenotype to the ancient Hungarian type. Therefore 3 bulls were imported from the Kalota region in 1997.

Measurement and description.

The high at withers and the live weight of adult bulls and cows are 145 cm, 600-700 kg and 135 cm, 500-600 kg respectively. They are black with scanty hair coat. The hair of calves is bright black, the yearling's one is reddish. The head is narrow and long. The horns tend sideway, backwards and downwards and upwards like a sickle. Its cross-cut is three or four angle like and its surface is transversally grooved. The body is strong and stubby with short legs and broad joints.

In general the buffalo has a good character and they are obedient, however some timid individuals are more irritable than the cattle. The buffalo dam uses to attack, only when she believes her new born calf in danger.

The buffalo is a rustic wantless animal, it does not claim for high quality feed, they like very much marchy, clumpy pastures and the sour grass. Also in winter buffalo is content with the low quality hay and maize straw. Because of the sensitiveness to cold weather, buffaloes require as closed barn in winter, first of all small calves are intolerant to cold.

The gestation lenth is 315-320 days. The first calves and those bearing male calves have a longer period.

Buffaloes of the western hungarian type (cow and calf)

The most important breeding goal has been the draught power, the meat and milk production is subordinate. During a lactation of 7-8 months cows produce 1200-1700 kg milk. The fat and protein content of buffalo's milk is high 8.0% and 4.2% respectively. Although the meat of young buffaloes has the same flavour and nutritive value as the beef, it is considered lower quality food in our country.

The buffaloes used for work are 50% stronger than cattle, but slower. The longevity is famous, the cows calve up to 18-20 years of age and the oxen are fit for work up to 20-25 years.

The present buffalo stock of Hungary is involved in a preser vation programme in order to maintain this Hungarian variety of buffalo. The milk is for suckling the calves. The draught animals serve only for the tuorism.

Water Buffalo in Austria

Berthold Traxler, Vienna, Austria

Water buffalo of the westem hungarian type;

The buffalo was domesticated from the Indian Arni (Bubalus arnee) more than 4000 years ago. The various breeds of these domestic animals fall into two different categories. One is the swamp buffalo group, which is rather similar to the ancestral wild Indian arni. Its most important role is as a working animal on small farms in Asia. The other group is the river buffalo, which has been selectively bred as an improved dairy type. All the European buffalo are river buffalo and are used for milk and meat, as well as draught work in some countries. The various European breeds of water buffalo are all fundamentally similar, but there are some differences in body size and length of the horns. The colour is usually black or dark grey and the horns are of medium length and grow backwards and sideways, curving up at the tips. The body is covered with a thick coat of fur, the buffalo of the Carpathian region are especially insensitive by cold weather, healthy and resistant.

The first buffalo were brought to Europe by the Crusaders about a thousand years ago, that is, they probably came first through Italy and around the same time to Bulgaria. It is likely that the domestic buffalo were brought into the Balkan and Carpathian area by the Turks, but the domestic buffalo did not appear in Romania and Hungary until the fifteenth and sixteenth centuries.

In Austria the domestic buffalo was raised mostly in the eastern part, in what is today Burgenland. The landscape here is very similar to the bordering west Hungarian "Pussta" and was in fact part of Hungary until 1921. The buffalo breeding industries of Austria and West Hungary were tightly connected through the Austro-Hungarian Empire and remain so today.

Today there are four small breeding groups in Austria:

One in the zoological gardens of Schönbrunn in Vienna, one in an estate in southern Burgenland, one in Neusiedlersee National Park, and one in the Pamhagen Park of Steppe Animals.

All the buffalo in Austria came from West Hungary and have been bred in Austria for several decades.

The population in the Schönbrunn zoological garden includes six animals, four females and two males. The majority of this old breeding group came from the west Hungarian zoo Veszprem, near the Balaton Lake. These animals serve mostly for show, but two of them are now being trained to pull an old-fashioned carriage.

Buffaloes in the Schönbrunn zoological garden. They came from the west Hungarian zoo Veszprem, near the Balaton Lake. These animals serve mostly for show, but two of them are now being trained to pull an old-fashioned carriage

In Neusiedlersee National Park a new herd of river buffalo was recently bred from the animals at Schönbrunn. They presently number only nine buffalo, six females and three males. The animals graze together with Hungarian grey cattle, to clear the meadows in the National Park from encroaching reed growth. This is very important for the breeding grounds of many birds and also helps to maintain the character of the landscape.

The third population of domestic buffalo is located in southern Burgenland on a large farm. Buffalo of Hungarian origin have been bred here for a long time. The present herd was imported from a farm south of the Balaton Lake in Hungary in 1991. The herd is comprised of eight animals, six males and two females. The livestock are used for meat and put on display for visitors. This herd should increase in size to about 40-60 animals

The smallest group of water buffalo is kept in the Pamhagen Park for Steppe Animals and consists of only two animals. The female came from Schönbrunn and the male from a zoo in Györ in western Hungary.

The animals from all four breeding groups are interbred and exchanged among the groups when possible and additional animals are continually purchased from western Hungary. There are still certain details to consider.

Since the population of water buffalo in Hungary is dwindling, animals from the neighboring country of Romania are continually imported. In Romania, the autochton carpathian buffalo is differentiated in two breeds. The grey-black Transylvanian in central regions around the Olt River, and the black Romanian in the Danube valley of the south. Professor Draganescu also identifies a third variety in northeastern Romaina on the Somes River. Indian Murrah buffalo have been exported from Bulgaria to Romania for many years to improve the dairy herds. The old varieties of cold-resistant and insensitive purebred Carpathian buffalo are in danger of extinction and animals without Murrah - blood are becoming rare.

More research about all varieties of water buffalo in Eastern Europe is urgently needed, and genetic analysis would also be very helpful. In addition, monitoring the remaining populations of the individual varieties is also necessary in order to establish effective methods of preservation of the species. In the meantime, the importation and exchange of breeding animals should be closely examined.

Bazna and Red Mangalitza pig breeds as a local breeds of Carpatian Hills.

Note I: Bazna pig breed

Dr. Alexandru Nagy, Turda Romania;
Dr. Florin Spãdaru, Cluj, Romania

Introduction

The actual tendency in pig industry, to have a very high concentration and specialization of the herds in the meat production, has an incontestable advantage, but they are some disadvantages to. One of those disadvantages is the continuously limitation of the biological and genetic diversity of animals. The very quick progress in genetically field of this breed, make opportune the preoccupation of the scientist to stop this process.

In the modern animal breading, is a current practice to keep as genetic nucleus the ancient swine populations. The Bazna swine breed is one of these ancient populations, breaded in Carpatian Hills area by more than 100 years. Regarding those facts, the maintaining of this breed as genetic nucleus in the farm of Agricultural Researches Station of Turda (A.R.S.Turda), Cluj County, is a real necessity. That give us the possibility to keep "in live" some quality of this breed like the rusticity, resistance, good production capacity in poor conditions, etc.

Keeping that breed as genetic nucleus in A.R.S.Turda give us the possibility to use this very resistant animals, making cross-breeds with the improved pig breeds and having the possibility to obtain a good quality production in the condition of the individual small farms, specific for the Carpatian Hills area.

Breed history

Disseminated in present in the Carpatian Hills area, the Bazna pig breed is developed in the second half of the nineteenth century. The starting point was an unimproved black local breed (Mangalitza) cross-breaded with Berkshires (around 1872), and introducing after that period different improved stock (Sattelschwein in 1959, Wessex during 1969-1970). After that moment, it was crossed into it. After World War II, it is recognized as a breed.

Distribution

In the present, consumers tastes are changed and the importance of this breed decli-ned sharply, but is currently breaded in individual peasant's farms in the Carpatian Hills area.

Characteristics

Colour: Originally black with a white band around the forequarters. The extinction of the white area is different on different animals, but the characteristic largeness of the white band is 20-25 cm. The rear half of the body is black.

The scientists consider the animals that have the typical dimension of the white band being better in production then the atypical one. Even from the starting point that morphological character was a selection criterion for the breeders.

Body weight and dimensions: Large framed animal with a deep body, the Bazna is a typical "meat and fat production pig". In table 1, we present the evolution of the most important body dimensions of the breed in different period. The data of table 1 make obvious an increasing of all the body dimensions that are studied. Regarding that observation is possible to assert the following: the selected body dimensions and the body weight is increased during the selection, progressively to one to other period. Thus, the trunk length are increase from 1929 to 1959 with 10.3 cm and comparing the dimension of the trunk in 1929 with the same dimension in 1998, that is longer with 40 cm. We find the same tendency on the all dimensions of body what are in discussion and presented in table 1.

Table 1
Evolution of body dimensions and body weight of Bazna adult boars and sows in different periods

Specification			Period of study				
			1929	1950-59	1965-69	1980-85	1990-98
Highnes (cm)	Frontside	M	70,8	74,1	xx	76,3	77,2
		F	70,8	71,8	xx	69,6	71,5
	Backside	M	75,2	80,3	xx	84,7	85,2
		F	75,2	75,0	xx	77,5	78,6
Longenes (cm)	Trunk	M	89,5	109,8	xx	125,7	130,2
		F	89,5	104,3	xx	114,8	117,4
	Body	M	xx	139,0	146,8	151,8	156,3
		F	xx	131,0	136,0	138,5	142,7
Circumference (cm)	Body	M	xx	140,5	158,4	141,2	145,8
		F	xx	125,5	156,5	134,6	138,7
	Ankle	M	15,5	20,0	xx	20,6	20,8
		F	15,5	16,6	xx	18,1	19,3
Weight (kg)	M		112	180,0	259,0	208,9	195,5

Reproduction performances:

Regarding the most important reproductive performances, the Bazna breed is maternal bread; the results in different historical period of the breed development are presented in table 2. The very good performances optained in 1950-1969 are accountable by the crossbreeding with two different imported breeds (Sattelschwein and Wessex), breeds who are improved for prolificacy and suckling performances.

Rearing and carcass performances:

Regarding these performances, the data from table 3 are very relevant.

The average daily gain, a very important parameter in pig production, was different between the two sexes and during the different periods. The results are significantly influenced by the alimentation and the housing conditions, different by one year to other.

The feed intake is decreasing in the last 20 years.

The carcass and meat quality is improved in the last 20 years. The back fat have a small increasing trend in period between 1929-1980, but is maintaining under 30 mm in average, very closely than white breeds breaded in our country.

In conclusion, examining the results, we consider that satisfactory, and we consider opportunely continuing the selection by crossing into it.

Bazna pig

Table 2
Reproduction performances of Bazna sows in different periods

Specification		Period of study								
		1929 Walter	1950-59 I.C.Z. Bontida	1961-65 I.C.Z. Bontida	1969 I.C.Z. Bontida	1970 S.C.A. Turda	1971-75 S.C.A. Turda	1976-79 S.C.A. Turda	1980-85 S.C.A. Turda	1990-98 S.C.A. Turda
Prolificacy	Total	7,8	10,45	10,6	10,8	9,6	9,5	9,7	10,1	10,6
	(cap)									
	in live	xx	xx	xx	xx	9,0	8,7	8,5	9,0	9,2
Average weight at born (kg)		1,2	1,2	1,3	1,5	1,3	1,4	1,4	1,5	1,35
Number of piglet at 21 days (cap)		xx	xx	xx	8,2	8,3	7,9	7,7	8,2	8,4
Suckling capacity (kg)		xx	xx	xx	44,7	43,4	34,2	33,2	34,6	35,7
Average weight at 21 days (kg)		xx	xx	xx	5,4	5,2	4,3	4,2	4,2	4,3
Number of wined piglets (cap)		xx	8,6	xx	8,1	7,7	7,7	7,5	8,0	8,1
Average weight at wining (kg)		xx	12,6	14,9	15,2	8,0	8,1	8,2	8,7	9,1

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1.Farcas N., Dimitriu A., Rusu I (1981) Contributii la studiul rasei Mangalitza Tipo Agronomia Cluj-Napoca

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Bazna and Red Mangalitza pig breeds as a local breeds of Carpatian Hills.

Note II: Red Mangalitza pig breed

Dr. Alexandru Nagy, Turda Romania;
Dr. Florin Spãdaru, Cluj, Romania

In the present, consumers tastes are changed and the importance of breeds which produce bacon and fatty meat declined sharply, but in the Carpatian Hills area the Red Mangalitza is currently breaded in individual peasant's farms. The reason of that is the rusticity, resistance and the capacity of this ancient breed, characters who make enable the Red Mangalitza pigs to withstand cold weather, but they can also tolerate high temperatures.

In the poor condition regarding the feeding and housing the pigs, caracteristic for the individual extensive pig exploitations from the Carpatian Hills, this very husky and resistant breed is may be the only one who corresponding in these conditions. In the same time, the human populations from the countryside prefer the fatty meat and the bacon, because they need a food with high energy to support the effort during the specific work in the mountain area, usualy in mine, extensiv agriculture or wood exploatation.

This facts and the need to stop the process of continuously limitation of the biological and genetic diversity of animals during the concentration and specialisation of pig industry give us the reason to keep these ancient populations, bread in the Carpatian Hill area by more than 200 years, as genetic nucleus in the farm of Agricultural Researches Station of Turda (A.R.S.Turda), Cluj County. That give us the possibility to keep "in live" some quality of this breed like the rusticity, resistance, good production capacity in poor conditions, etc.

Breed history

Closely related with the Serbian Sumadias pig, the Hungarian Yellowish Wool pig or the Bakonyer, the Red Mangalitza is a very ancient local breed. It was breaded for good bacon yield in the Carpatian Hills area by more than 200 years.

Distribution

In individual peasant's farms in the Carpatian Hills area from Romania, but in the different local populations and colour variety is present in Serbia, Hungary, Swiss, Slovakia. In the former Federal Republic of Germany, the yellowish inner coat variety is occasionally crossed with other breeds to produce pigs of primeval appearance.

Characteristics

Colour and hair: In the Carpatian Hills area, the well-known colour variety is the red one. The skin is slate grey; the bristles are brown, long and curly. Red inner coat. Hooves, snout, eyelids and anus are black.

Body weight and dimensions: Large framed animal with the back of medium length and moderately arched, the pelvis is slightly sloping. Powerful limbs. The most important body dimensions and thei evolution in diferent period are presented in table 1.

Reproduction and rearing performances

Reproduction performances

Regarding the most important reproductive performances, the Red Mangalitza breed is maternal bread; the results in different historical period of the breed development are presented in table 2.

Rearing and carcass performances

The average daily gain, a very important parameter in pig production, was different between the two sexes and during the different periods. The results are significantly influenced by the alimentation and the housing conditions, different by one year to other.

The carcass and meat quality is not semnificantli diferent in the last 20 years. The back fat have a small increasing trend in period between 1977-1998.

In the last year thei are some study about the very low level of colesterol in Mangalitza fat.

In conclusion, examining the results, and especiali the tradition of breading of Red Mangalitza in the Carpatian Hills area as an bacon pig, we consider the performances of the breed satisfactory, and we consider opportunely continuing the selection by crossing into it.

Specification	UM	Boars		Sows	
		x_sx	V%	x_sx	V%
Longer of trunk	cm	141.2_1.70	2.41%	136.3_1.36	3.74%
Highness in front side	cm	73.7_2.82	6.49%	64.9_0.76	4.40%
Highness in backside	cm	78.7_7.10	6.75%	73.4_0.81	4.12%
Trunk circunf.	cm	143.7_2.23	3.11%	136.8_1.78	4.80%
Ankle circunf.	cm	18.5_0.28	3.08%	16.4_0.20	4.75%
Body weight	kg	191.2_5.15	5.39%	160.70_5.88	13.70%

Tab. 1
Evolution of body dimentions and body weight of red Mangalitza adult boars and sows in different periods

Specification		Period of study					
		1977	1978	1979	1980	1990	1998
Prolificacy	Total (cap)	8.75	8.15	8.80	8.30	8.10	8.40
	in live	7.78	7.36	7.70	7.30	7.60	7.80
Average weight at born (kg)		1.35	1.41	1.31	1.30	1.25	1.30
Average weight at 21 days (kg)		3.7	3.8	3.7	3.5	3.6	3.8
Suckling capacity (kg)		25.9	24.9	26.2	25.4	26.2	28.6
Number of piglet at 21 days		7.00	6.55	7.10	7.30	7.40	7.50
Number of wined piglets (cap)		6.45	6.50	6.30	6.35	6.42	6.58
Average weight at wining (kg)		6.70	6.70	6.30	7.16	7.20	7.36
Mortality %thilwining (cap)		20.00	19.7	19.4	12.0	xx	xx
Rate of sows utilisation / year		xx	1.59	1.6	1.7	1.7	1.7

Tab. 2
Reproduction performances of red Mangalitza sows in different periods

Specification	Period of study											
	1977		1978		1979		1980		1990		1998	
	M	F	M	F	M	F	M	F	M	F	M	F
Average daily gain (g)	427	391	489	445	432	429	473	440	475	425	480	445
Back fat (mm)	22.4	23.5	24.8	25.3	25.2	24.7	25.1	25.3	25.8	25.8	25.4	26.2
Specific consumption (kg forage / kg gain)	4.35	4.48	3.10	3.45	3.58	3.74	4.00	4.10	4.10	4.10	4.00	4.10

Tab. 3
Rearing and carcass performances of young red Mangalitza pigs in different periods

References

1.Farcas N., Dimitriu A., Rusu I (1981) Contributii la studiul rasei Mangalitza Tipo Agronomia Cluj-Napoca

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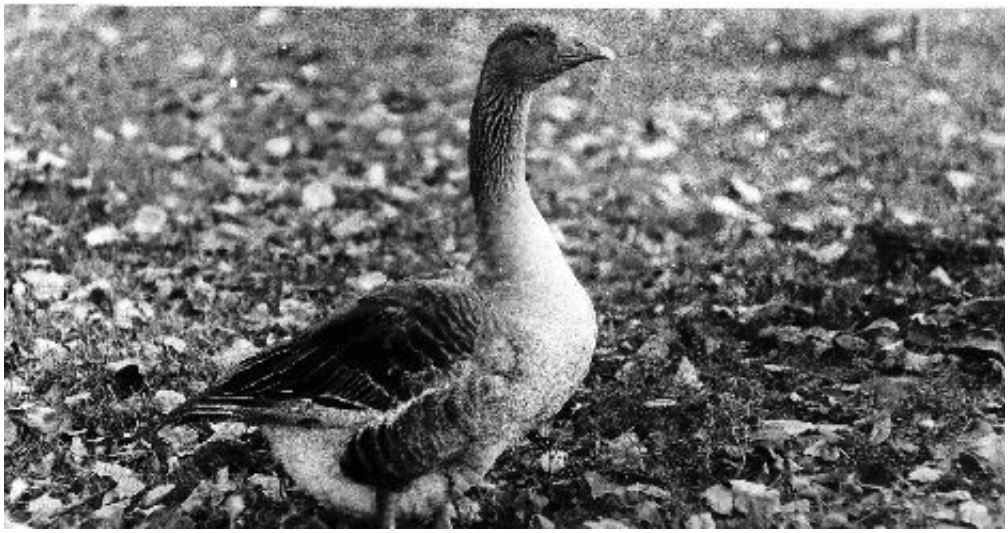
Wolfe Publishing Ltd., London, U.K.

