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Safeguard for **A**gricultural **V**arieties in **E**urope
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SAVE Project Office
Neugasse 30, CH 9000 St. Gallen, Switzerland / *www.save-foundation.net* / *office@save-foundation.net*

Hazelnuts – not only at Christmas time

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The days are getting shorter, it is getting colder. It is the time of cabbages, clementines, oranges and nuts. Nuts are not only eaten at Christmas time, but also all year round. One of our native nuts is the hazelnut. Hazelnuts are very popular in crunchy bars, chocolate, nougat, pastries, spreads or as a crunchy snack between meals. Liqueurs, schnapps, hazelnut oil and even cosmetic products are also made with hazelnuts. But where do all these nuts come from and how are they grown?

The hazel era

The European hazel (Corylus avellana) is believed to be the oldest fruit species native to our country.[2] The hazel was already widespread in the Middle Stone Age and was one of the most important foods at that time. Therefore, this period is also known as hazel era.[6,7] Nowadays, the hazelnut's range extends from Europe to western Asia and the Caucasus, where it can be found both at low altitudes and at altitudes of up to 1400 metres. Meanwhile, hazelnuts are also cultivated in North and South America and in Asia.[1,3]

Economic importance of hazelnuts

The hazelnut is one of the most economically important nut species worldwide.[1,7] In 2020, over 1,072,000 t of hazelnuts were produced on a cultivated area of more than 1,015,000 ha. Turkey is by far the world leader in hazelnut production. In Turkey, 665,000 t of hazelnuts were harvested on a cultivated area of almost 735,000 ha with export values of US$ 1.24 million (hazelnuts, unshelled) and over US$ 1.1 billion (hazelnuts, shelled). This corresponds to 72% of the world's hazelnut cultivation area and 62% of the world's hazelnut production. In second place follows our neighbour from the south, Italy. With a cultivation area of more than 80,000 ha, Italy produces about 140,000 t of hazelnuts with export values of US$ 3.8 million (hazelnuts, unshelled) and more than US$ 221 million (hazelnuts, shelled).[10] Only a small part of the hazelnuts (10%) is eaten fresh, the majority is processed.[3]

Male flower, female flower and infructescence of hazel (Photos: Adobe Stock #328710558, #167986880), Pixabay #850709)

The hazel (*Corylus avellana*)

Botanically, the hazel (*Corylus avellana*) belongs to the birch family (*Betulaceae*). The hazel is a 3-7 m tall shrub that usually flowers in February/March. However, it also happens that hazels flower as early as January. The flowers are monoecious and separate-sex, i.e. female and male flowers develop on the same plant. The male flowers are elongated catkins, the female flowers are inconspicuous with red, filamentous stigmas. Hazels are pollinated by the wind. They are important native woody plants that provide nesting opportunities for birds and food for many animals. Although hazels wind-pollinated, bees collect pollen from male flowers.[6]

Preservation of varietal diversity

Hazel is not just hazel: over 400 varieties of hazel have been described.[4] Despite the great genetic variability of hazel, breeding is still in its infancy; only a few dozen varieties are used commercially.[1,9] In Turkey, there are 18 standard varieties, most of which are the result of a natural cross between the hazel and the Lambert nut (*C. avellana* x *C. maxima*).[9] Efforts are being made to help preserve the great diversity of hazelnut varieties. Studies on different hazelnut varieties have been carried out in the past, but the focus was on cultivars. In the SAFENUT project financed by the EU Commission, wild varieties were included in addition to European cultivars.[1] 68 hazelnut varieties can be seen in the wild fruit collection of the SAVE Foundation in Mogelsberg, Canton St. Gallen, Switzerland (https://wildobst.info/).

The nuts of the various hazel varieties differ in size, shape and in the ratio of the shell to the nut kernel (kernel content). Hazelnuts are about 1.5-2.5 cm in length and weigh between 1.5 and 4 g, of which the edible nut kernels account for between 0.5 and 2 g.[2,3]

The kernel content is a typical characteristic of the different hazel varieties; it ranges from 33% to a good 49%. The availability of water greatly influences the size of the nut and the kernel content; the less water, the smaller the nuts and the lower the kernel content.[3] There are spherical hazelnuts and those with ovoid and elongated shapes.[1] Spherical nuts are preferred for industrial processing. These can be cracked, blanched and roasted more easily. One might think that the industry consistently prefers hazelnuts that are as large as possible - but this is not the case. For products that contain whole hazelnuts, such as chocolate and pralines, smaller, hard hazelnuts are used.[3]

