Agribusiness Management

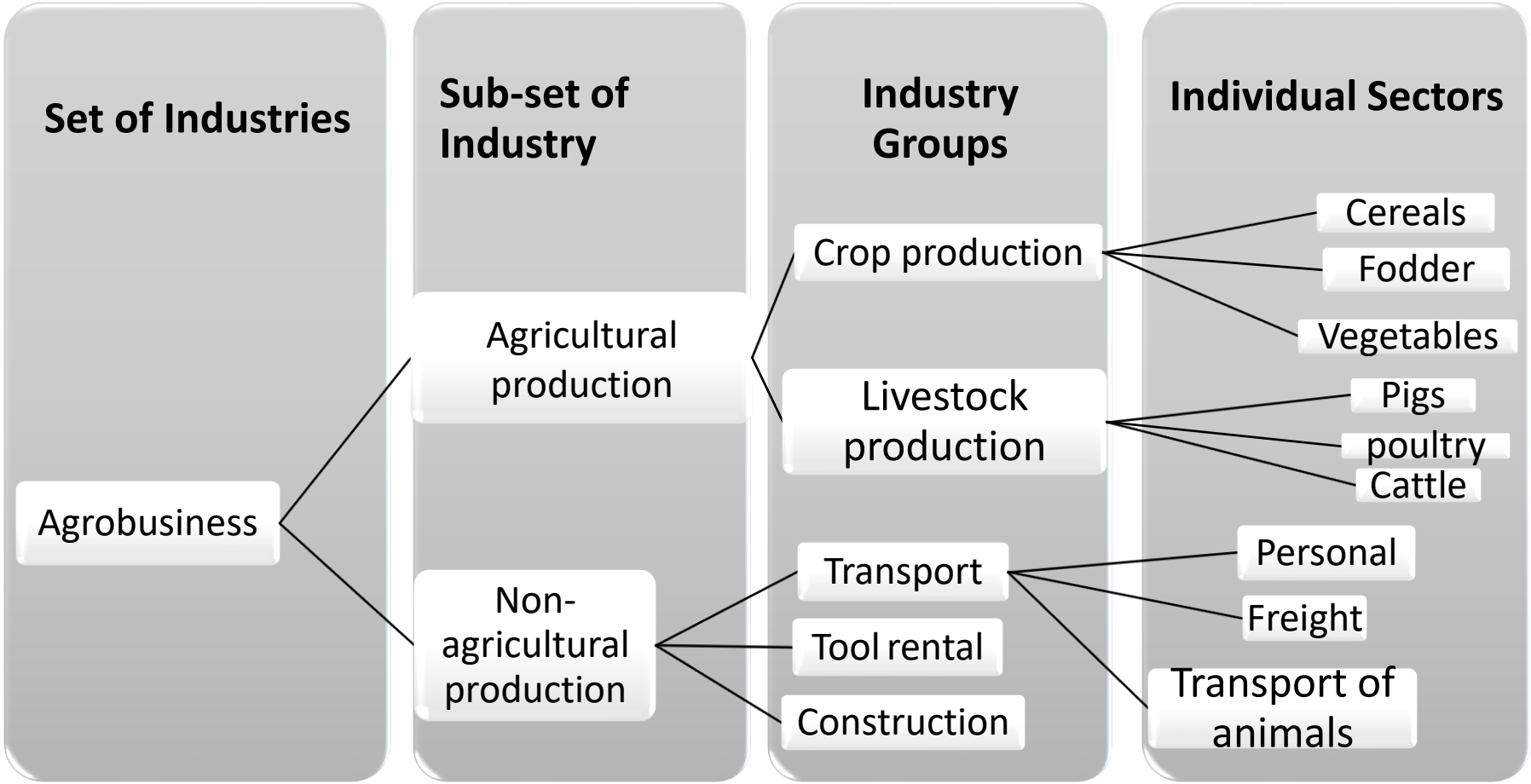
Management of Production

Agribusiness management

- Agribusiness is defined as an economic sector linked to agriculture and livestock, from the beginning to the end of the chain, involving:
  - Inputs production,
  - feedstock production,
  - feedstock processing and distribution, and
  - other services up to the end consumer or export.
- Thus, agribusiness GDP is measured based on the total value added of the sector to the economy, evaluated within market prices, in other words, including indirect taxes without subsidies.
- Besides, it is divided into two major productive sectors: crop and livestock production.

Features and peculiarities of Agricultural production

Agribusiness production industries



The set of agricultural industries

- **Agriculture industry**: part of production of a certain business unit, that produces one or more related products originating from the same source, but which differ from other technologies, organization and end products.
- **Auxiliary production sector**: non-agricultural production sectors contributing to ensure the main operation of agricultural production.
- In order to **make more efficient use of inputs and resources**, but also to improve profitable revenues, the undertaking organizes, in view of the given production and economic conditions of the so-called associated production within the associated production sector (transport or repairs for others, etc.).