The Sub-Carpathian Goose Variety

Prof. Dr. Elzbieta Smalec; Siedlce, Poland

Sub-Carpathian Goose Variety (Grey Goose)



Situation

Procedures of improvement of domestic animals, screening and mass migration usually bring about a loss of native breeds and varieties. Geese are represented in the world by a small number of breeds and varieties. Under different ecological conditions of Poland a number of varieties of goose has been formed which originated from Anser anser L. and A. cygnoides L. At the beginning of 70's we realised about the possibility =of fear extinction of native varieties of geese. The reason of that was many-fold:

- more economically effective populations were introduced;
- incubation techniques spread out all over the country;
- egg - meat type of geese got advantage over the native birds;
- a demand for the synthetic quilts have been extended;
- poultry industry paid preferential price for white, heavy geese.

In this situation we decided to trace native varieties of birds all around Poland. The sub-Carpathian variety was one of many among inhabitant populations.

I penetrated region of Northern Carpathian inside Poland in 1973-1974. Native birds were recognised in 10 hamlets. From all over the area, some 2- 6 birds were bought from 55 various peasant farms. Over 200 geese were bought and transferred to the other part of Poland, far from the mountain area.

Conservation

From those years birds have been kept in a farm in the number of 200 birds. At the beginning sex ratio was like 1:1 and next, 80 males and 120 females have been kept in 4 replications. The whole population is reproduced in two years' scheme. Geese were evaluated with respect to basic performance and characterised for frequency of serum protein's polymorph forms.

It seems that Sub-Carpathian goose doesn't remain in their habitat any more. Principles of maintaining genetic resources have been worked out earlier. In practice, still actual the inquisition should cover three problems:

the loss of some genes which are specific for the variety;
- changes of gene (alleles) frequency within the rescue stock;
- connection of the above.

Beyond the clear conservation program, birds (traits) are introduced to the goose breeding stock, the process that can help to avoid gene loss.

The Romanian and the Carpathian Romanian Ciobanesc Dogs

Dr. Constantin-Viorel Gaspar,Suceava, Romania

Introduction

In Romania - during the centuries – have developed two dog populations belonging to the Ciobanesc pedigree. One has short hair – the Carpathian Romanian Ciobanesc Dog (CRC) – easier to keep clean and good-looking, and one with long hair - the Minoritic Romanian Ciobanesc Dog (CRM) – with more pretentious hair, but more praised due to his very nice general look.

The Romanian Ciobanesc Dog

Here are the first records about the Romanian Ciabanesc dogs:

- On Traian's Column there can be seen dog faces – very much looking like the CRM of our times – accompanying the Dacian warriors in the fighting scenes between Dacians and Romans;
- The Romanian pastoral tradition made these two dog populations to become a necessity;
- The first scientific records about the CRC last since 1930' when the National Zootechnical Instiute, based on the size measurments, conceives a standard project for the selection and improvement of this dog population;
- The second World War and the political regime installed in Romania afterwards made that science of dogs breeding to disappear as an organised activity
- The resuscitation of the Romanian science of dogs breeding – in general –, and of the concern for the Romanian Ciobanesc dogs – in special –, took place after 1970 when more and more dogs belonging to this pedigree attended the dogs exhibitions. In 1981, the appointed authority has homologated the standard sizes for these two pe digrees, and in 1987 the pedigrees have been homologated in Romania, by drafting two standards for arbitration. In 1989, the national breeding society (AchR) became member of the "Fédération Cynologique Internationale (FCI)";
- The political events that took place in 1989 in Romania had negative consequences for the dog breeding. Within AchR occurred sharp different opinions leading to its tem porary separation of FCI.

In the last 30 years, an important contribution to the preservation and promotion of these populations had the companies, the dog breeders and the specialists from Bucovina – where are localised about 60 – 70% of the total number of Romanian Ciobanesc dogs.

How have survived these dog populations of Romanian Ciobanesc dogs?

- hey had to be used for the protection of the animal herds in the area with permanent exposure to the big predatory wild animals, especially in the forest areas;
- This pedigree has been separated from others and consequently, their genetic base was not altered by interfering with other dogs;
- These populations were created by natural selection and hence, they have a higher re sistance against the classical pathological entities;

The Carpathian Romanian Ciobanesc Dog

Is a burly, large size dog proceeding from Molossus pedigree, used by the Romania shepherds for the protection of the animal herds against large predatory wild animals and malefactor. His name comes from the Carapthian Mountains. It is a calm dog, with a balances behaviour, but irresistible in attack and unbeatable in defence.

It has a robust look and resists to the worst weather conditions. The general impression is of a forceful, commanding, statley and agressive (when necessary) dog. With massive constitution, with a strong and robust stature, it has a bushy and abundant hair, almost

square in shape and a very impressive behaviour. Its sexual characters are very well emphasised, with obvious sexual dimorphism. On its sides and inside parts of his legs the hair is shorter, but longer on its neck – where it forms a mane – and posterior side of the legs where it forms tufts.

The fur colour varies from uniform white, dirty white – as background for grey, black, reddish or yellow spots. The apparent mucous membranes are dark coloured (black or dark brown). It has minimum 62 cm in height (the male) and 60 cm (the female).

The classical dentition, with 42 teeth, doesn't accept missing teeth. Muscles = " in scissors " (the way of afrontation of the dental tables). It has a long tail he wears at the hokks' level while standing still and in tension it is worn upright, exceeding the backbone line nut never curled on the back

The Mioritic Roma-nian Ciobanesc Dog

It is a large size Romanian Ciobanesc dog living in all the areas of Romania and mostly in the Carpathians. It is a dog with a massive build (impression given by the abundant fur, with long hair 14-18 cm, even 20 cm). It's fur colour varies from white, dirty white, with black, grey, reddish or yellow spots. It is very good dog of protection and defencre, that children love very much (due to its hairy aspect).

In the last decades only, we have proceed to the selecion and imrovement of the pedigree by modern methods based on: sire selection; the best exemplares mating; the control of characters transmission to the descendants without altering the ancestral features who made them so useful.

4. Rare Plants

On Farm Conservation of Plant Genetic Resources in the Carpathian Mountains

Wieslaw Podyma, Blonie, Poland

The Carpathian mountain system is unique at both the European and the global scale. It forms one of the very last regions in the centre of Europe particularly rich in natural resources and traditional cultural landscape and forms of land use.

Poland is a unique example of the country in Central Europe, where the old local forms of crop plants survived owing to the 'crumbled' structure of farming. Most of the indigenous germplasm was collected in the mountainous regions of Southeast Poland. During the missions organized by the National Centre for Plant Genetic Resources, nearly 1000 samples were collected (Tab.1).

The main areas of landraces and old varieties occurrences were defined during missions conducted between 1976 and 1979 (Hammer and Hanelt, 1979; Hanelt and Hammer, 1977; Hanelt et al., 1982; Kulpa and Jastrzebski, 1986; Kulpa and Górski, 1986). They are situated mainly in the southern part of the country and include the mountain regions of Beskidy, the Tatra (Carpathian Mountains) and their forelands. Because of climatic, ecogeographic, and edafic conditions as well as fairly primitive agricultural practices those areas for many years served as refuge for primitive forms of cultivated plants. It should be emphasised that local races competed successfully with new varieties in these regions. Well adapted to the specific environmental conditions, they guaranteed not high, but stable yields also in unfavourable years. The expeditions resulted also in the documented examples of active breeding activities of farmers e.g. on Vicia dasycarpa, which was selected for fodder purposes from weedy populations of the species (Kulpa and Hanelt, 1981). The mentioned regions were characterized by cultivation of some relic crops' e.g. Camelina sativa, Raphanus sativus var. oleiformis, Panicum miliaceum (Kulpa and Hanelt 1981), and were refugial places of distribution typical weeds related to cultivation as Agrostemma githago and Bromus secalinus or archaeophytes like Avena strigosa.

During collecting missions organized in the period 1985-1990 a systematic decrease in number of samples of field crops was observed. In 1995 we decided to return to some places in Carpathians that were visited during the mission in 1978. Nearly all local field crops have disappeared. Fifteen samples of cereals were collected in comparison to the previous mission, when 111 samples of cereals were gathered. Only one sample of wheat was found whereas in 1978, 33 variable accessions were collected. Local forms of Hordeum vulgare and Avena sativa are still grown on fields located above 1000 m a.s.l., while at lower elevation cultivation of local spring rye populations were also recorded. The observations made during the last expeditions, as compared to those of earlier years, indicate an almost complete eradication of old cultivars and landraces.

The accessions collected during missions in the period 1976-1979 are 'core' of maintained landraces of field crops of polish origin. At the present, the local crop cultivars are available mainly as the materials stored in gene bank. According to our evaluations in the last decade, the local populations of crop plants disappeared almost completely. However, some regions still exist where traditional vegetable varieties are still grown and survived orchards with old fruit trees.

The modernization of Polish agriculture, exclusion of marginal areas from cultivation and wide access to seeds of new varieties is menacing the local populations of all crops. The similar processes are reported from other Carpathian countries e.g. from Romania (Pistrik et al.). However relict crops, landraces of Triticum dicoccon (Slovakia – Myjavska pahorkatina, 1990), and Triticum monococcum (Romania - Valea Bradului northeast of Brad, 1994)

(Pistric et all 1995) have been rediscovered.

The National Centre for Plant Genetic Resources, Poland has undertaken initiative of transboundary cooperation in Carpathian Mountains (Nowosielska, Podyma, 1999).

Tab.1: Collections made in Carpathian Mountains in Poland during period 1976-1998

Year	Region	Number of collected samples	Main groups of plant collected
1976	Pieniny, Gorce, Beskid S_decki, Do_y Jasielsko-Sanockie, Bieszczady	149	Cereals, pulses, oil plant
1978	P_askowy_ Kolbuszowski, Do_y Jasielsko-Sanockie, Beskid Niski, Gorce, Pieniny, Pogórze Spisko-Guba_owskie	214	Cereals, pulses, oil plant
1986	Pogórze Rzeszowskie i Dynowskie	47	Cereals, pulses, oil plant
1987	Beskid S_decki, Makowy, _ywiecki, Podhale	156	Grasses, pulses, cereals
1990	Bieszczady, Beskidy Zachodnie, Podhale, Tatry	57	Pulses
1995	Tatry, Pieniny, Gorce	197	Grasses, pulses, cereals, fruit trees
1997	Beskid Ma_y, Makowski, _l_ski, _ywiecki,	168	Pulses, vegetables, fruit trees, grasses, oil plants
	Total	988	

The joint collecting missions were organized in cooperation with national gene banks of Ukraine, Slovakia and Czech Republic (Tab.2).

Tab. 2: Collections made in Carpathian Mountains in Ukraine and Slovakia during period 1976-1998

Year	Region	Number of collected samples	Main groups of plant collected
1976	Pieniny, Gorce, Beskid S_decki, Do_y Jasielsko-Sanockie, Bieszczady	149	Cereals, pulses, oil plant
1978	P_askowy_ Kolbuszowski, Do_y Jasielsko-Sanockie, Beskid Niski, Gorce, Pieniny, Pogórze Spisko-Guba_owskie	214	Cereals, pulses, oil plant
1986	Pogórze Rzeszowskie i Dynowskie	47	Cereals, pulses, oil plant
1987	Beskid S_decki, Makowy, _ywiecki, Podhale	156	Grasses, pulses, cereals
1990	Bieszczady, Beskidy Zachodnie, Podhale, Tatry	57	Pulses
1995	Tatry, Pieniny, Gorce	197	Grasses, pulses, cereals, fruit trees
1997	Beskid Ma_y, Makowski, _l_ski, _ywiecki,	168	Pulses, vegetables, fruit trees, grasses, oil plants
	Total	988	

As has been shown, many accessions have been collected during the collecting missions. The material is preserved in the genebanks and available for future use. But it is separated from the ongoing evolution in the area, which resulted in so much new and useful variation.

The National Centre for Plant Genetic Resources, Poland has very promising experience in on farm conservation of old fruit trees in cooperation with non-governmental organizations and landscape parks. Also Hungarian Gene Bank in cooperation with the International Plant Genetic Resources Institute prepared programme for in situ conservation of selected species. More complicated is the on-farm conservation of the less spectacular species, but for them there is also a growing chance in eco-farming.

Participation of local communities

The Carpathian belong to the most valuable natural and landscape areas of every country in the region, with relatively dense network of protected areas of various status. Within the Carpathian Mountains there are several dozen national and landscape parks, a few hundred nature reserves and some thousands of other protected objects (Rakowski, Sienkiewicz, 1998). The Convention on Biological Diversity changed philosophy of nature protection, and cultural landscape is considered now as integral part of protected area. Now are prepared new plans for management of protected areas, and on farm conservation is one of the elements of the multitask approach. Successful implementation of in situ conservation of plant genetic resources in Carpathians depends on two main factors:

- transboundary cooperation of all countries in the region,
- participation of local communities.

Transboundary cooperation

At the Parliamentary meeting held in Warsaw inn 1997, representatives from 5th Carpathian countries agreed to cooperate in environmental protection and sustainable development in the Carpathians. The proposal of establishment and development of the Pan-Carpathian System of Protected Areas has been prepared. Non-governmental organizations form Slovakia, Poland and Ukraine established federation "Carpathian Bridge".

Socio-economic factors influence a farmer's decision on whether to select or maintain a particular crop variety. In Switzerland agricultural legislation has been modified to give farmers direct payments to compensate for specific measures taken for conservation of biodiversity (Lebeau 1998). Similar possibilities of farmer's compensation are also in European Union (Directive 2078/90).

Partnership between the authorities at national, regional and local level and farmers will be successful in bringing about good nature and landscape management in agricultural areas.

The role of genebanks can be seen as a catalytic one, combining the efforts of farmers and natural protection.