Hazelnuts, nutritious nibbles

Hazelnuts are very nutritious and considered healthy. They contain about 60% fat with a high proportion of unsaturated fatty acids (especially oleic acid) and about 16% protein and 16% carbohydrates, respectively.[1,3] As a "functional food", hazelnuts contain essential amino acids, vitamins (B and E), minerals (K, Mn, Ca, Mg) and high concentrations of bioactive substances such as sterols, tocopherols, phenolic acids and flavonols. The consumption of hazelnuts might prevent cardiovascular diseases.[3,5] Not only the hazelnut kernels are used but also the nut shells which are used for heating or mulching.[9]

Cultivation of hazel

While hazel cultivation is not widespread north of the Alps, in southern areas hazels are grown in large plantations in monoculture. Hazelnuts can tolerate drought only poorly and are dependent on a sufficient and even water supply. In areas where this is not guaranteed, hazelnut plantations are irrigated. To maintain a high nut quality, hazelnuts in plantations are fertilised.[9] The hazelnut is also

prone to various pests such as insects, bacteria and fungi. And where do the hazelnuts with the holes in the shell come from? This is the work of the hazelnut weevil (Curculio nucum), an important pest of the hazelnut. This with its long snout rather curious looking fellow feeds on green plant parts as an adulct and on the nut kernel as a larva.[2,8] How hazelnut plantations are managed also depends on the topographical conditions. In flat areas, the cultivation of the plantations is highly automated. In the mountainous areas of Turkey, where hazelnuts are grown on slopes, a lot of manual labour is still needed. This also has a bitter social component: many migrant workers from the poor south-east of Turkey work on the plantations and children also work on the plantations.[11] There are initiatives to improve the situation of the workers.

Hazelnut Plantation in Langhe, Italy. Photo: Adobe Stock #185511271

© Reinhold Möller

The hazelnut weevil (Curculio nucum) lays 1-2 eggs in unripe, still soft hazelnuts. The larva hatching in the nut eats the kernel. The larva then bores through the nutshell and falls to the ground. The larva overwinters in the soil. After pupating, the beetles hatch and the cycle begins again.

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The genomic history of the domestic donkey

Donkey on Rhodes Island. ©SAVE

For thousands of years, donkeys have made it possible to transport goods and people in inhospi-table regions. Little is known about origins, breeds and selections asthere is hardly any research on donkeys. The donkey is no longer needed as a transport animal in our modern society. A new study now sheds more light into darkness. The genomic history of donkeys shed light particularly on their contribution towards human history, but also points out to better management of the spe-cies in future.

Zoo-archaeological findings indicate that donkey domestication took place from the north-eastern Sahara to Eritrea. It can be assumed that the drying up of the Sahara (5500 - 4500 BC) caused shep-herds to domesticate donkeys as a frugal transport animal. Recent mitochondrial and nuclear sequence studies confirm this assumption. Furthermore, it has been long known that the domestic donkey is closer to the African wild ass (Equus africanus spp.) than to the Asian wild ass (Equus hemonius spp.). Origins in Mesopotamia (4th and 3rd millen-nium BC) and Yemen (6500 BC) were also dis-cussed. The atlas wild ass (Equus africanus atlanti-cus) is also discussed as the ancestor of a North African development center. It is, therefore, difficult to find a consensus between the genetic and ar-chaeological data. Since the worldwide patterns of the genomic diversity of donkeys are insufficiently recorded, their global distribution cannot be recon-structed with absolute certainty .

Authors of a study firstcreated a genomic time series to validate the domestication history which covers the last 4000 years or so with 11 different locations from the Atlantic coast to Turkmenistan.

The results of the studies can be summarized as follows:

- There were diverse contacts between Europe and West Africa from Antiquity to the Middle Ages.
- The domestication of the donkey started out from a single African source around 5000 to 2500 BC.
- The spread to Eurasia took place from 2500 BC. onwards.
- Central and East Asian subpopulations differ-entiated 200-100 BC.
- Around 500 BC., the modern European lines emerged.
- The modern Irish donkeys are not of West African ancestry but have descended from the European lines.
- Inbreeding and introgression from different lineages determined breeding management in the past.