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Old Landraces in the Carpathians Mountains in Romania

Claudia Ciotir, George Savu
Suceava, Romania

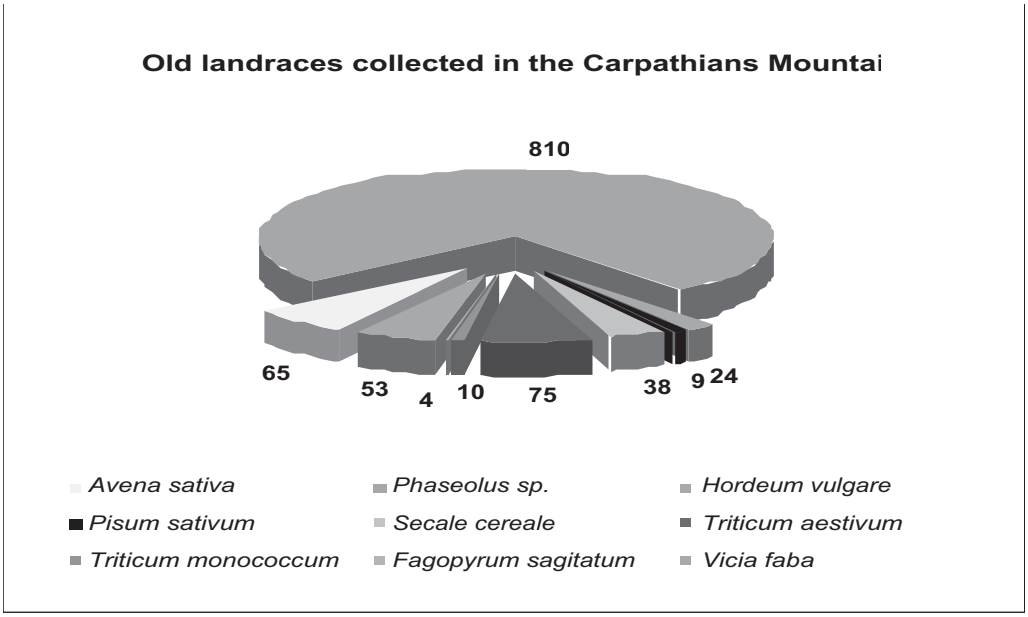
Despite many disturbant factors like tough soil , hard climatic conditions , shrinking genetic diversity , introduction of modern varieties , agriculture in the mountains overcame the difficulties and some of the old traditional rare cultivated plants were kept in culture

Despite many disturbant factors like tough soil, hard climatic conditions, shrinking genetic diversity, introduction of modern varieties, agriculture in the mountains overcame the difficulties and some of the old traditional rare cultivated plants were kept in culture being excellent adapted.

Varieties of Beans

Collecting of the mountaneous landraces has intensified as the Suceava Gene Bank has been founded , especially because of the Collecting Department which had as the main target gathering and storing of old rare varieties.

Old rare varieties have been found in prolong of the main resistance centers which are situated in isolated mountaneus areas .These are early landraces , resistant to cold, diseases and pest so that we have to inssist on living off cultivation and in situ conservation.



Old Landraces collected in the Carpathian Mountains

From literature , before the first world war , the cultivation of the old landraces was most frequent . Although the agriculture was highly practicised in the rural households , being a rich biodiversity of cereals and vegetables , some rare varieties were extincted at the same time with the expansion of civilisation . Some varieties were totally extincted like Cicer arietinum and Lens culinaris, others were partially extincted like Phaseolus coccineus , Vicia faba , Fagopyrum sagitatum , being gathered in isolated regions . Surprisingly , some old landraces , reported as extincted , were again found , being recultivated after they have been espelled by the rural communities.

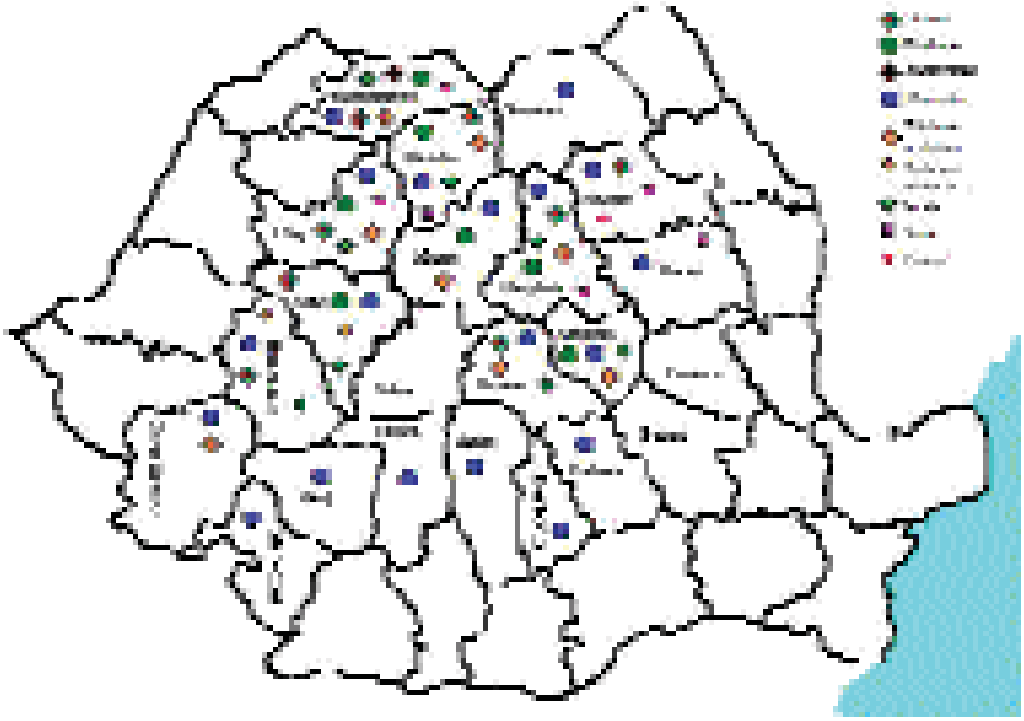
Incessantly , in villages situated at 400-800 metres there are still commonly old varieties : oat (Avena sativa) , rye (Secale cereale) , spring wheat (Triticum aestivum) , barley (Hordeum vulgare) and common bean (Phaseolus vulgaris) , pea (Pisum sativum) , and faba bean (Vicia faba).

Landraces and local varieties are highly valued in many families for their quality and special uses as part of traditional life. To emphasize this situation, the graph at page 71 represents the holding storage at the Suceava Genebank.

For instance, the spring wheat is cultivated for home-made bread , its diploid ancestor , Triticum monococcum , grown since the fifth millennium BC in the territory (Zahary and Hopf 1993) was reported here under recent cultivation. Einkorn wheat (alak) became a relict crop in Romania in the 1950 s , but was found in 1990 surprisingly at Sasciori , Alba county and at Valea Bradului , Hunedoara county. Almost all labor is handy made and in the aftermath the people work very hard . The ears with the hulled grains are bruised completely and used together with maize and common wheat as fodder for pigs , cattle and hens.

But the main cereals grown for animal feeding at higher altitudes are oats , rye , barley

Old traditional rare cereals and vegetable landraces cultivated in the Romanian Carpathian Mountains



and buckwheat which are cultivated in the Northeastern part of Romania . The accessions are brown or grey coloured with partially dark motted fruits.

The diversity of the garden bean (bush and pole types) seems to be comparable to those of other centers of secondary variability , like the Eastern Carpathians.

County	Triticum aestiv.	Triticum monoc.	Avena sativa	Hordeum vulgare	Secale cereale	Phaseol. vulgaris	Pisum sat.	Vicia faba	Fagopyr. sagitat.	Total
ALBA	8	2	8	4	6	34				62
ARGES						20				20
BACAU						36		6		42
BISTRITA	12	8	21	3	2	76		2		124
BRASOV	4		2		8	33				47
BUZAU						21				21
CARAS SEVERIN	3					7				10
CLUJ	7		6	6	11	19		3		52
COVASNA	3			2	2	8				15
DAMBOVITA						11				11
GORJ						3				3
HARGHITA	8		5	3	5	5		10		36
HUNEDOARA	17		7		2	67				93
MARAMURES	11		14	4	2	38		3	4	76
MEHEDINTI						18				18
MURES	2			2		34				38
NEAMT			2			166	9	26		203
PRAHOVA						45				45
SIBIU								3		3
SUCEAVA						327				327
VALCEA						30				30

Romanian farmers prefer to sow a mixture of different morphological types which can be recognized from seeds shapes and coloration patterns.

The enormous diversity of Phaseolus vulgaris with reddish and brown tubers , strange types , such as with dark violet long tubers and dark violet flesh or yellowish sickle shapes. In the Northem mountains , part of Bucovina , we have met a very rich biodiversity (327 beans old landraces).

The variability of beans is now relative because it has been noticed in the last decade that half of the old landraces has been extincted.

The garden bean (Phaseolus vulgaris) is highly appreciated in rural nutrition . It is the most important protein source besides milk and eggs . The altitude limit for Phaseolus vulgaris , variety coccineus (common beans) , is at 800 – 850 m , forms with high resistance to cold.

Also worth mentioning it is that , at 860 m , there were found local forms of Pisum sativum (peas) and Vicia faba (faba beans) . They are used for salads , soups , hot pots , either mashed or baked , depending on shape , colour and content of fibres in the hull .

Glance at the area localisation where the accessions have been collected from , this can be noticed on the map and on the table above.

The efforts to maintain the indigenous material still being cultivated in Romania by ex situ and in situ conservation would be continued , but we need more than persuading the farmers to keep on the old landraces . It is required in the near future to perform a conservation project to help people to maintain the old landraces in cultivation , maybe offering them some other seeds instead , or financial aid for supplying.

Unfortunately , the Suceava Genebank has not succeeded in finding financial support for intensifying the activity of preserving the old rare varieties in situ and ex situ , being difficult even to accomplish the collecting expeditions.

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Old Varieties of Fruit Plants in Transcarpathia - Evaluation, Selection and Preservation

Dr. Boris M. Sharga; Uzhgorod, Ukraine

Introduction

Plant diversity is not equally distributed in Europe. It is in fact concentrated in countries with mountains, were altitude-dependent difference of climatic and soil conditions exists.

In comparison with the rest of neigbouring territory, genetic resources in Carpathians are of an reach value, and will continue to be in future, because moun-tains will not disappear in the nearest Earth life.

Limitations placed by Carpathians on farming in Ruthenia (altitude-depen-dent humidity and longevity of warm period of year, shortage of lands, poor and heavy soils) resulted in almost natural man-helped selection. Thus, old fruit varie-ties were created via selection against harsh environments. Delicate, cold and di-sease-sensitive genotypes were eliminated naturally. Attention was also paid by ru-ral people to fruit appearance, its size and taste, ripening time and to amount of produced yield. A lot of farmers' varieties were developed, particularly, on the South-Western slopes of Ukrainian Carpathians. Here we can find many non-docu-mented cultivars, especially, apples and pears. For example, names ‚Zimnica', ‚Dobrokvaska', ‚Kormosha', , Baracke', ‚Bucmanka', ‚Ivanyanka' telling nothing to modern western man, however local people know, that these are enought produc-tive, good in storage, disease-resistant cultivars or farmers' varieties of apple. The former two cultivars have fruits with sweet-sour taste, and latter four are bearing sweet fruits with strong apple flavor. They are producing 80-160-weight fruits, which retain their market qualities in storage till the middle of May. Laboratory observa-tions showed well developed wax layer onto the fruits and leaves. This covering forms a water-repellent surface and thereby prevents formation of water film in which the germination of fungi or multiplication of bacteria may take place. Thick cuticules decrease mechanical damage during cultivation and harvesting.

Fruits

Old pear varieties or landraces (such as ‚Kamyanka', ‚Petrovka', 'Kivyaschanka' etc.) presented mainly by summer-harvesting trees with middle-sized or small fruits with nice flavour and taste. Some of them are used by local peo-ple for preparation of dry fruits, alcoholic drink ‚Grushovka' and compotes. Many varieties are resistant to such fungal pathogens as Entomosporium macula-tum Lev., Septoria piricola Desm. , Gymnosporangium sabinae (Dick.) Wint. , some other microbes.

Most of apple varieties showing good field resistance to apple scab (Venturia inaequalis (Coske)Wint), cedar apple rust (Gymnosporangium juniperi-virginianae Schwein) some other diseases.

It is interesting, that farmers' varieties of apple and pear here had never been infected by Erwinia amylovora (Burr) Winslow et al. Why ? Have they all genes for fire blight resistance or it simply result of genotype reaction with climate and soil conditions? It remains to be determined.

Farmers' varieties presenting heterogeneous populations grown in local gar-dens. Such populations are consisting mainly of old trees now (about 100 and more years old) with large, thick trunks (often more than 1 m in diameter) and huge branches. Young trees of the varieties are not produced, because small holders with (0,06 - 0,50 ha of land) can't plant large-growing trees. Old trees are often cut be-cause of security reasons. Farmers' varieties are going to be replaced gradually by genetically homogeneous modern cultivars which often are not adopted to organic farming in mountains. This is true not only for fruit varieties, but also for many other of crop plants.

Nuts and Chestnuts

Special attention should be given to the walnut and chestnut trees. Presently they are used for nuts production and for making of furniture. Medicinal properties of the plants are less used. It is traditional for subcarpathian small holdings to have one or few walnut trees near houses. In pre-soviet times they were used along with pear and apple trees to mark field and road margins. These plants have generally been neglected by scientists. Little genetic improvement work was done by farmers and scientists for these plants.

Three species of walnuts (Juglans regia, J. nigra, J. hindsii) and their hybrids with domination of J. regia are growing in Ruthenia in private sector and in the state forests. Populations of trees with different quality of nut kernel, time of bloo-ming, tolerance to bacterial disease and plant vigor are distributed on the edge of Danubian valley and on the foothills of Carpathians.

The Castanea sativa is cultivated mainly in forests as supplemented tree. One chestnut garden is planted soon after the Second World War on the hill near Serednye Village, Uzhgorod District. It covers few ha of land and grows without pruning or soil cultivation. Many old and young chestnut trees were discovered in forest near Mukachevo town.

Populations of chestnuts and walnuts are not evaluated properly yet, particu-larly, for diseases resistance. There are no modern or distinct cultivars of these crops in our region. Farmers varieties are not strictly nominated. Local people just calling them ‚walnuts' and ‚edible chestnuts' and planting seeds with better nuts.

Need for action

Urgent actions should be taken to prevent old farmers' cultivars or landrases from being lost:

1. Scientific expeditions are necessary for evaluation of the plant material. The same should be done for populations of walnuts and chestnuts. To achieve this, each of villages should be investigated, promising plant material should be collected and preserved in gardens, as seeds and in vitro.

2. Rural people should be informed better about old farmers' varieties preser-vation importance and in some ways involved into protection and development of local communities' horticulture.

3. Wild-growing populations of apple, pear, walnut and chestnut required evaluation.

4. International cooperation should be intensified. Contacts needed with leading scientific teams in Hungary and Italy for walnut, Italy, Spain, Austria, Switzerland, France, Portugal for chestnut, Belgium, Spain, France, UK for apple and pear. Joint projects are necessary between them and researchers from Ruthenia and other Carpathian regions, particularly, for evaluation of polygenic resistance of old plant varieties to diseases and pests and utilization (and in this way preservation) of prospective genotypes in breeding programs aimed to develop new Carpathian cultivars with characteristics requested by market.

The similar scheme of actions can be used also for old varieties of other crops.

Suceava Genebank – Objectives and Achievements

Dr. Silvia Strajeru - Suceava Genebank, Romania

Introduction

Plant genetic conservation activities are car ried out in Romania by 84 statal institutions, as follows:

- Suceava Genebank;
- 7 research institutes;
- 62 research stations;
- 7 agricultural and biological universities;
- 7 botanical gardens.

Excepting Suceava Genebank, all collections are maintained as working collections for breeding, research or teaching purposes.

Three ministries (Food and Agriculture Ministry, Environment, Forestry and Water Ministry, The Ministry of Education), Romanian Academy of Sciences are involved in PGR conservation and utilisation activities in Romania. As coorditating body is National Committee on Plant Genetic Resources which is constituted by 22 members representing the most important institutions working on PGR .

History of Suceava Genebank

Collection and utilisation of PGR have a long tradition in Suceava. From 1956 on first collections of PGR was established at Agricultural Research Station of Suceava. The collection missions or ganised by Dr. Mihai Cristea were focused on maize landraces. That's why we have in our collection very old maize populations as Hangu collected from Hangu village. By using this material in breeding works it was created the first breeded maize form cultivated in this area called Suceava1. Many years later the idea of setting up of Suceava belonged to Dr. Mihai Cristea and 1985 was the starting year of the building works. Between 1988-1990 the Genebank belonged to Agricultural Research Station of Suceava. In 1990 the Suceava Genebank was established as autonomous institution.

As shown in figure 1, genebank is organised in three fields of activity with 27 people.

Responsible for financing – Government by Food and Agriculture Ministry

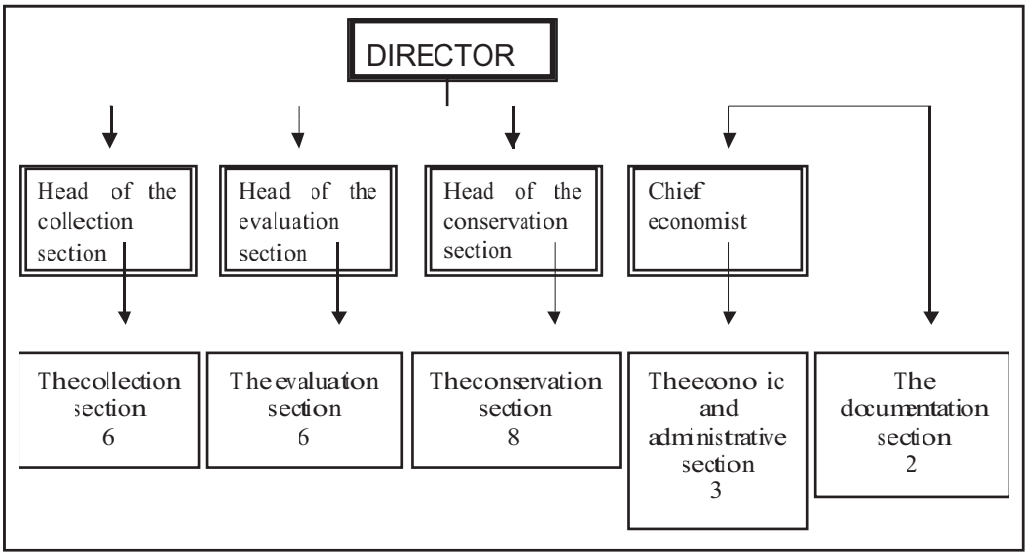


Fig. 1. Organizational structure of Suceava Genebank

Objectives

to keep the national collection of all seed propagated plants;

• to provide biologic material with high level of resistance to biotic and abiotic factors to breeding programmes.