After early domestication, African donkeys not only differentiated further in the West and Horn of Africa and Kenya, but also acquired genetic ancestry from Western Europe and the Levant, Anatolia, and Mesopotamia. The domestication of donkeys was accompanied here by a limited but demonstrable wild introgression.

This study is an important milestone in characterizing the development and distribution of the donkey. Further investigations will refine results. In this way, not only the historical heritage of past populations are demonstrated, but the genetic basis of adaptations to arid conditions are also revealed, which are of the greatest interest in view of global warming.

Source: Todd, Evelyn T.; Tonasso-Calviere, Laure; Chauvey, Lorelei; Schiavinato, Stephanie; Fages, Antoine; Seguin-Orlando, Andaine et al. (2022): The genomic history and global expansion of domestic donkeys. In: Science 377 (6611), pp. 1172-1180.

DOI: 10.1126/science.abo3503

The Balkan Seed Network

In May 2022, 16 organizations and institutions actively involved in the conservation and utilization of local seeds in the Balkans have agreed on a Memorandum of Understanding (MoU) to establish the Balkan Seed Network. The purpose of the network is to increase conservation and sustainable use of plant genetic resources in agriculture. Activities will be aimed at stimulating resilient food systems and establishing a paradigm of collaboration, within the rich biodiversity and agricultural heritage of the Balkans.

Countries of the Balkan Peninsula are very rich in agrobiodiversity. Their very diverse landscape with small valleys, plains and plateaus caused challenges and created different traditions in agriculture. Up to now, most Balkan farmers are smallholder farmers, with a huge pool of experience and traditional agricultural knowledge. With a network of seed savers, breeders, scientists, farmers, gardeners, associations, organizations, research institutes and educational institutions, the Balkan Seed Network members believe in working together to support local communities of farmers, women and young people in protecting the common traditional farming knowledge and culinary tradition.

Small farmers can have a huge contribution, in mitigation or adaptation of climate change. Therefore, the Balkan Seed Network focuses on community-based science as the key for the conservation of plant genetic resources that are well adapted to low

Electronic information service of the SAVE Foundation www.save-foundation.net
office@save-foundation.net / Neugasse 30, CH-9000 St. Gallen, Switzerland www.agrobiodiversity.net

input sustainable agriculture – especially trough organic farming and agro ecology – in order to face the current environmental and socioeconomic challenges. Additionally the aim of the Balkan Seed Network is not only constricted to conserve and enrich biodiversity, safeguarding food sovereignty, safety and quality for the present and future citizens / generations, but also for the nature through an agro ecological approach.

Members of the Balkan Seed Network (alphabetically)

1. AEGILOPS (Net. for Biodiversity and Ecology in Agriculture), Greece
2. Agricultural Research Institute (ARI), Cyprus
3. Alica Foundation, Bosnia &Herzegovina
4. Association ARCHE NOAH, Austria
5. Association of Plant Genetic Resources (APGR), Albania
6. Association Romania in Transition, Romania
7. Civil association FABIA CSB, North Macedonia
8. Community Local Seed Bank Bushat (COSPE), Albania
9. Ecological movement “Frame of life”, Serbia
10. Institute of Plant Genetic Resources, Agric. University Tirana , Albania
11. Institute of Plant Genetic Resources “Konstantin Malkov”, Bulgaria
12. Lipa dooel, North Macedonia
13. Maritsa Vegetable Crops Research Institute (MVCRI), Bulgari
14. Organic Agriculture Association (OAA), Albania
15. SITO SEEDS Network, Greece
16. Institute of Plant Genetic Resources, Agric. University Tirana , Albania
17. Institute of Plant Genetic Resources “Konstantin Malkov”, Bulgaria
18. Lipa dooel, North Macedonia
19. Maritsa Vegetable Crops Research Institute (MVCRI), Bulgari
20. Organic Agriculture Association (OAA), Albania
21. SITO SEEDS Network, Greece
22. Zelena Mreža Aktivističkih Grupa (ZMAG), Croatia

The Balkan Seed Network welcomes all interested initiatives of the region with the proposition of co-operation and/or for an exchange of knowledge. The network also welcomes donations for the realization of the Balkan Seed Network program activities.

The chairperson of the network is Gordana Đurić (email: gordanadjuric(at)protonmail.com), and secretariat representative is Kostas Koutis (info(at)aegilops.gr).

http://balkanseednetwork.com/

Cattle Breeding in Eastern Europe Situation and Practices

*Carpathian Brown ©**https://polyan.hu/***

There are hardly any AI centres in the countries. Milk and milk products from small farmers are sold on the informal market (directly from the farm or on the local market).