Activities

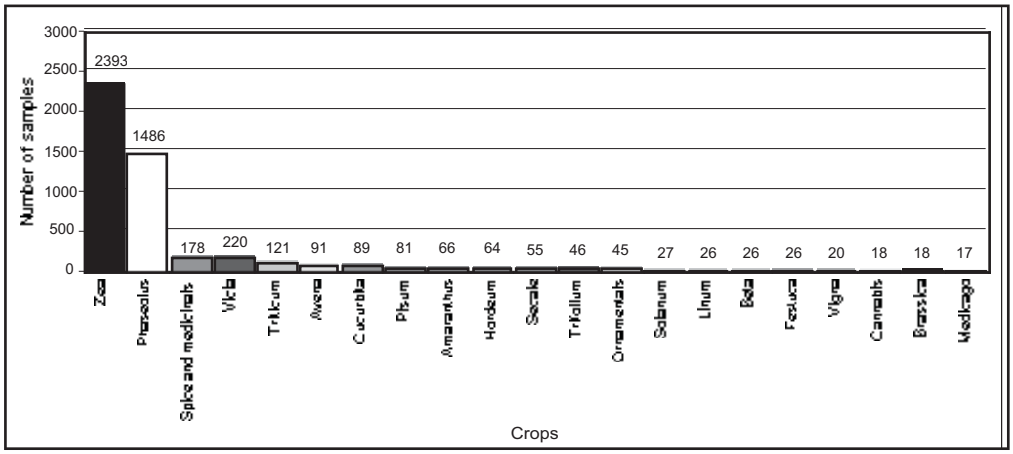
- collection;
- reproduction and multiplication;
- characterization and evaluation;
- conservation and documentation.

1. Collection activity was focused on

1.1. enrichment and diversification of seed collection;

1.2. completion and systematisation of dead collection.

Fig. 2: Material collected during ten years collestrion missions



Seed collection

Material gathered by Suceava Agricultural Research Station team during '50s provided the basis for the crop plant collections, especially maize landraces and was incorporated into Genebank collection.Around 30 collecting missions were resumed in 10 years of Genebank activity. It were explored 76 ecological areas in 35 Romanian districts, resulting in 5113 accessions belonging to over 145 plant species. The main object of collections were landraces and material under cultivation, in the second line being wild species (figures 2 and 3).

T

he reason for which old cultivars are still used by peasants in isolated or marginal areas are:

- tradition;
- perfect adaptation to pedo-climatic conditions;
- lack of financial sources to get modern varieties.

Future outlook

The collection actions will be directed to:

- local population, old cultivars in extinction danger
- wild species at present used as fodder or, rough matter
- medicinal, spice and technical plants having multiple using possibilities in pharmaceutics, cosmetic and food domains.

Dead collection

The herbarium has been running since 1990. At present the collection contains about 2000 samples of 70 families, 160 genera and 500 species, most of them being collected in Suceava district.

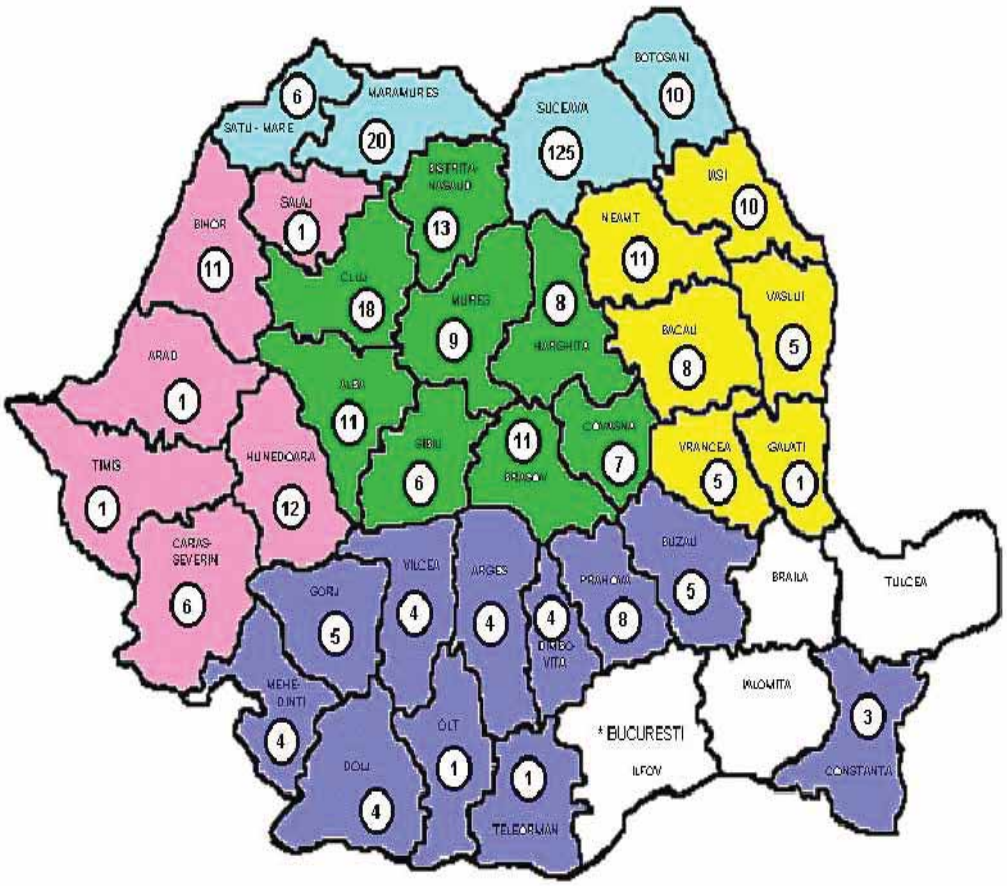


Fig. 3: Number of species colected in the explored Districts

2. The activities performed by the evaluation section are:

- characterization;
- evaluation;
- regeneration;
- multiplication.

Regeneration and multiplication

Regeneration is fulfilled when the seed viability decreases below 85 %. Multiplication is accomplished when the seed stock is under 5000 seeds. Both activities being very expensive, about 50 % of accessions need either regeneration or multiplication. Old and freshly regenerated material is conserved separately.

Characterization and evaluationof accessions is done only for a reduced number of samples due to the raised cost of these works.

A minimal descriptors list is developed for each crop based on IPGRI descriptors completed by traits of interest to breeders.

Now, only 9% of our active collection is studied in the experimental field while about 11 % are biochemical evaluated (figures 4 and 5).

Conservation

2.2. Characterization and evaluation

In the first 10 years of activity basic material have been introduced in conservation by three main ways:

- collection (5113 accessions);
- taking over working collections from various institutions (4916 accessions);
- exchanges with similar institutions world-wide (67 accessions).

Type of collection – active.

Number of samples – over 10200 of 224 species.

Seed conservation

Most of the germplasm consists of maize, bean, barley, wheat, flax a.s.o. The maize collection with its vast number of samples is regarded as one of the best sets. Vegetables, medicinal, aromatic and ornamental plants are weak represented in genebank collection. (figure 7).

Fig. 4:Number of accessions characterized in the experimental

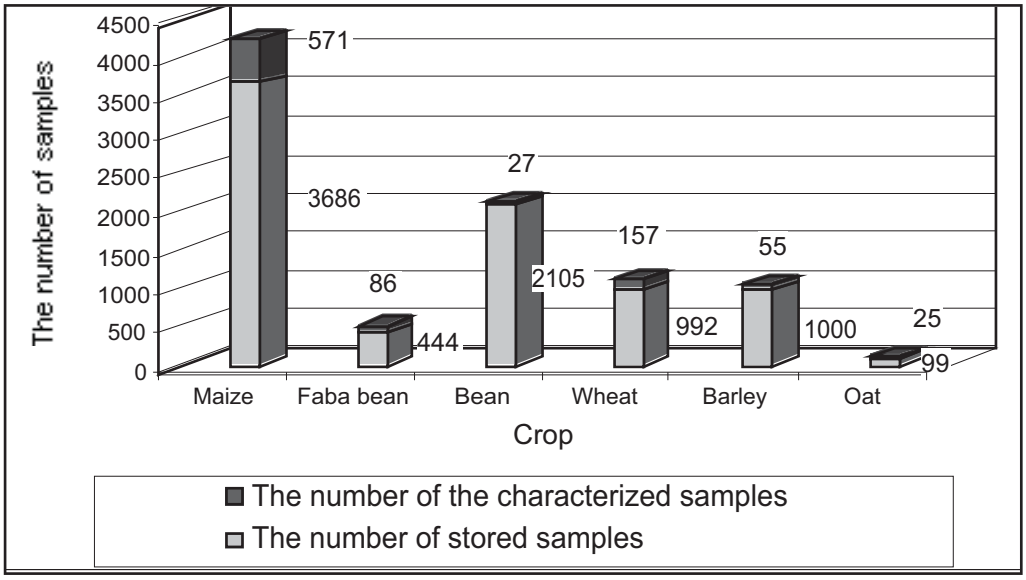
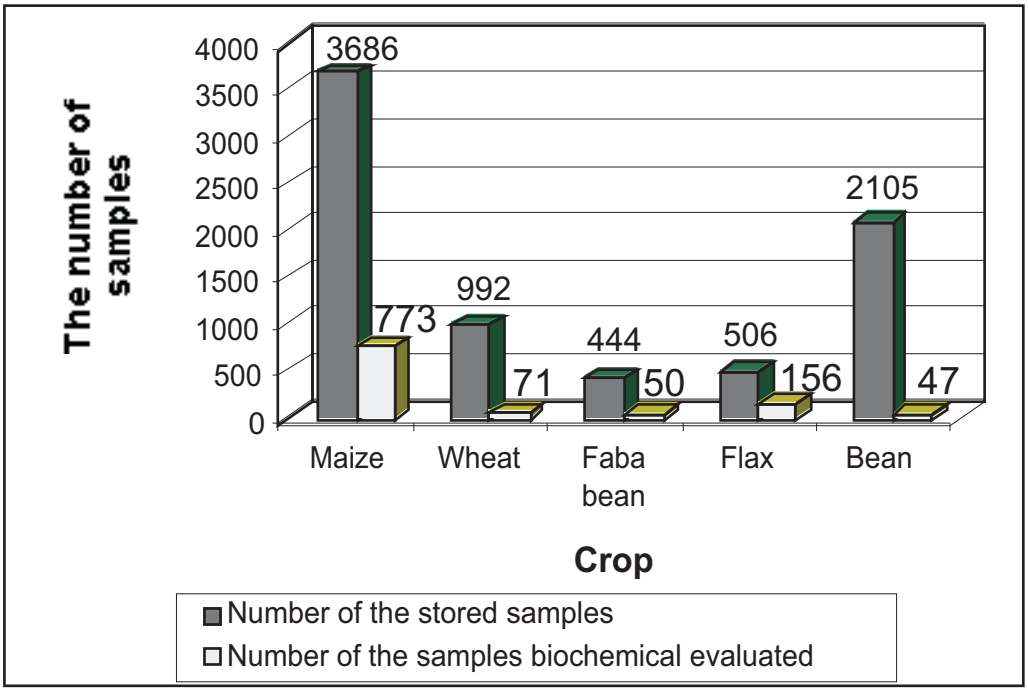


Fig.5: The number of the biochemical evaluated samples of the



Storage

Storage facilities

For preserving seed samples into bank there are the following conditions:

- 4 cells for the base collection, each of 15.9 m2 without refrigerating equipment;
- 4 cells for the active collection each of 23.5 m2;
- seed drying room of 9.8 m2;
- 3 working rooms, two of 14.7 m2 and one of 17.6m2.

Containers; glass jars (200, 400, 800 and 1000 ml according to the seed and sample sizes)

Parameters of seed storage

Moisture content of seed: 6 – 8 % according to the species.

Storage temperature: +4oC.

Tissue conservation ("in vitro")

Tissue cultures were established for the conservation of Solanum tuberosum.

Number of accessions: 40 local genotypes.

Conditions of preserving:

- slow growth (temperature + 6oC and light intensity 200 lx), often combined with application of hormonal (abscisic acid) or osmotic (mannitol) inhibitors;
- microtubers "in vitro" at a reduced temperature (+4oC) and obscurity.

Future outlook

- to introduce with priority the long-term conservation;
- the defining and the constitution of national collection;
- to increase the "in vitro" collection of Solanum tuberosum.

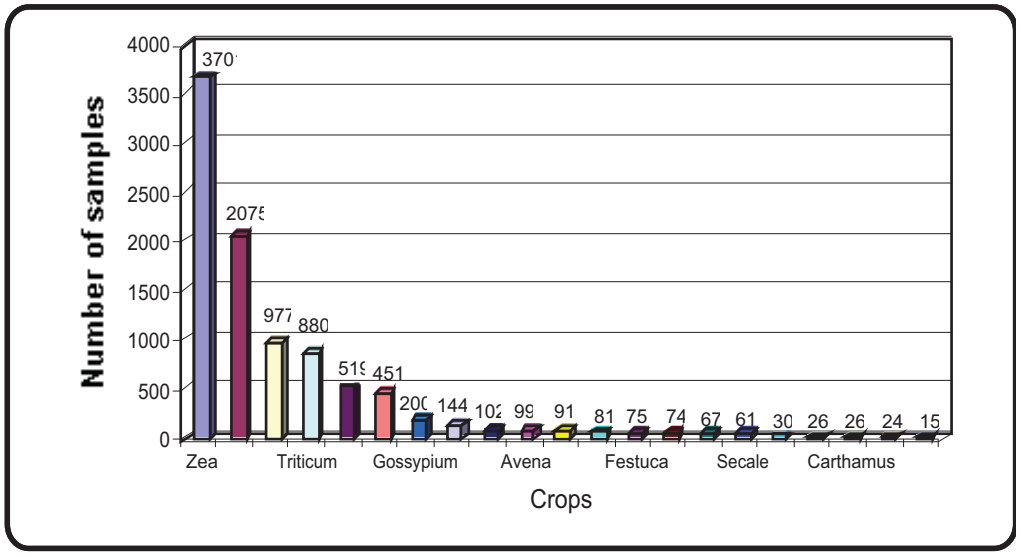


Fig. 7. Samples conserved according to main crops

Old Indigenous Forms of Crops in the Ukrainian Carpathian

Dr. Victor K. Ryabchoun, Dr. Roman L. Boguslavsky;
Kharkov, Ukraine

Ukrainian Carpathian are situated in the centre of European subcontinent and is a part of Central-European secondary hearth of crops diversity. This region was the cradle of East-Slavonis ethnoses. In the same time it is located at a crossroads on which a large streams of people were moving. This had leaved its mark on antropologic type and ethnic structure of the population, cultural and economic traits, including the crop varieties structure. This hearth was developing by interaction with neighbour Balkan secondary hearth and Bug-Dnestr micro-hearth of productive farming.

N.I.Vavilov was interesting in territory of Carpathian, since here, in isolated mountain reserves, ancient forms of cultivated plants migrated here in old times.

Diversity of natural-climatic conditions, typical for Carpathian as mountain region, combined with diversity of cultures and traditions of peoples inhabitant Carpathian, had determined significant diversity of cultivated plants. They have valuable blocks of genes causing adaptivity are of importance for contemporary plant production.

At the same time, disposition of Carpathian in the Center of Europe, important at the standpoint of military strategy, had resulted that they became arena of two wealth and a number of local wars, had suffered social catastrophes including mass annihilating and deportations of inhabitants. This had destroyed way of life of peorle. One of results was loss of many aboriginal crop forms. Among them emmer, spelta, naked-grain and local hulled forms of barley and oats, millet et al. Other reason of loss of ancient varieties is active introduction of bred cultivars, as local as supplied from other places of Ukraine and foreign countries. This process was going on intensively in the times of large state farms, when governmental institutions was regulating rural production. But also at present, when private farms are arising in Ukraine, a farmers prefer modern bred cultivars, Ukrainian and foreign, as more productive. Relative to such crop as poppy, its growing is prohibited on legislative level, as narcotic plants. New cultivars, non containing narcotics, have been created and are applied, which may supplant the indigenous forms of these crops. At last, ecological catastrophes - strong droughts and temperature lowering, floods, landslips etc. - in last years lead to breach of private sector economic and therefore to disappearance of indigenous crop forms.

Therefore search, preservation and effective use of ancient crop forms of Ukrainian Carpathian is important task as for Ukraine as for international people association.