Beef cattle are imported from other European countries for breeding. Although local breeds are known, they are rarely promoted by the state. Breeding programs for endangered breeds are rare. In mountainous countries like Kyrgyzstan, 90% of the grassland has been eroded and recultivation is progressing slowly.

Herd books and performance tests are often not used.

In the Czech Republic, performance breeding is very successful and highly technical. Milk and ani-mals for slaughter are exported abroad and are processed there. In the country itself, there are none adequate companies that could take over the processing. Small businesses are declining even more. This also applies to Hungary. From an eco-nomic point of view, it would be very desirable for milk processing to take place domestically, where the milk is produced.

The local breeds such as the Carpathian Brown are known but hardly supported. In Hungary, Carpathian Browns were imported from Romania in 2008 revive breeding To make smallholders enthusiastic about this dual-purpose breed, which is particularly adapted to mountain regions, the »Polyán Associa-tion« introduced in 2014 a kind of «loan system». The farmer receives an inseminated cow, using and purchasing it in instalments over time. The young animals can also be bought. The aim is to continu-ously build up the breed, support small farmers and thus, promote rural development. The system works similar to the SAVE Animal Loan System. Since 2019, a separate breeding organisation was funded.

Genetic studies (18 microsatellite markers) by the University of Debrecen have shown that the Carpa-thian Brown seemed to be related to the Busha cattle.

The stock of Hungarian Grey Steppe cattle is slowly stabilising. It is an attraction for the Hungarian Steppe. Products from them have been awarded the AOC label. Restaurants that sell dishes from the Hungarian Grey Steppe cattle receive the ear tag number. This makes processing possible to trace the animal to its farm.

SAVE presented their work and some projects like the BushaLive project. The presentation met with great interest. In particular, the fact that SAVE includes the situation of the farms and farmers in its work was very much welcomed. The valorisation aspect such as Arca-Net and other activities also attracted a lot of interest.

Conclusion: The workshop was a very successful event. Impulses could be set and the knowledge about the situation of cattle breeding in the differ-ent countries could be deepened. The fact that critical voices also found their place made the event particularly interesting. For example, it was questioned whether it makes sense to continue increasing the milk yield of cows when they need more concentrates and veterinary care at the same time. One wonders of the worldwide lifetime pro-duction of a high-performance cow today, which is 3.2 lactations, but for the Carpathian Brown Swiss, they are known to have 20-year-old cows that are still in lactation.

More information: https://www.fao.org/europe/events/detail-events/en/c/1619165/

Star Treck in Potato Production

©https://www.freepik.com

McCain, the world's largest producer of frozen potato products, is concerned about the impact of climate change on potato growing. McCain sources its potatoes from around 3,500 farmers worldwide, ranging from smallholders to large-scale enterprises. The company is updated daily on climate changes. In Brunswick, Canada, the group has now set up an experimental farm that uses both traditional potato growing practices and state-of-the-art technology. The aim is to meet the challenges of the future. The "Farm of the Future" is part of a series of experimental farms and laboratories around the world set up to optimize potato cultivation. McCain has committed to implementing regenerative agricultural practices on all potato acreage worldwide by the end of 2030.

After 10,000 years of domestication, our increasingly unbridled world now threatens the future of the world's third most important food crop after rice and wheat.

The technology on the farm in Brunswick, Canada, looks like something out of a Star Trek film: A team of postgraduates from Dalhousie University is working on a crop sprayer that uses artificial intelligence to identify insects and weeds that can damage the crops. Instead of spraying the entire field, pattern recognition systems detect unwanted intruders and direct nozzles at them. It only takes 200 milliseconds to identify and spray a bug.

On a potato sorter, or the "autonomous vision tuber sorter," sensors scan potatoes as they enter a storage shed. Clumps of red, green, and blue appear on a screen like disassembled versions of Ugo Rondinone's colourful rock sculptures. The machine scans for gravity and density, important for frying quality and problems like "hollow heart" - when cavities form in a nodule.

But traditional methods of maintaining soil fertility and reducing tillage are also used. Cover crops of 28 different varieties were planted last year to protect the field after the potato harvest. It is ancient practice whereby plants provide nutrients to the soil and protect against pests - millet, for example, helps protect against nematode worms while retaining water in the soil.

Cultivation of catch crops is more expensive in terms of labour and seeds but it prevents soil erosion in the long term and maintains fertility. In this way, all data collected in a synthesis of old and new are analysed in detail to find out which cover crops help best to increase yields.

Another method is the use of cattle on the harvested fields. This is intended to gradually eliminate the decoupling of animal and plant production.

McCain and other big companies like Mars and PepsiCo have endorsed a report by a working group within the Sustainable Markets Initiative (SMI) stating that the amount of sustainable agriculture must triple by 2030. The report was released just ahead of the United Nations COP27 climate summit in Egypt.

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Source:

https://www.theguardian.com/environment/2022/nov/05/potatoes-future-climate-emergency-canada?CMP=Share_iOSApp_Other

New European Reference Center for Endangered Animal Breeds

Balear Cattle. ©SAVE

As from 1 January 2023, experts of Wageningen University & Research (WUR) will work together with IDELE (France) and BLE (Germany) to advise the European Commission, national governments and breed organisations on sustainable breeding programmes for endangered farm animal breeds, as well as the implementation of EU breeding regulations.

The Standing Zootechnical Committee of EU DG SANTE approved the European Commission's proposal to establish an EU Reference Centre for Endangered Animal Breeds (EURC-EAB) on October 3rd, 2022. In this new EU Reference Centre, WUR will be working alongside IDELE (Institut de l'Élevage, France) and BLE (Federal Office for Agriculture and Food, Germany). Sipke-Joost Hiemstra (Wageningen Livestock Research/Centre for Genetic Resources, the Netherlands) has been appointed Director.

The EURC-EAB will collaborate closely with the European Regional Focal Point for Animal Genetic Resources (ERFP). ERFP is the European network of National Coordinators, who are responsible for the coordination of the conservation and sustainable use of animal genetic resources at national level.

The task of the EURC-EAB

EURC-EAB will provide scientific and technical advice to the European Commission aimed at establishing and harmonising methods for the conservation of endangered breeds, as well as the preservation of genetic diversity within these breeds. This includes the breeding of cattle, pigs, sheep, goats and horses. The EURC-EAB will also support governments and breed organisations in the implementation and further development of European breeding regulations (EU 2016/1012).

Hiemstra: "Effective breeding programmes are very important for maintaining the variety of rare farm animal breeds in Europe. This is how we maintain genetic diversity within the breeds and thus ensure that these breeds remain usable in the future."

Contact point and information hub

National Competent Authorities (the responsible government organisations at the national level), breeding organisations and other stakeholders can contact the EURC-EAB with questions or bottlenecks regarding the implementation of the EU animal breeding legislation (EU 2016/1012) for endangered breeds. Emerging questions from the European Commission and EU Member States in the Standing Zootechnical Committee related to genetic resources will also be taken up by the EURC-EAB.

Furthermore, the EURC-EAB aims to widely share guidelines to assess the risk status of breeds, as well as best practices for the conservation and sustainable use of endangered farm animal breeds. The EURC-EAB will set up specific communication tools for its target audience.

Source: https://www.wur.nl/en/research-results/research-institutes/livestock-research/show-wlr/new-european-reference-centre-for-endangered-animal-breeds-established.htm

«Let's Liberate Diversity!» 11. Forum Budapest 27.-29. October 2022

Source: https://liberatediversity.org/

The European Coordination Let's Liberate Diversity! (EC- LLD) draws its origins and foundation from the annual gatherings on agricultural biodiversity known as the Let's Liberate Diversity! Forum. The first edition of the forum took place in 2005 in Poitiers, France, and since then 11 editions have been organised in different European countries. Rotation is essential for broad and diverse involvement of citizens and communities. In 2022 the 11th Let's Liberate Diversity! Forum took place in Budapest, Hungary. The forum was co-organised together with Magház, the Hungarian seed savers organisation established in 2012, with the main aim to work for the participatory management and awareness raising of agrobiodiversity in Hungary. The objective of LLD Forums is to develop the issue of agricultural diversity by linking the work and experiences of the different actors involved, including public awareness, and promoting a horizontal and participatory dissemination of knowledge and expertise. For this purpose, the program includes workshops, activities, food tasting, seed swaps and much more. The program of the 2022 forum in Budapest can be found and downloaded at this link: https://liberatediversity.org/ wp-content/uploads/2022/10/ BUDAPEST2022_PROG_web.pdf Within this 2022 edition we decided to also include a space dedicated to art exhibitions (see chapter dedicated), since art engages the collective imagination and can be a good catalyst for conveying content.