National Centre of Plant Genetic Resources of Ukraine is carriing out collecting missions with the aim of search and collecting ancient forms of crops of Carpathian region including Before-Carpathian, Carpathian mountain-mass and Transcarpathian. The first expedition had took place in 1994, enveloping all four Carpathian regions: L'viv, Ivano-Frankivs'k, Chernivtsi and Transcarpathian. Two other expeditions - in 1996 and 1998 - were carried out thanks to friendly assistance and support of Poland Genebank, for what, taking a opportunity, we express our thanks. During these expeditions a number of localitats were investigated (table 1). In all 724 samples were collected (table 2). The samples of true ancient varieties are presented in the table 3.

Among them the most interesting indigenous crop is spring rye (Secale cereale L.) having local name "jaritsa". It is grown in mountain where winter rye cannot pass the winter because damping defeat by snow spot. In the neighbouring village Mel'nichne, Turka district, L'viv region jaritsa was presented by two races with white and rose-coloured ears. The plants may have, on lots having good moistening by spring water, height to 180-190 cm with thick density of stems, good hardiness to loging and root rot.

In Dolinsky district of Ivano-Frankivs'k region (village Shevchenkove) "jaritsa" is being sowed in mixture with local forms of spring vetch (Vicia sativa L.). Local population uses the flour from rye traditionally for baking "black" bread, and the straw – for roofing. Ears and grains of rye have also ritual significance.

Old residents of village Mel'nichne, L'viv region, tell that spring rye was here ordinary crop, whereas winter rye began sown only in the first half of 20 century. At first, the peasants treated to it with distrust, and only example of progressive farmers changed their mind.

Spring Carpathian rye have time to ripen during relatively short period of vegetation (85-90 days). But it is characterized by narrow ecological fitness, and during trial in East Forest-Steppe of Ukraine becam often depressed.

Old populations of winter rye remains in separate localities of Carpathians. In village Sloboda Bolechivs'ka, Dolinsky district, Ivano-Frankivs'k region, there is being grown local form with heightened hardiness to thaws. The advanced cultivar L'vivs'ka was bred on the base of local winter rye forms.

Growing of maize in Ukrainian Carpathian has almost of 500-yeary history. It was imported here from the neighbouring Bessarabia, and here in mountain valleys the populations had developed, adapted to short vegetation period of 85-90 days, temperature lowering, sour meadow soils. Plants of "hutsulian maize" are of middle height - 1.5 to 1.7 m, corn-cobs are short - 10-13 cm, grains are "siliceous". Presence of protruding blades on envelopes of corn-cobs is evidence for "primitiveness" of these forms. The first advanced cultivars were bred by selection from these forms in the late forties, among them "Mukachevs'ka kremnysta mistseva".

Local populations of phaseolus be-

Table 1:Settlements in Carpathian Region investigated during Collecting Missions 1994, 1996, 1998

L'VIV REGION

Derevach (L'viv district)
Berezets (Gorodok district)
Lyshnya (Drogobych district)
Lotatnyky, Yarushychi (Stryj district)
Korostiv, Tershiv, Gorne, Dobrogostiv, Side, Busovys'ko,
Mokhnate, Yasenytsya Zamkova (Starosambirs'ky district)
Verkhnyo-Synyovydne, Klymets', Zhupan (Skole district)
Mehichne, Turka (Turka district)

Winter rye, spring rye, apple trees

IVANO-FRANKIVS'K REGION
Tatariv, Kryvopillya, Stajishche, Verkhny Yaseniv (Kosiv district)
Pidpechary (Ivano-Frankivs'k district)
Ozeryany, Viknyany, Olesha, Zhyvachiv (Tlumach district)
Yamna, Vorokhta, Yablunitsa (Yaremcha district)
Dolyna, Goshiv, Vygodivka, Vytvytsa, Sloboda Bolekhivs'ka, Lypa,
Luzhky, Tserkivna, Stankivtsi, Shevchenkove, Vyshkiv, Senechiv,
Rika (Dolyna district)

Winter rye, spring rye, maize, spring vetch, pear trees

TRANSCARPATHIAN REGION
Nyzhni Vorota (Volovets district)
Uzhok, Lug, Maly Berezny, Velyky Berezny (Velykoberezny district)
Simer, Svalyavka (Perechyn district)
Kerets'ky, Dovge, Lipcha, Rossosh (Svalyava district)
Bushtyna, Bedevlya, Solotvino (Tyachiv district)
Velyky Bychkiv, Bila Tserkva, Dilove, Kvasy, Kevelіv, Yasenya,
Lazeshchina (Rakhiv district)
Vilkhivka (Irshava district)

Maize

CHERNIVTSI REGION
Kreshchatyk, Repuzhyntsi (Zastavna district)
Klivodyn, Stavchany, Yuzhynets (Kytsman' district)
Putyla, Marynychi (Putyla district)

Winter rye, maize, apple trees, pear trees

Faba bean, phaseolus bean, poppy, celery, parsley, fennel, mustard, rutabaga, turnip, hemp are being grown everywhere

an had been forming in Ukrainian Carpathian during more than 200 years of it's growing. These varieties are climbing and belong to Phaseolus vulgaris and Ph. coccineum. The first is characterized by great diversity on colouring, size, shape of seeds, taste, cooking ability, suitability to use in the phase of immature pod for preser ving and cooking etc. At present, climbing forms are being replaced intensively by the bush forms. Ph. coccineum is presented by two forms: white-seed, more tender at cooking, and with coloured, more rough seed. Owing to late-ripeness, the seed of this species are used as food in immaturate state.

At present old local cultivar of spring vetch "Kalus'ka misceva" is being grown in Ivano-Frankivs'k region, most often in mixture with oats and rape. Local populations of winter vetch (Vicia villosa Roth) are found also. By individual selection the cultivars Kolomyjs'ka 2 in Ivano-Frankivs'k region and Stavchanka in L'viv region were bred out of them

Table 2: List of the crop samples collected in Carpathian Region by Expeditions 1994, 1996 and 1998

Crops	Amount of samples collected in years			
	1994	1996	1998	In all
winter wheat	11			11
spring wheat	1			1
winter rye	21	6		27
spring rye	5	8		13
barley	12			12
oats	13	8	1	22
maize	20	9	16	45
buckwheat	1		1	2
pea	11	6	2	19
phaseolus bean	91	61	54	206
faba bean	16	9	8	33
sunflower	1	1		2
radish oil	2			2
mustard white			1	1
mustard black		1	1	2
poppy	25	9	5	39
tobacco	1	3		4
flax		2	2	4
hemp		1		1
food beet	8	11	2	21
sugar beet			1	1
chicory root			1	1
vech	1		2	3
potatoes	1	14		15
red beet	6	4	9	19
mangold		3	1	1
carrot	4	5	6	13
turnip	1	3	2	8
rutabaga			1	4
black radish			1	1
garden radish	1			1
parsnip		1	1	2
onion	10	13	6	29
garlic	9	17	6	32
cole	4	6	5	15
tomato	1	3		4
sweet peppers	1	3	1	5
cucumber	7	4	1	12
celery	3	1		4
lettuce	1	4	4	9
parsley	5	8		13
dill	6	10	9	25
franch spinach (Atriplex hortensis)			2	2
anguria			1	1
physalis	1			1
scorzonera			1	1
sorrel	1			1
caraway	5	1		6
fennel			1	1
rhubarb	1		2	3
vegetable marrow	4		3	7
pumpkin	11	1	2	14
custard squash		1	1	2
snowball-tree		1		1
In all	323	238	163	724

Victor K. Ryabchoun: collecting of vech near Zhivachiv village, Ivano-Frankivs'k region

Regrettably, during the last collecting missions were not found traditional crops of local population in 19th - beginning of 20ty centuries: emmer - Triticum dicoccum (Schuebl.) Schrank, spring bread wheat - T. aestivum L. f. aestivalis, perennial rye - Secale cereale L. f. multicaulus, naked-grain barley and oats. It is necessary to continue investigation of this region by expeditions regularly and more detail, and it will give undoubtedly new valuable collections of old local forms.

The potatoes occupies a particular place in the agriculture of local villages. It is being grown everywhere, is characterized by hardiness against Phytorhtora, high content of starch, good taste qualities. Thanks to pollen fertility of a number forms, self-seeding was developed, giving the material for natural selection at forming of local forms. At present there are remain very few properly landraces, however their genepool as blocks of coadaptive genes is secured in a number of advanced cultivars. In particular, by self pollination of potato landrace was bred cultivar Karpatsky, which has high content of starch, high taste qualities of tubers, resistant against Phytophtora. It had been used in potatoes breeding as in Ukraine as in other countries in creation of cultivars Verchovyna, Mavka, Polonyna, Nyzhnyovorits'ka, Svitanok kyjivs'ky, Lugovs'ka and others.

Growing wild forms and local populations of food grasses of Carpathian region are characterized by longevity, winterhardiness, acid-resistance, early-ripening, heightened content of dry matter and protein, other valuable properties. By selection from landraces of this region were created cultivars grown in 10 regions of Ukraine: Trifolium repens (L.)-Predkarpats'ka 1; T. pratense (L.)-Predkarpats'ka:33; T. hybridum (L.)-Prydniprovs'ka:2; Lotus corniculatus (L.)-Monastyrets'ky:2; Lolium perenne (L.)-Drogobyts'ky:1, Drogobyts'ky:2; (L.) multiflorum; Lam.-Peredgirs'ka:1, Drogobyts'ka:16; Dactylis glomerata (L.)-Drogobychanka, Stanislavs'ka:1; Festuca pratensis(Huds.)-Vysokogirna; F. arundinacea (Schreb.)-Smereka; Agrostis alba (L.)-Galychanka and others.

Table 3: Ancient Forms of Cultivated Plants in Ukrainian Carpathian

Crops	No of sample	Locality of growing			Frequency of meeting with	Additional data
		settlement	district	region		
Winter rye	IU005321	Putyla		Chernivtsi	single sample	"Gutsul"
	IU005367	Shevchenkove	Dolina	Ivano – Frankivs'k	middle	"Local", early-ripe
	IU014693	Stankivtsi	– " –	– " –	rarely	
	IU014694	Slobodа Bolekhivs'ka	– " –	– " –	single sample	
	IU005379	Rika	– " –	– " –	middle	form with white and pinkish ears, early-ripe
	IU005380	– " –	– " –	– " –	middle	– " –
	IU005462	Yasenytsya Zamkova	Starosambirs'ky	L'viv	middle	
	IU005468	Melnichne	Turka	– " –	middle	
Spring rye	IU005361	Shevchenkove	Dolina	Ivano – Frankivs'k	middle	
	IU005373	– " –	– " –	– " –		
	IU005374	– " –	– " –	– " –		
	IU014946	Stankivtsi	– " –	– " –	rarely	
	IU015182	– " –	– " –	– " –		
	IU014915	Slobodа Bolekhivs'ka	– " –	– " –		
	IU014910	Lypa	– " –	– " –	middle	
	IU014976	– " –	– " –	– " –		
	IU014995	– " –	– " –	– " –		
	IU014988	Senechiv	– " –	– " –	middle	
	IU015100	– " –	– " –	– " –		
	IU005463	Yasenytsya Zamkova	Starosambirs'ky	L'viv	middle	
	IU005805	Melnichne	Turka	– " –	middle	
Maize	IU005256	Kvasy	Rakhiv	Transcarpathian	single sample	middle-early ripeness, large grains "Gutsul";
	IU005325	Marynychi	Putyla	Chernivtsi	frequently	middle-late ripeness
	IU005328	– " –	– " –	– " –		– " –
	IU005369	Shevchenkove	Dolina	Ivano – Frankivs'k	rarely	middle-early, large grains
Spring vetch	IU005364	Shevchenkove	Dolina	Ivano – Frankivs'k	middle	mixed with spring rye variety "Kalush
	IU022393	Zhyvachiv	Tlumach	– " –	mass	seed growing is being carried out; in n oats
Faba bean	are being grown everywhere				middle	
Pea					frequently	old varieties are climber, belong to Ph.vulgaris and Ph.coccineum
Bean						
Poppy					rarely to middle	
Celery					ffrequently	
Parsley					frequently	
Fennel					frequently	
Mustard					rarely	
Rutabaga					single sample	
Turnip					single sample; rarely	
Hemp						
Apple trees		Berezets	Gorodok	L'viv	6 trees	old varieties "Mazur", "Zelenyak" et al
		Klivodyn	Kytsman'	Chernivtsi	5 trees	planted in before 1914; Elder 80 years
Pear trees		Stavchany	Kytsman'	Chernivtsi	single tree	200 years; var. "Baranchyky", fruits
		Vygodivka	Dolina	Ivano – Frankivs'k	3 trees	astringent sweet, are being used as bott
						Trees are grafted; planted in the end of 19th century

Among forms of vegetables, remaining from ancient times, should be named horse-radish, turnip, swede, garlic, mustard. Local sample of turnip from the village Tserkivna, Dolinsky district, has larg root having mass up to 1 kg. A number of garlic samples with larg bulbs from villages Tserkivna and Lipa, Ivano-Frankivs'k region, and also much-tooth forms from village Lazeshchina, Rachiv district, Transcarpathian region, are of interest for breeding.

The valuable shrub - snowball-tree (Viburnum opulus L.) is being grown on peasant coachings. It fruits are being used for medicinal purposes, making of infusions, jams and others. In addition, inflorescences and bunches of fruits are used in ritual purposes.

There are met with, on the territory of Carpathian, old fruit trees of pear (near 200 years) and apple (100-120 years).

Medicinal plants are being collected by the local population in rich wild flora of Carpathians. However, Levisticum officinalis Koch, Ruta hortensis Mill., Mentha L. (different species) are grown on farmsteads as medicinal and ritual plants.

Many ancient local forms of crops are considered as valuable sources of important traits and properties for contemporary breeding programmes, and also as important element of ethnic culture. Therefore, they are to have been preserved first of all in the conditions of their traditional growing and also in genebanks.

Endangered Vegetable Genetic Resources in the Carpathian Mountains.

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TIntroduction

Plant genetic resources play an important role in preservation of biodiversity and in crop improvement programs as gene donors. Of special importance are landraces, which can provide useful traits for broadening the genetic base of crops. Wild relatives of crops species are also useful in plant breeding as gene sources for pest and disease resistance, and for tolerance to environmental stresses. Loss of genetic diversity implies the loss of these diverse genes. As extinction of local germplasm is recently aggravated by an increasing adoption of hybrid cultivars and by socio-economic changes in agriculture, collecting and preserving local germplasm becomes and urgent necessity.

Breeders are interested in utilising germplasm wild and cultivated, which offers great potential value for breeding. The plant breeders look to plant germplasm as a source of high cold or drought tolerance, more effective photosynthesis in lower temperature, tolerant to air or soil pollution, resistant to pathogens etc. Collected accessions can be used to rebuilding quality characters as taste, flavour, other nutrient compounds, which are lost sometimes during of intensive breeding works. .(Michalik, Nlnczek, 1997, Witek et all, 1998, Witek et all 1998a, Wonoszynska et all, 1998, Kotlinska 1996a,)

Polish conservation programme

The conservation of vegetable germplasm in Poland was initiated in 1982 and is a part of the National Programme co-ordinated by the Centre for Plant Genetic Resources (PBAI) in Radzików and supported by the Polish Ministry of Agriculture. In 1988, the Plant Genetic Resources Laboratory, Research Institute of Vegetable Crops at Skierniewice took over the responsibility for conservation of genetic resources of vegetable crops in Poland. The main objectives of programme are to collect, preserve in a viable state of plant genetic resources endangered with extinction and to stimulate its utilisation.

In 1998 the total number of vegetable germplasm at Polish Gene Bank was 5843 accessions (4523 in seeds and 785 vegetatively propagated species in field collections). It covers 64 vegetable species and 567 accessions of wild species. In collection of cultivated mushroom exist 125 accessions of 8 species.

In the frame of the programme are maintained working collections in which are carrying out multiplication, regeneration, valorisation of morphological and economic traits, evaluation of specific characters etc. At present are maintain 13 working collections: genus Allium (onion, shallot, garlic, and wild species), Lycopersicon sp., Phaseolus sp.,Daucus and other Umbelliferae, Asparagus officinalis, Lactuca sp., Cucurbitaceae, Brassicaceae, Cultivated mushrooms.

We have directed our research in plant genetic resources towards improving the availability of useful germplasm. Our objectives are: to accumulate data on important characteristics of conserved germplasm; to introduce alternative methods of preservation vegetatively propagated species as garlic (cryopreservation), to further develop the database management system; to publish the catalogues; and expand the exchange of germplasm and information. We believe that this approach will serve the breeders and all other users more effectively (Kotlinska 1993a, Kotlinska 1994a, Kotlinska 1996, Kotlinska et all 1997,Kotlinska 1998, Szymanski,1998)

Poland is a country in Central Europe, where the landraces and old cultivars of vegetable crops still exist in small farms. The main areas of their occurrence are situated in the north – eastern, eastern and southern part of the country. The southern part covers the Carpathian Mountains as Bieszczady, Pieniny, the Tatra, Beskidy, Sudety and their peripheries. In many cases, these old forms are growing parallel with the modern cultivars in one

farm. Mainly the older farmers maintain them, because they know their value and are strongly accustomed to them during long time of growing. In opinion of these farmers, the landraces are better adapted to the specific local environmental conditions and are more stable in unfavourable years than modern cultivars. Thanks to such farmers up to now survived very valuable germplasm, which require very urgently preservation (Kulpa, Hanelt 1981, Kotlinska 1993, Kotlinska 1998, 1998a, Podyma 1997)

Plant collecting, systematically performed, is the most important means to broaden the variability of plant collections. Local collecting missions allow the gathering of native germplasm, which might be lost in the course of genetic erosion if not collected. Systematic collecting and conservation of the endangered vegetable genetic resources has been conducted since 1986.