Participating in the Forum in Budapest were 68 different organisations and 28 different countries for a total of 120 registrations. Within this framework and involving the main national associations, it is possible to involve rural communities and local formal and informal groups in a European conversation. It is within these communities that knowledge about growing, preserving and using local varieties is preserved. This is of crucial importance when we consider the strong genetic erosion and the use of uniform varieties within food production systems. Seeds design the agricultural systems in which they will be grown, and their quality is essential to ensure good production for farmers. At the same time, however, seeds have a social imaginary that moves them out of being just a means of production in agriculture. Indeed, the names of varieties, their characteristics are linked to our history, they once defined our symbolic horizons, tastes and flavours are linked to our tradition and cuisine. But there is more. Those who control the seeds control the food system and what we put on our plates. That is why talking about seeds is not easy and touches emotional chords that are not normally considered by the technicalities with which we usually deal with agricultural matters. Without understanding all these threads that link seeds to society, serious seed policies cannot be made that can meet all the expectations of the many and varied stakeholders.

Source: https://liberatediversity.org/wp-con-tent/uploads/2022/12/ECLLD_REPORT_2022_finaldef-1.pdf

Newsflash

From chicken to horse: German Zoo association supports the conservation of endangered farm animal breeds

The "Interdisciplinary VdZ (Association of German Zoos) Symposium on the conservation of old Livestock Breeds" took place in the animal park Nordhorn, Germany, as part of a project supported by the German Government. "The VdZ symposium brought together almost 70 representatives from zoological institutions, breeding associations, science and didactics, thus promoting interdisciplinary exchange on the topic of farm animal breeds in zoos," says VdZ Deputy Director and project initiator Dr Julia Kögler. "A long-term establishment of this symposium is planned, because the conservation and protection of endangered farm animal breeds can only succeed through strong networking and the cooperation of many partners," adds Prof. Dr. Dr. Kai Frölich, also project initiator and director of the Arche Warder e.V.

Zoological gardens and zoos keep not only wild animal species but also livestock breeds, such as the Augsburg chicken, the Coburg fox sheep, the Thuringian Forest goat or the Bunte Bentheimer pig. In 2020, 45 VdZ member zoos in Germany kept a total of 1,070 animals from 74 native breeds. This corresponds to around 45% of the total diversity of livestock breeds in Germany, which can be experienced by society in VdZ zoos.

VdZ Verband der Zoologischen Gärten; engl.: German Association of Zoological Gardens

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One mother, two fathers?

Thale cress (Arabidopsis thaliana), a model plant widely used in research (Photo: Adobe Stock #260138875)

Molecular biologists at the University of Bremen made an amazing discovery: they were able to detect plants that have one mother plant and two fathers! How is that possible?

In the animal world, life begins with the fusion of an egg and a sperm cell. Normally this is also the case in plants. Rarely, in about 1 in 10,000 plants, the egg cell is fertilised by two sperm cells. This is called polyspermy. While polyspermy is fatal in animals, viable offspring can be produced in plants. Researchers assume that polyspermy in plants is a very old developmental process. For breeding, polyspermy can become significant, as incompatibility reactions that limit conventional breeding might be circumvented. Both ornamental and crop breeders have already expressed interest in the use of 3-parental breeding.

https://blogs.uni-bremen.de/3patec/

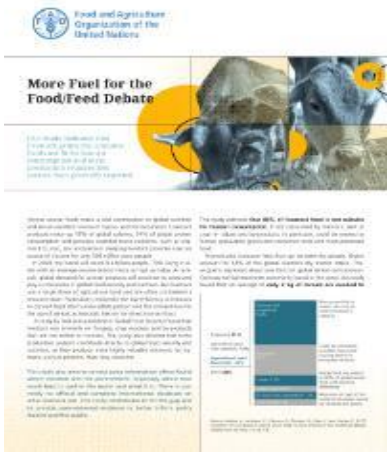
https://www.3sat.de/wissen/nano/drei-eltern-eine-pflanze-100.html

Manual Pig Production

The handbook "Welfare and Environmental Impact of organic Pig Production" summarizes the results of the Core Organic Cofund project POWER, aiming to increase animal health and welfare of organic pigs while reducing the environmental footprint of the farming systems. It provides a common toolbox of knowledge-based strategies for designing and managing concrete outdoor runs, reducing piglet mortality and health problems and improving system resilience and sustainability. Best practices and innovative examples from across Europe are presented to inspire and facilitate the continuous development of an economically competitive production, which meets the principles of organic farming.

Download: https://www.fibl.org/en/shop-en/1300-hb-power-en

More fuel for the food/feed debate



Livestock contribute to food security by supplying essential macro- and micro-nutrients, providing manure and draught power, while generating income. But they also consume food edible by humans and graze on pastures that could be used for crop production. Livestock, especially ruminants, are often seen as poor converters of feed into food products. This paper analyses global livestock feed rations and feed conversion ratios, with specific insight on the diversity in production systems and feed materials. Results estimate that livestock consume 6 billion tonnes of feed (dry matter) annually – including one third of global cereal production – of which 86% is made of materials that are currently not eaten by humans. In addition, soybean cakes, which production can be considered as main driver or land-use, represent 4% of the global livestock feed intake. Producing 1 kg of boneless meat requires an average of 2.8 kg human-edible feed in ruminant systems and 3.2 kg in monogastric systems. While livestock is estimated to use 2.5 billion hectares of land, modest improvements in feed use efficiency to reduce further expansion.

Source: https://www.fao.org/documents/card/en/c/cc3134en/

Readers' Opinion on Solar Grazing

Waldschaf Widder. ©Hans Kjär, Arche Austria

In the SAVE eNews 03/2022, we published the concept of "Agri-Voltaik": Voltaic systems on grassland are grazed under the modules with sheep, thus creating a win-win situation, because the pastures, which are occupied by solar voltaic modules are maintained by grazing with sheep.

A reader has now drawn to our attention to the fact that it is not quite as easy as the American Solar Grazing Association mentioned: Areas covered with solar modules are more like an industrial park than a rural landscape. It is, therefore, desirable, at least in Central Europe, to equip unused roofs and walls of buildings with solar modules instead of species-rich areas that can be used for grazing.

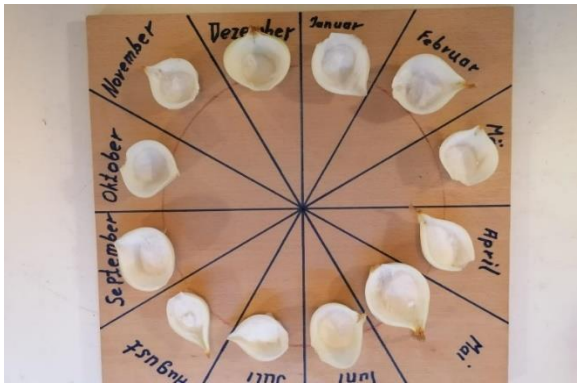
Experience with forest sheep in Germany has shown that only hornless sheep breeds are suitable for this. Horned breeds can come into conflict with the wiring. In addition, the areas are often too dry because the modules do not distribute the rain evenly over the area. A selenium deficiency was also found on the surfaces equipped with voltaic modules. The reason for that has not yet been clearly clarified. The grazing showed that when trees are present, the sheep clearly prefer their natural shade to that of the solar panels.

The plea is: Wherever possible, roofs and facades should be equipped with solar modules and not impair the open landscape with its diversity of species.

We thank you very much for this critical perspective and are happy to pass it on at this point. You see: your opinion counts! Mail to: office@save-foundation.net

Last but not least

Onion divination for the next growing season



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Cromniomancy, or the practice of onion divination, isn't the fastest way to get otherworldly answers, but it has been in practice for centuries.

If you find yourself caught in a love triangle, it cannot hurt to grab onions and see what sprouts. No need to plant the onions: after carving their names onto two onions, leave them in a cool dry place to await the green shoots, then pick the potential mate whose designated onion sprouts first.

In Germany, a tradition for New Year's Eve, or Silvester, is to make a Zwiebelkalender, literally, an "onion calendar." Gustav Jungbauer described it in 1927: with simply setting out 12 pieces of onion, one for each month, and sprinkle them with salt. The amount of moisture that appears the next day indicates the amount of rainfall in its corresponding month.

Source: https://www.atlasobscura.com/articles/food-fortune-telling .

Season's Greetings from The SAVE Team

Alder Slope Cows of the Wallowa Valley. © https://www.wallowa.com/