In Poland, a few collecting missions are made every year, mainly in the south, southeastern, eastern, and northeastern regions of Poland and neighbouring countries. In these regions are traditionally less agriculturally advanced than other parts of Poland, not suitable conditions for large production and also are keeping strong traditions, therefore provide more interesting areas for germplasm collectors.

The route of expeditions led through the old polish centres of vegetable cultivation, where we suspect to find interesting materials. The sources of plant genetic resources are:

- Local markets,
- Allotment gardens, which exist in each town in Poland. Amateur gardeners culti vate in gardens very old cultivars and landraces of many vegetables and other plants for a long time.
- Small farms in villages

The most valuable materials origin from small farms located in isolated villages. According to Polish traditions around the houses ought to be small home garden for own needs. In these gardens, grow basic vegetable species, fruit trees, herbs and ornamental plants. Such gardens are important source of old, local cultivars, ecotypes grown for years from force of habit, for pleasure. Sometimes the tradition of their cultivation is going from generation to generation (onion, garlic, beans, tomato, cucumber, cabbage etc.) The old farmers willingly partake of their seeds or plants with us and provide a lot of information about traditional cultivation, usability of different plants as food, medicine or to protection against pests and insects etc. Therefore, first of all must be collecting as soon as possible the germplasm in mentioned farms. In a few years, when old farmers will die, this rich source of genetic resources will be irretrievable

Up to the seventies traditional old vegetable cultivars and landraces were in commercial production and were possible to collect them on the fields. Presently rest of surviving old forms is possible to find only in home gardens in small quantity for family supply. Many of local population of vegetables disappeared almost completely (Kotlinska1994a, Kotlinska 1998)

As an illustration up to the eighties fifteen landraces of onions were well known in Poland .Local cultivars were connected with the region of cultivation and their names derived from the place of growing (for example onion landrace Legnicka, Krakowska Czerwona, Ropczycka, Przybyszewska, popular in the limited area close to the town Legnica, Krakow, Ropczyce, Przybyszew, etc). From that 15 landraces still exist five.

IAfter the First World War shallot and similar forms called potato-onion, both of this Allium species were grown in small plantations in Poland, especially where onion failed. In twenties two kinds of potato-onion were in cultivation: yellow and red. Shallot was destined mainly for processing. A potato-onion form also clusters of onions but usually no more than 10 in cluster. This species has low soil requirements, so could be planted on sand as well as heavy soils. It is also more resistant to low temperatures than shallot and

onion. Its bulbs are more pungent, harder and less juicy than shallot, with yellow or red outer skin. Potato-onion ripens later than shallot i.e. in the middle of August. Nowadays potato – onion is rare. (Brzezinski, 1925; Chroboczek, 1977, Kotlinska 1994, Kotlinska, 1996, Woyke et all 1965). The similar situation is in case of other vegetable species as cabbage, carrot, parsley, beet, cucumber etc.

In his book "Vegetables in the field", dated 1886, Kaczynski (1886) recommended the carrot cultivars Bez serca (without heart), Brunszwicka long, Duwicka Karota, Holenderska (Dutch), Nantejska Karota, Nantejska improved and Paryzka. Almost forty years later, Brzezinski (1925) recommended the cultivars Karota paryska, Karota z Guerande, Póndnuga nantejska (Semi-long) and Druga z St.Valery (long).

The cultivars that were introduced from Europe as well as from the Soviet Union became well known in Poland after World War II. At that time, the carrot cultivars Paryska, Duwicka, Amsterdamska, Pierwszy Zbior, Nantejska, Lenka, Perfekcja, Amager, Londynska, were grown. They were selected based on the foreign cultivars mentioned above (Chroboczek 1953, Edelsztajn 1950).

Results of the expeditions

The first two Polish carrot cultivars Selecta and Lenka (derived from Nantejska), were bred in 1950's. Many mentioned cultivars of carrot were used for many years, though their number has been decreasing year after year. Many of the very well known old cultivars have been lost. However, some are still maintained by breeders, farmers or in gene banks. Some of the old polish cultivars (Amsterdamska, Pierwszy Zbiór, Nantejska, Lenka, Selecta, Perfekcja, Amager) are still listed in the 1996 National Register, Unfortunately, the turnover of cultivars is so rapid, that we must pay great attention to preserve in the gene bank the obsolete open - pollinated cultivars, and old cultivars that are not grown anymore (Kotlinska 1997).

It's a pity, those valuable populations, most of landraces and a lot of breeding materials collected over the past two decades has been lost forever. Great efforts are made to collect and to reproduce local forms and old cultivars in the gene bank. In some cases it is possible to save them in collections or on the farms

The description of the expeditions gives illustration about materials occurring in penetrated places:

- In the Carpathian - Pogórze region, especially near Kraków, Wieliczka, Dobczyce, Nowy Targ and Mszana, different types of bean (dwarf, flagellate, climbing) with great variability of morphological and agronomic characters are still grown. In recent study it was stated, that in one village can meet bean landraces not only with great phenotypic variation, but also belonging to separate gene pool A and M. (Wonoszczynska et all, 1998).Some of them were cultivated there in the XIX century. Different forms of shalot and garlic, and the very old fashioned vegetable Brassica napus var. napobrassica called "Karpiel" were collected near Jordanów. "Karpiel" is used for human consumption as well as for fodder. A very old, native cultivar of white-headed cabbage used for souring is still grown in the village of Wlosienica near Oswiecim. (Kotlinska 1992a, Witek et all1998, Wonoszynska 1998).
- in the Pieniny region among collected accessions was found the old fashioned and very rare population of broad bean, which was appeared a very valuable source for new bred cultivar with black seeds (Kotlinska 1998,Witek et all, 1998a),
- During explorations were found in some of isolated villages in Bieszczady, Beskidy, Pieniny, in which mostly old lades very solicitously protect traditional landraces as running bean, garlic, broad bean, shallot typical for that limited area. Such places are very good locality to establish on farm conservation. Especially in vicinity of Przemynl in 3 villages in many farms still are maintain specific for that region landraces of vegetable species like onion, garlic, shallot, few types of bean, dill, carrot, cucumber, tomato, radish, parsley (Kotlinska 1993, Kotlinska 1994a, Kotlinska 1998)

On the base of the exploration results and gathered information's can noticed, that in

Polish part of Carpathian mountains and their peripheries regions the most often is p ossible to find the primitive forms of:

1. bean, shallot, garlic - rich materials
2. onion, dill, parsley, cabbage, radish, lettuce, carrot, tomato, chives, rutabaga.- in small er amount
3. cultivated mashroom growing in wild state (Agariqus sp., Pleurotus sp.,Coprinus sp., Stropharia sp., Flammulina sp.,etc.

Cabbage, carrot, parsley, celery and parsnip landraces are becoming very rare. During explorations made on Poland territory between 1988 and 1998 have collected: 20 accessions of cabbage, 25 of carrot, 38 of parsley, 27 of red beet, 4 of celery, one of parsnip, but 452 of bean, 106 of cucumber, 73 of tomato, 66 of shallot, 62 of dill, 43 of onion, 40 of lettuce. (Kotlinska 1997, Kotlinska et all 1997b, Kotlinska 1998, Szymanski 1998).

The amount of vegetable landraces is quickly decreasing. In spite of budgetary limitations, every effort is made to enlarge Gene Bank in Poland. Explorations are organised every year to collect and preserve indigenous germplasm, identify, search for economic traits including resistance to pests and pathogens, tolerance to environmental stresses, and content of nutritive compounds. The collections are growing and the material is available to breeders and scientists in Poland and abroad. Collaboration with research centres at universities and other non-government organisations in Poland and abroad will speed up identifying important characteristics and duplicates within collected material, and classify marker genes for beneficial characteristics (Kotlinska 1993a, Kotlinska et all 1996a, Kotlinska 1998a, Kotlinska et all 1998).

Above is given the basic gene bank activities, but still is not well organised the germplasm preservation on farm. In Poland is urgent need to introduce and popularised this effective method of local form preservation. The easiest way is to organise that in the small farms located in protected areas around national reserves, with cooperation with Forestry Gene Bank, in villages where the landraces occur. The biggest problem is the lack of funds to support such program.

Successive collecting of existing germplasm in natural environment, preservation in gene bank, ex situ, in situ, on farm is the only way for their preservation for using now and in future. Postponement of such works even for one year, make great endangered for these materials and decrease chance for their salvage. In Poland because of not effective collecting activities during 1970 - 1980 we lost forever a lot of unique vegetable genetic resources. The present economic situation in Poland cause more difficulties in our activity. Up to know we succeeded to gather only a small part of germplasm existing still in natural environment around the Poland.

Progress is depends on financial situation and better understanding of necessity such kind of activity in following years. Therefore, we are looking for collaboration with organisations, which understand the importance of genetic resources conservation and to help in our efforts.

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Some of data about vegetables in Poland

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The area of horticultural plants in Poland comprises more than 600 000 ha which is 3% of cultivated plants. Value of horticulture production is more than 25% of total plant production. Vegetable production is a major component of Polish agriculture. The vegetables play an important role in Polish diet and provide essential nutrients at a low cost especially to low income families. Among the major 7 of vegetables that are grown in Poland are cabbage, onion, carrots, red beets, cucumber, tomato, and cauliflower. Basic source of vegetables are field production, which covers about 280 000 ha and it is about 1,5% of total plant area. Total vegetables production is over 5 mln tons per year and in favourable years can be 6 mln tons and is observed increasing tendency.

Poland belongs to the European countries with the highest consumption of vegetable after Italy, Spain and Greece. In vegetable consumption per person Poland is before Holland, Belgium, Germany, Great Britain. Yearly consumption per person is over 120 kg of fresh and stored vegetables and has increasing tendency. (B_kowski, 1997)

Third (3) place of Poland, it means 12% of vegetable production in EU countries is mainly a result of very high red beet production (85% of EU production), cabbage (47%), carrot and cucumber (14%) and onion (12%), tomato (1,5%).

At present in Poland are consuming less then twenty species of vegetables from which cabbage, carrot and red beet are about 60%. Important position in vegetable production is processing as pickling, sauerkraut, drying, and freezing. Production of mushroom in Poland is about 70 000 ton in that processed mushrooms. Consumption on local market is only about 1 kg per person per year.

In future is planning to increase production area of field vegetables to about 300 000 ha and to increase consumption to 150-160 kg per person per year. It is recommended pattern of consumption: 50-60% fresh cooked vegetables, 20-25% processed vegetables and 15-20% stored vegetables and supplemented of 10% of vegetable production from plastic tunnels and greenhouses and by import during December to March

Realisation of agriculture politics in Poland in the field of food production is depends on agriculture level, and mainly horticultural production. In Poland are favourable condition for market of ecological food, because of low applying of chemicals for plant protection (0,4kg active substance per 1ha) and low using of artificial fertilisers (about 80 kg of NPK and 132 kg of CaO per 1 ha).

Rare Maize Varieties and Local Landraces in Mountain Regions of Romania

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Dr. Marius Murariu; Suceava, Romania

In Romania maize was introduced in the seventeenth century (1679- in Tara Romaneasca, 1648- in Transilvania, 1673- in Moldova) (6). There are many papers which confirm that the maize is originated from America (1,3,4,5,7).

The intra Carpathian territory and the neighborhood areas of central, east, north and north-west Romania, is a very heterogeneous ecogeographyc space, where, during about 300 years, after the maize introduction, natural and artificial selection has determined a high diversification of local varieties.

"Cincantin" and "Pignoletto" (flint types), were the first varieties introduced in Romania. These landraces, under the climatic conditions from our country have been suffered important transformers, dividing in a lot of maize local landraces.(2) (table 1).

It is obvious that this long period has favored an active genetic process of population formation (figure 1), stopped in 1957 - 1962 by the very quick introduc-tion, on more than 90 % of maize cultivated area of corn hybrid seeds.

With the reason to conserve the local maize genetic diversity, a broad collecting germ-

Table 1: The maize local varieties from Carpathian mountains of Romania

Local varieties	Type	Origin	District
Cincantin (Photo 1)	Flint	Eastern Carpath. Mountains	Suceava, Neamt Bistrita, Bacau
Hanganesc (Photo 2)	Flint	Northem Carpath. Mountains	Maramures Suceava Bacau Valcea Pra-hova
Secuesc (Photo 3)	Flint	Southern Carpath. Mountains	Alba Hunedoara Bistrita
Pignoletto (Photo 4)	Flint	Southern Carpath. Mountains	Brasov
Lapusneac (Photo 5)	Flint	Western Carpath. Mountains	Harghita Mures
Optac (Photo 6)	Dent	Western Carpath. Mountains	Valcea, Arges
Cincantin/Hanganesc (P. 7)	Flint	Northern Carpath. Mountains	Suceava Neamt Bistrita Bacau
Hanganesc/Moldov. (P. 8)	Flint	Northern Carpathian Mountains	Suceava Neamt Bistrita BacaM
Ardelenesc (Photo 9)	Flint	Western Carpath. mountains	Cluj, Bistrita Har-ghita Mures

plasm program was developed during 1957 - 1961. More than 1880 local sam-ples were collected from different Romanian areas and evaluated during the period 1957 - 1985 at the Turda and Suceava Agricultural Research Stations.

It was concluded that the maize germplasm of 34 districts of Romania was grouped in 4 racial complexes, 17 races and 6 subraces being a rate of 0.36 to 6.00 samples at 1000 ha cultivated area this density was attributed to the general agricultural level of the far-mers from the given place.

Afterwards by the progressive introduction of the hybrids in all crop areas from Romania, the surfaces occupied by the maize landraces have been lowed year by year (figure 2).

The maize breeding programs by heterosis capitalization between the con-sagvinizate li-nes leaded to the realization of some maize performance hybrids, but the initial germ-plasm sources represented by the old varieties were neglected.

After the revolutionary 1989 touring-point and the return to the private agri-culture pro-perty, many farmers, in consequence of subjective reason renounced to commercial F1 hy-brid seeds and returned to grow some old maize population, fre-quently advanced hybrid generation or usually uncontrolled miscellaneous seeds.

In the moist and cold areas situated at the maize crop limit area from Ro-mania, the maize locale landraces presented in the next table cover the small sur-faces.

Though these locale varieties have a good resistance at the extreme climatic conditions, they realize the lower productions.. These maize landraces represent valuable gene sour-ces for the some important traits in the maize breeding. There-fore I consider that in the present "in situ" conservation of the maize locale repre-sent an important objective .

It is necessary to be mentioned some deficiency recorded during the man-agement of our local maize resources, like the size limiting of collected and repro-duced samples (3 - 10 families only), the screening based only on fenotipicaly evaluation criteria, the lost of ma-ny breeding valuable genes , lake of safety condi-tions for sample conservation's. All the-se reasons determined a high level of ge-netic drift and genetic erosion, subjective scree-ning, losing of about 75 % from ini-tial number of samples and the existence in 1997 of only 3264 maize samples stored in Suceava Genebank.

At present our preoccupations consist in the saving of the old and rare varieties and performing of the national collection. From the total number of the samples conserved in Suceava Genebank, 1232 locale landraces coming from mountain region (from 500 m to 800 m altitude). In this figure you can see the covered area with the locale landraces and the number of the samples conserved in Suceava Genebank (figure 3). We are interesting in the evaluation of maize genetic resources for emphasizing of some germplasm sources concerning the precocity, cold resistance, pest and diseases resistance, quality, etc.

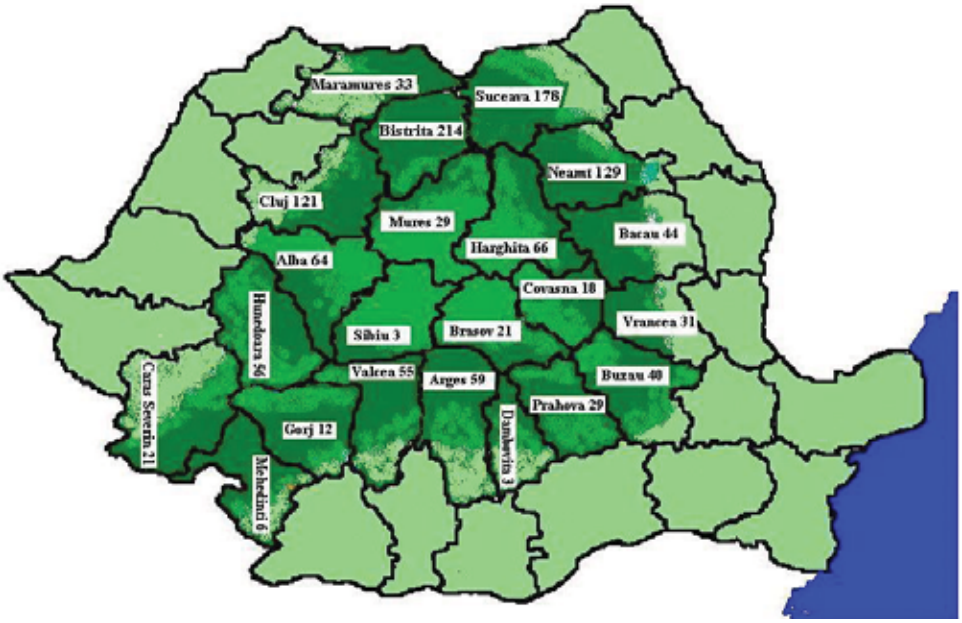

Figure 3: Maize local landraces from the mountain region of Romania conserved at the Suceava Genebank

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Traditional Varieties of Cultivated Fruit in the Romanian Carpathians

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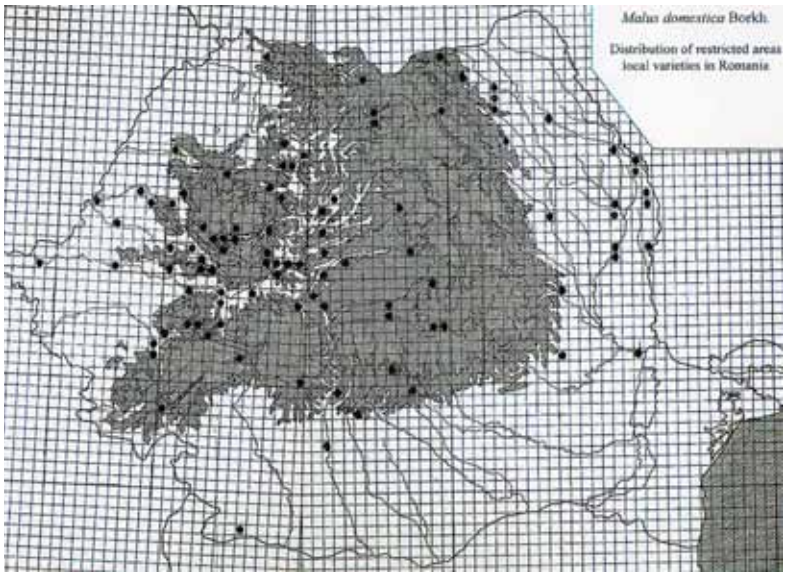
The agricultural genofound erosion process has known different levels in Romania, depending on species or group of species, and on regions. In cereals and other annual cultures, it was the highest between 1965-1975, a period that correspond to the introduction, particulary in plain and hill areas, of high productivity varieties and hybrids and to the restriction of cultivated mountain areas. For the fruit trees, the process was slower, as a result of their longer life and of their traditional location in hill and sub-mountain areas; erosion for the above-mentioned period was continous and irreversibile.

The oldest written references concerning Romanian fruit trees varieties date from the XVIIIth century and they mention apple tree and plum tree varieties still cultivated nowadays in south-western Romanian Sub-Carpathian area. Later, the number of mentions of this kind became greater in etnobotany and in pomology works, but there is no systematic approach of mapping the places in wich these varieties can be found (BORZA, 1921). Romanian Pomology (BORDEIANU, 1964-1967, coord.) makes a remarkable synthesis of the data concerning imported and local varieties cultivated in Romania; further contributions to completing and up-dating these data are rare and concern only restricted areas.

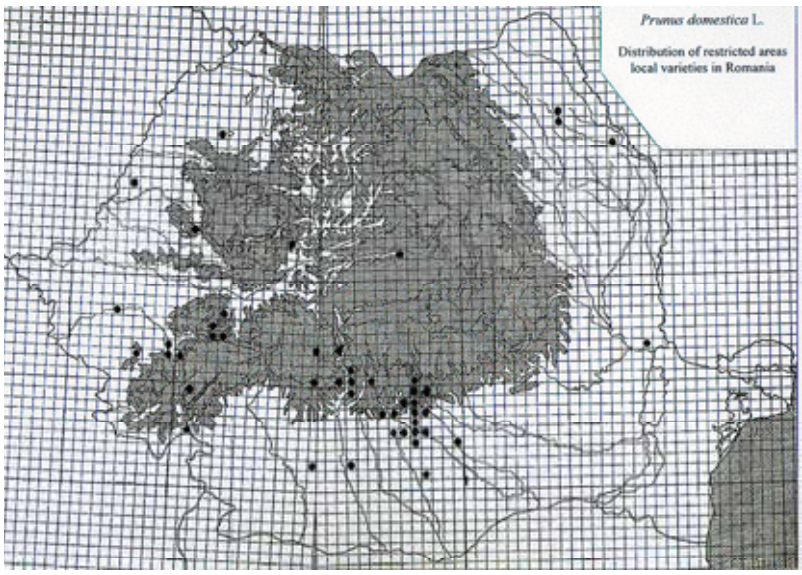
The analysis of the data mentioned in reference materials until now shows that most of the local varieties are the apple tree. pear tree, plum tree and cherry tree species. For the apple tree, 178 local varieties are mentioned; for the pear tree, 86 varieties; for the plum tree, 32 varieties; for the cherry tree, 28 varieties. The absence of verry rigorous descriptions of genetic and productive botanical features of the fruit trees described as local varieties as well as collective denominations (summer apples, autumn apples, august pears, etc.) indicate areal redundancy of the varieties described. The mapping of the localities where local lines were quoted show as main diversification areas the hill and the sub-mountainous regions inside and outside the Carpathians range. Mapping these places underlines mainly restricted spreading local forms, widely spreading forms being quoted as common to an area or another, as it is the case for the "Domnesc", "Patul" and "Cretesc" apple tree varieties.



Malus Domestica Borkh.; Distribution of restricted areas of local varieties in Romania

We should mention the fact that a great number of restricted spreading local varieties resist as an altitude superior to 700-1000 m above the level of the sea and they represent important resources in improving resistant varieties for mountainous regions.

In the absence of local varieties mapping research at the level of all fruit producing areas, their distribution is subjectively influenced by uneven prospecting; thus, for the apple tree,

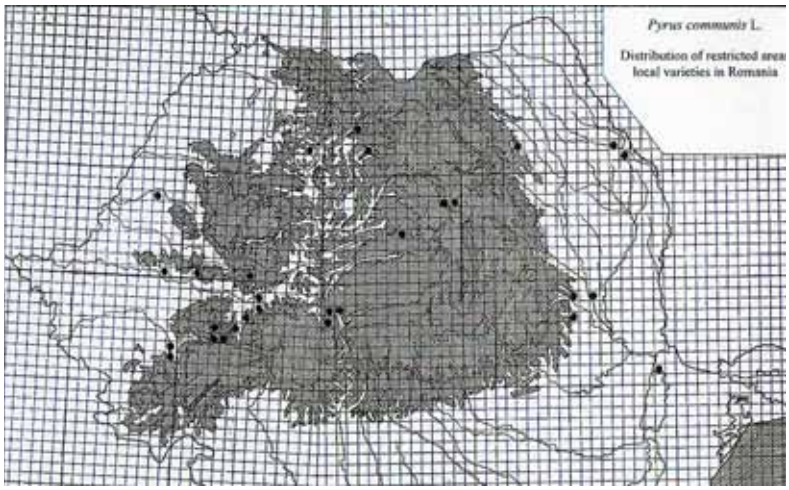


Prunus domestica L.: Distribution of restricted areas of local verieties in Romania

a great density of data in the Apuseni Mountains, in the Transylvanian Plains, in the Ha_eg depression, in the Wallachia Sub-Carpathians and the Moldavian Hills can be noticed, while these data are rather rare for well-known fruit producing areas such as the Bozovici Depression, the Olteniei Sub-Carpathians and in the Curbature Sub-Carpathians.

The developping of the local genetical resource concept, as a result of the disappearing of national and world-wide high-potential value varieties stimulated the action of establishing fruit tree species and variety collections under collections under the care of the Fruit Tree Culture Research Institute in Pitesti-Maracineni. The collections contain traditionally cultivated local and foreign varieties, and varieties and hybrids newly-created in Romania or to be introduced in our country. These collections are located in the Sub-Carpathian area in fruit producing areas where these species are traditionally cultivated.Initiating a common programms for researching and preserving fruit tree Carpathian genofound requires the setting of a regional network of research centres for the main fruit producing areas, local form description standardising in the order to ensure synonymisation, and creating private or state (research centres and universities) extensive orchards.

Romanian pomological and etnobotanical literature quotes several local varieties. Among them, we can mention, as most wide-spread: *Domnesc* si *Calugaresc* in the Moldavian and Vallaquian Subcarpathians, *Banatesti* and *Hategana* in the Hateg Depression and in the Poiana Rusca Mountains, and *Muntenesti* in the Fagaras Depression.



Pyrus communis L.: Distribution of restricted areas of local varieties in Romania

Among narrow-spread local varieties, the varietiesquoted for the Retezat and for the PoianaRusca Mountains are considered to be valuable for high-altitude regions: *Banatesti, Rosii de iu - lie, Muscatore, Fraganele Arius, Rusmoline, Cucurbetoase, Vitate*, and for the Apuseni Mountains: *Rosii de Tebea, Frumoase, Rosii de toamna, Rotilate, Crigle, Mustoase de Albac.*

Plum-trees are the most wide-spread varieties in the Carpathians and in the mountaineous depressions. The following local varieties are wide-spread: *Vinete romanesti, Grase ro - manesti, Tuleu Gras si Gatlane*. Another 30 varieties are narrow-spread and have very similar names, which makes their differentation very difficult. Among these varieties, the following have a special resistance to mountaineous weather conditions: *Scoldus, Negru de vara, Negru de toamna, Galbior.*

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Wild Fruit Plants in the Ukrainian Carpathians

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More than 70 species of trees and 110 srubs are growing in Carpathian forests. Out of these, 49 are regarded as fruit wild plants [4, 5]. The distribution of them is presented in Table 1.

They are presenting an important part of Biological ecosystems. Some of them, for example, mountain ash, wild cherry, chestnut are able to grow as single species stands. Such species as Rubus idaeus L., Rubus caesius L., Prunus spinosa L., Crataegus oxyacantha L. p.p., Rosa canina L., are creating on the slopes of foothills the protective belt against water erosion.

Rural people are using fruits of about 20 species (Table1). Under socialism only Subcarpathia alone was able to collect and process about 10.000 metric tons of wild fruits.

Most of fruit-producing plants have good content of nectar and pol-len during blooming and to support about 100.000 of honeybee families [3, 4]. The sources of these are sufficient.

Wild apple, pear and cherry trees are used by local peasants as root-stocks for grafting. In last decades botanical gardens and nurseries are paying more attention for study of wild fruits plants onto level of the populations [1, 2]. Dozens of unique forms of apple, pear, cherry, plum and chestnut trees was selected from wild material. Some of them can be directly introduced to agriculture and gardening in order to prevent their losses for future generations.

As important genetic material, they should be used in breeding programmes.

Table 1
Genetic resources of wild fruit plants in Subcarpathia

Species	Low-land	Foothills of Carpathians	Low forest belt	High forest belt	Alpine and subalpine species
Castanea sativa Mill.	rare	rare	numerous	-	-
Cerasus avium (L.) Moench.	rare	numerous	abundant	rare	-
Cornus mas L.	rare	rare	rare	-	-
Corylus avellana L.	rare	numerous	abundant	rare	-
Crataegus jxyacantha L.p.p.	rare	numerous	numerous	rare	-
Fragaria vesca L.	rare	abundant	abundant	rare	-
Fragaria viridis Duch.	rare	rare	rare	-	-
Malus sylvestris Mill.	rare	rare	numerous	rare	-
Padus racemosa (Lam.) Gilib.	rare	rare	rare	-	-
Persica vulgaris Mill.	rare	rare	-	-	-
Prunus spinosa L.	numerous	abundant	abundant	rare	-
Pyrus communis L.	rare	numerous	rare	rare	-
Rhodococcum vitis-idaea (L.) Avror.	-	-	rare	numerous	rare
Rosa canina L.	numerous	abundant	numerous	rare	-
Rubus caesius L.	rare	abundant	abundant	rare	-
Rubus idaeus L.	rare	rare	abundant	abundant	-
Sambucus nigra L.	numerous	abundant	numerous	-	-
Sorbus aria (L.) Crantz.	rare	rare	rare	rare	-
Sorbus aucuparia L.	rare	rare	rare	rare	-
Sorbus domestica L.	rare	rare	rare	-	-
Vaccinium myrtillus L.	-	-	rare	numerous	abundant
Viburnum opulus L.	rare	numerous	numerous	rare	-

Description of the past and current situation of Land Races and obsolete Fruit Species in the Carpathian Mountains of Slovakia

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Nitra, Slovak Republik

History of the fruit production in our country is traced to the Roman empire period. In the following period strong influence to the development of the fruit production had the expansion of Christianity on our territory. In the middle age fruit production had not character of production and it was connected to the life in aristocratic castles and monasteries. The tendency of the feudal owners of orchards was to collect as much of fruit varieties and ornamental species as possible, what represented at that time filling of collectors passions and was the criterion of prestige of higher society.

The trade influence in the area of the former Czechoslovak republic in the second half of the 19 century with requirement of uniform fruits for supplying of the municipal markets or for export can be described as the first negative effect to the range of fruit collections. Since the second half of 19 century we can observed efforts for regulation of fruit production in Slovak literature. In the books of authors Anton Egri 1852: "Pomologia alebo poucenie hospodára v steparstve", Stefan Moyzes 1865: "Myslienky o zahradnictve vobec a o steparstve na Slovensku", Anton Penzel 1867: "Ovocinar na Slovensku". In 1885 started the first steps to organize fruit cultivation in Hungary (Slovakia too) by determination of suitable assortment and by detachment of areas for fruit production. In conference of the Fruit association of Hungary were determined this areas, following in the Slovak territory: "Bratislavska, Komarnanska, Zemplinska, Gemerska, Povazsko-pohronska, Severoslovenska". After the First world war was Slovak fruit assortment developed in the frame of Czechoslovak fruit assortment. This list of varieties was published in 1923 in the magazine" Ovocinarske rozhlady" and in 1926 under the title "Vyber trznich odrud ovocnich pro Ceskoslovensko". Assortment of the fruit species in 1923 included 18 varieties of apples, 16 varieties of pears, 13 varieties of cherries, 15 varieties of plums, 20 varieties of small fruits except apricots and peaches. This assortment did not included reliable land races or local varieties, as assortment was submitted as a frame for macro rajonization. In 1932 the final version of assortment came into effect for all Czechoslovak territory. This rajonization was valid in Slovakia until 1951, when new assortment was created, which can be divided for:

∑ Principal varieties (for large scale production)

∑ Supplementary varieties (for gardens)

∑ Testing varieties (small extension, for testing)

After the second world war mainly by enforcing of large scale production in agriculture (collectivization) were lost many valuable genotypes –directly by planting only new varieties or indirectly by liquidation of balks (natural habitats in borders of fields, meadows and vineyards).

On assortment regulation and reducing of fruit species had influence next rajonization made by Dvorak (in1952) and Malik, Cifranic (in 1959).

Changes in diversity of fruit species can be documented on example of apple trees on territory of Czechoslovakia. According estimations from the end of last century were cultivated 1000 – 1500 introduced and original genotypes and at present situation thanks mentioned trends in assortment reduction we have in the list of registered varieties 60 propagated varieties for economical use. At the plant breeding stations was observed reduction of genetic resources and their replacement by new modern (foreign) varieties as a strate-

gic important germplasm for new breeding.

In 1991 the Department of Genetics and Plant Breeding in Slovak Agricultural University we started in the frame of program "Conservation and protection of gemplasm of obsolete cultivars and land races in Slovakia". In the next time this project was included into national program, but it creates space for cooperation with NGOs in solving the problems of monitoring, evaluation, propagation and conservation of perspective samples of Slovak germplasm, which are gathered from our contributors from selected areas and collecting expeditions organized by our working team.

In assortment of fruit species we assure conservation of biodiversity in specialized orchards – repositories, which are created for individual species at minimum in three areas of Slovakia. At present our collected assortment represents following collections in which are included reference varieties and they still require next evaluation (Table 1):

Accomplished results in relation to Slovak germplasm can be interpreted through genus Malus, where since 1991 till 1999 were preliminary evaluated in total more than 5 000

Genus:	Number of genotypes
Malus	650
Pyrus	120
Prunus	215
Cerasus	220
Persica	45
Armeniaca	200
Sorbus (domestica)	45
Castanea	70

Table 1 Collected assortment by number of genotypes

samples (including duplicates) from areas (Fig.1):

• Stiavnické vrchy, Krupinska planina

•Biele karpaty

• Gemer

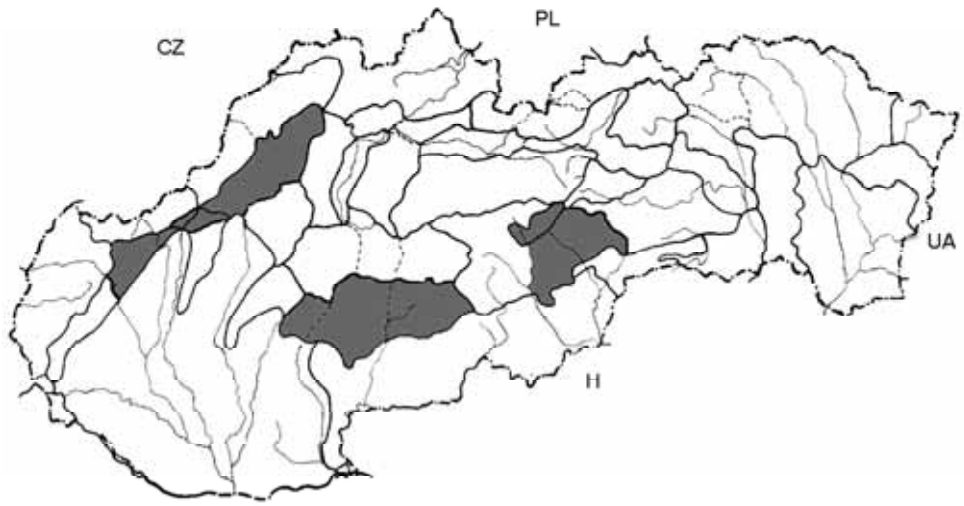

Figure 1: Map of Slovakia, gray color – investigated areas

From total number of 5 000 we can 350 describe as a original spontaneous genotype from Slovak territory, eventually as a varieties with local importance. From evaluated number were 1118 samples identified (morphologically) as a old varieties in total number 65 with frequency of occurrence presented in Table 2:

Table 2 List of varieties, number of samples and their share from 1118 evaluated samples

Variety	No.	%	Variety	No.	%
Baumann´s Reinette	110	9,84	Sudeten – Renette	7	0,63
Harlemer Reinette	101	9,03	Oberländer Himbeerapfel	6	0,54
Hontianske *	80	7,16	Kaiser Wilhem	5	0,45
Batullen Apfel	73	6,53	Schöner von Kusdorf	4	0,36
Onthario	73	6,53	Reinette grise	4	0,36
Solivarské u__achtilé *	70	6,26	Pottovo	4	0,36
Winter Gold Parmäne	62	5,55	Grosser Bohnapfel	4	0,36
Boiken Apfel	39	3,49	Gelber Edelapfel	4	0,36
Reinette Harbert	36	3,22	Kaiser Alexander	3	0,27
Gestreifter Cardinal	36	3,22	Kant Apfel	3	0,27
Schöner von Boskoop	34	3,04	Landsberger renette	3	0,27
Gold Renette von Blenheim	31	2,77	Victory	3	0,27
Gravesteiner	29	2,59	Winter- Bananenapfel	3	0,18
Pelz Apfel	27	2,42	Grahams Jubiläumsapfel	2	0,18
Mutter Apfel - Nonnetit	26	2,33	Sommer Pfirzichapfel	2	0,18
Kassel Reinette	25	2,24	Weisser winterkalvill	2	0,18
Cellini	23	2,06	Paradies Apfel	2	0,18
Gelber Bellefleur	20	1,79	Roter Böhm. Jungfernapfel	2	0,18
Berlepschova Goldrenette	19	1,70	Prinz Albert	2	0,18
Champagne Reinette	12	1,07	Gelber Richard	2	0,18
Rote Reinette	11	0,98	Steyman Winesap	2	0,18
Londoner Glosereinette	11	0,98	Ananas Reinette	1	0,09
Minister von Hammerstein	11	0,98	Antonovka	1	0,09
Durchsichtiger A.aus.Croncels	10	0,89	Cox`s renette	1	0,09
Rotte Sternrenette	10	0,89	Da_kovo (CZ)	1	0,09
Wageners Apfel	10	0,89	Eveapfel	1	0,09
Berner Rosenapfel	9	0,81	Goldrenette von Peasgood	1	0,09
Hlohovské *	9	0,81	Travers Goldrenette	1	0,09
Lohak (CZ)	9	0,81	_tetínske (PL)	1	0,09
Coulonova reneta	8	0,72	Grosseherzog Friedrich v Baden	1	0,09
Winter – Citronenapfel	7	0,63	Docman	1	0,09
Jakob Lebel	7	0,63	Berliner Haasenkopf	1	0,09

* Slovak local variety

The most frequent varieties are in correlation with asserted rajonization of assortments in the history. In the group of old varieties we ensure propagation, conservation in repositories of genotypes with rare occurrence, eventually if we found during evaluation specific forms (different colors, shapes and other properties).

Priorities for immediate needs of action:

Priorities for immediate needs of action:

1. At present the first priority is monitoring and collecting genotypes in specialized orchards for their next evaluation and possible economical use.

2. Propagation and return of local varieties to the areas of their former dissemination with the aim to reviving original processing technologies.

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Variability of Ribes, Rubus, Fragaria, Rosa and Vaccinium in Areas of the Carpathians

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Introduction

The conservation of usable genetic resources is a social responsibility. On the national and international level conservation and integration ofusable species needs more concentrated efforts.

Our aim is concentrated on the variability of Ribes, Rubus, Fragaria, Rosa and Vaccinium in the Carpathian area.

Genus Ribes

Ribes taxonomy has been confused for centuries. Currently, gooseberries are located in Grossulariaceae (Cronquist, 1981, Sinnott, 1985).

In the Carpathian Mountains we find 7 species of Ribes. These species adapted to cool, moist conditions are remarkable for their cold hardiness between -30° and -35°C. Currants and gooseberries are rich in vitamins (especially C), pectin, fructose and mineral elements. They are cultivated some local varieties, especially in the East Carpathian. We know of a variety of black currant - Joseni 19 - but there are also some local red and black currant local selections. I found also in Negreºti-Oaº a local gooseberry selection.

Genus Rubus

The Carpathian Mountains are exceptionally rich in Rubus species and could be considered to be a major centre of diversity for the genus. There are reported to be more than 100 species (Sãvulescu, 1956). There is a high concentration of species in subgenera Eubatus (90 species). The Rubus species are spread every where in the west mountains and hills.

People from these areas have collected fruits of many of these wild species for industrial and local use.

Some studies demonstrated wide intraspecies variability. Nyárády (Sãvulescu, 1956) described more than 75 hybrids between Eubatus species and also between subgenera Eubatus and Ideobatus.

Many of Ideobatus and Eubatus used species are known to cross freely with the cultivated raspberry and blackberry. The used species have desirable traits and provides an abundant source of germplasm for breeders.

Genus Fragaria

Fragaria is represented in Carpathian through three species; two diploid - F. vesca and F. viridis Duch and a hexaploid, F. moschata in a fertile well-drained soil. This is a delicious strawberry with a rich aromatic flavour and is not usually produced very freely.

Genus Vaccinium

We find three species of Vaccinium genus in Carpathian: V. myrtillus, V. vitis-idaea L, V. uliginosum L. People collect fruits of the first two species for local use.

Genus Rosa

About 400 species of genus Rosa are found throughout the northern portion of the Northern Hemisphere. In the Carpathian area there are about 25 species. The most important is R. pendulina, which is very rich in C vitamin, about ten times as much as R. canina. There are identified some species (R. tomentosa, R. micrantha, R. rubiginosa, R. elliptica, R. dumalis, R. dumentorum) which have good fruits collected for local use: in traditional medicine, syrups, jams. Some species are important for perfumes and cosmetics industry.

From all these species there are cultivated local selections and varieties. In the last 20 years, old species and selections were replaced with the new selected varieties. More than 30 selections from this species which were cultivated in Carpathian area, now, we could not find in the national germplasm. In the East Carpathian in the private gardens are some local selections of this species.

Although, traditionally, Romanian people have used many of these abundant wild species for local and industrial use, there has been essentially no utilisation of this enormous, valuable genetic resource for cultivation and breeding development.

A program to inventory and assess the potential of native selections of these species in Carpathian should be a resource for the community and researchers, to re-establish the wide diversity of useful plants that can be grown.

Many of these species are known and many desirable traits have been identified.

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Peculiarity of Fruit Cultures Genofond in Zakarpatia

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The geographic situation of Zakarpatia determines significant variety of soil-climatic conditions. The region divides accordingly its high-altitude into three landscape zones: lowland, foothills and mountains. Every zone has special soil and climatic conditions and due to this varieties of animals and plants have extended. The varieties of West-European origin influenced in a great degree on the variety composition of fruit cultures in region. The varieties that satisfied with naturally historical region features are wide extended. The high adaptive quality of different origin varieties promotes the creation of specific composition of fruit cultures. Assortment of fruit cultures is enriched with new better ones, but they demand high level of ultivation. However in some farms and personal plots the old varieties of different origin that bears some economicaly-biologocal features and is valuable biological varieties of fruit cultures. Apple - M/ul domestika Barkh is the most extended among fruit cultures in all landscape zones of Zakarpatia and occupies more then 70% of all fruit planting. Apple grows well and bears fruit as in middle lowland area as in sever mountain areas. According data of L. Lyubimova and others there are some apple varieties that flower and bear fruits in level of 650-700 m of attitude. Such varieties adapting to environment have short vegetation period and can be matured in these conditions.

It is observed a set of varieties that show significant resistant to diseases Apple varieties of local origin - Divoche (Kishasan), Barhelkove, Dovhanyky, Krasa Zakarpatia (Shykilayi), Kormoshky, Solivarske blagorodne, Ferkovanya, Cherepanya and others.

The old introduced sorts - Litnye prosore,Rambur lotaryngsky, Bernske rozheve, Kronselske prozore, Kardynal bilirizpysky, Poyinyk, Renet Vilmusha, Renet ananasky, Boskonska krasunya, Ontario and many others.

Productive indexes of local varieties of apple

Variety	Average yield (kg)	Mass of fruits	Taster valuation	Maturing	Resistance to deseases
Barhelkove	175-200	130-160	4.0	Sept-Jan.	satisfactory
Divoche (Kishasan)	80-100	75-100	4.0	Sept.-Feb	good
Dovhanyky	75-100	110-180	3.0	Oct.-Feb.	good
Shykilayi	250-300	120-160	3.0	Nov.-May	good
Kormoshky	100-150	100-120	4.0	Dec.-May	good
Solivarske blagorodne	150-200	125-175	4.0	Oct.-Feb.	good
Ferkovanya	200-500	125-175	4.0	Nov.-May	good
Cherepanya	250-300	200-300	4.0	Nov.-May	good

These varieties are mainly in foothill and mountain and partly in lowland zones of regions. They can be founded in old orchards in hillside, plots of land attached to houses. Hillside orchards of social sector are not cultivated at present and are us d for soil erosion protection.

In the lowland it can be meet tries of sweat cherry, peach, apricot that are resistant to monila with over-early term of maturing. In the basin of Borzhava River there are old

planting of blackthorn. In foothill zone it have been revealed interesting sor s of local ori-

gin nut resistant to lersonia disease and frost, have good yield of kernel (more then 50%) and thin shell. It must be noted that with every year genofond of fruit tries reduce specially in connection with the flood in 1998. It is because the problem of saving the variety of fruitcultures is very important. To solve the problem of genofond save it is necessary to use expedition observing and determination of fruit sorts cultures. It is necessary to grow plants in nurseries, to provide grafting and to found variety bank of fruit cultures. Zakarpatian Institute has small nursery and can pick outa plot for such planting.

Vegetables and Spicy aromatic Plants in Zarkarpatia (Alla Fandalyuk)

In collecting nursery of the Institute there are about 50 species of local spicy and medical plants. Some of them are cultivated in small near house plots as Lovage (Levisticum officinale), Sallflower (Croci stigma). Others as Carawey (Carum carvy) and Common balm (Melissa officinalis) and others are growing in mountain forests and eges. Among vegetables there are some local inreresting variaties of haricot bean and asparagus that are growing only in small near house plots (Phaseolus vulgares, Vaj paszuj, Bakti peszij and others).

There is growing a local variety of water-melon (Cucurbito pepo), that can be baked. Such varieties must be saved by special storing and cultivating in nurseries.

Prospective insecticide Plants from natural Flora (Mykhailo Babidorych)

We have a collection of more then 50 species of plants from natural landscape that manifast insecicide and fungicide action, but many of them must be protected from entire loss in general process of land cultivation by selection and growing in spatial nurseries.

Data of domestic Animal Genofond in Zakarpatia (Vasyl' Buria, Vasyl' Ahiy)

The cattle in Zakarpatia are presented mainly by Brown Karpatian breed that is improved in high scale by cross with Swits breed of American and European origin. Soon or later the problem of save local established breed will be erised. Buffalos remain in Khust district not only in village Steblivka but also in village Sokirnytsya and need protectingmeasures for save.

Hucul horses are still used for timber treveling in mountainforest localities in several districts of Karpaty. It is needed comprehensive monitoring and protection measures to save this breed.

The local Mountain-Karpatian sheep breed have very long wool and high content of fat in milk, they also must be saved as bearers of unical genes.

Saving of agro-eco-landscape of Karpatian region (VASYL' CHESHOK)

The entirely and rather unsystematic cultivation of land in Karpatian region bring destruction to formed landscapes particulary natural meadows and pastures and loss of same species.

It is pressing demand to perform monitoring and valuation of such areas and elaborate the measures of save them.

Also it must be mentioned the great importance of insects.

Appendix

DETAILED PROGRAM

Workshop

"Rare Breeds and Plant Varieties in the Carpathian Mountains"

In collaboration with the Vegetal Genebank Suceava

Wednesday May 26th 1999	13:00-14:00	Arrival of the participants of the workshop - Welcome Apero - Registration and hotel rooms	Hotel Sagra
	14:00	Opening Session - Organizatory items - Greetings from the directress of the Suceava Genebank - Greetings from SAVE	Hotel Sagra
	14:30	Presentation Part I: Introduction, Rare Breeds	
	19:00	Dinner	Hotel Sagra
Thursday May 27th 1999	8:00	Breakfast	Hotel Sagra
	9:00	Presentation Part II: Rare Plant Varieties	
	12:00	Lunch	Hotel Sagra
	14:00	Discussion (state of the conservation programs, problems, possibilities); seminary work in teams	
	16:00	Transport to the Suceava Genebank	Suceava Genebank
		- Visit Genebank and Laboratories	Suceava Genebank
		Transport back to the Hotel	
	19:00	Dinner offered by the Suceava Genebank	Hotel Sagra
Friday May 28th 1999	8:00	Breakfast	Hotel Sagra
	9:00	Roundtable (divided into plants and breeds)	
	11:00	Conclusions, need for action and priority list	
	12:00	Transport to Gura Humorului	
		- Lunch	Monastery Humor
		- Visit of Humor & Voronet Monasteries	
		- Visit of two farms (Asaftei Gh.; Buburuzan Vasile)	
	18:00	End of the workshop, departure	

Technical Tours on Tuesday, May 25th 1999, Thursday, May 27th 1999 Friday, May, 28th, 1999

Visit of Agricultural Research Center Pojorâta , district Suceava Visit of the Hucul Horse Research Center Lucina, district Suceava Visit of the council from the village "Vatra Moldovitei".	Tuesday, May 25th , 1999
Visit at the Suceava Agricultural Research Station (Animal Breeding Farm) Visit at the Suceava Genebank	Thursday, May 27th 1999
Visit of two farmers families in the village "Mân_stirea Humor" and village "Voronet", district Suceava Visit of "Humor" and "Voronet" Monasteris	Friday, May 28th 1999
	Voronet Monastery

Topics for the Seminary Work in Teams and the Roundtable

Thursday 27th of May 1999

14:00 - 16:00 Discussion (state of the conservation programs, problems, possibilities); seminary work in teams

Teams:
1) Horse, Cattle, Buffaloes
2) Pig , Sheep, Goose; Sheepdog
3) Crops, Maize, Vegetables
4) Fruit Plants

For every breed and plant variety of your team:

How many are left and where (size)?

The size of the still living populations of rare breeds and plant varieties; distribution
If not known: show the way to get more information

What is the problem and why?

Show the problems of breeding, endangeing and extinction
List catchwords

Where is action needed and how?

Determine needs of action
Mention possibilities
Make a priority list

Friday 28th of May 1999

9:00 - 11:00 Roundtable (divided into plants and breeds)

Discuss the need for future actions
Make a priority list for rescuing breeds or varieties **by each country**

How can the necessary duties be shared **in the different countries** (by GO's, NGO's, Universities, Privates)?

How about fundraising, further contacts and other possibilities

Proceedings:
further engagement of the participants, expert network, workshop report

Endangerment of breeds
Criterias for Red Lists

Animal Breeds

A) by crossbreeding (barely pure sire lines available)
--> changing of genotype and phenotype

B) by diminuation of population (FAO-criterias)

females in reproduction:	status:
> 100	critical
100 - 1'000	endangered
1'000 - 5'000	vulnerable
5'000 - 10'000	rare

Plant Varieties:

(standard not yet recognized)

accessions on less than 5 sites	**-> threatened**
accessions on 6 to 30 sites	**-> rare**
accessions on more than 30 sites	**-> safe**

SAVE-Foundation/Monitoring Institute, May 1999

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