The set of agricultural industries

- When selecting the industries in the agricultural primary production entity, a number of factors should be taken into account:

Within the crop production sectors	Within the sectors of the livestock production
the operation of the sector on land,	the impact of the combination of industries on the need for organic fertilisers, bulk feed and stems,
requirements for organic fertilisers,	optimal concentration of environmental sectors,
the inclusion of the crop in the sowing procedure,	possibility of adaptation for multiple sectors of environment,
demands on the need for work and mechanising agents during vegetation.	combining the sectors according to the smooth and efficient use of labour during the year.
demands on single-purpose machines,	

The set of agricultural industries

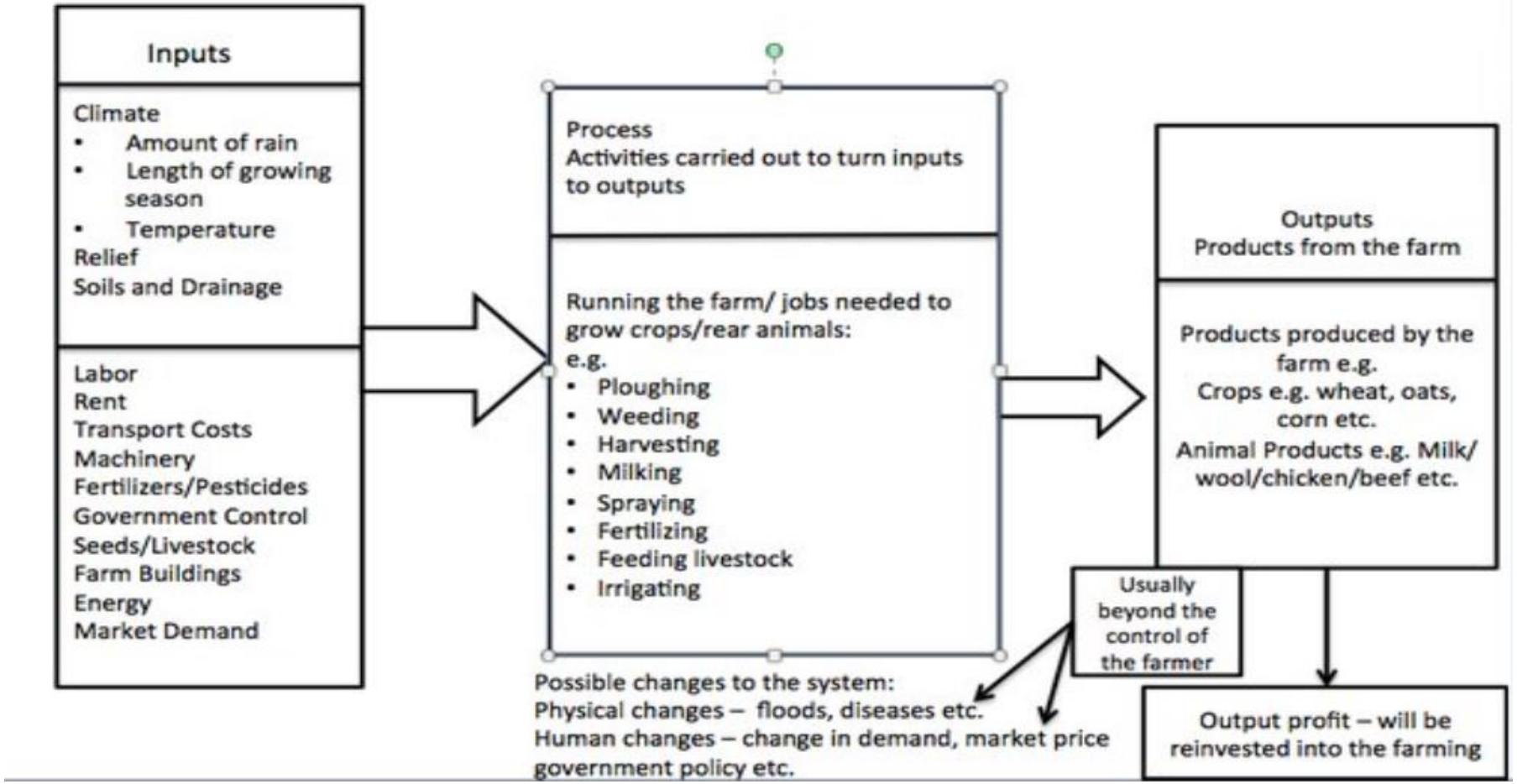
According to the feasibility of the products, the industries are divided into:

- **market industries:** those sectors whose products are realized in addition to a business unit,
- **non-market industries:** those whose products are consumed as an intermediate product within a production-organizational unit.

Another classification of industries is the **share of the output of a given industry** or group of industries in the total volume of market output of a business unit:

- **The main ones:** which participate the most in the creation of market output of the entrepreneur (usually one to two sectors of crop production and one to two sectors of livestock production),
- **additional ones:** which participate marginally in the creation of the entity's market output. However, their importance is underlined by the agrotechnical need for crop rotation and the use of by-products in the unit,
- the **sub-sectors:** those which make maximum use of the natural and economic conditions of the agri-subsidy and contribute marginally to improving profit (e.g. fish farming, bee farming, etc.).

Farming system: Imputs, Process & Outputs



Pagotto, M., & Halog, A. (2016). Towards a circular economy in Australian agri-food industry: an application of input-output oriented approaches for analyzing resource efficiency and competitiveness potential. Journal of Industrial Ecology, 20(5), 1176-1186.

Links between agricultural sectors

Despite the relative autonomy of the agribusiness industries, these are linked with associates caused by the biological nature of agricultural production. The links between sectors have their own:

- **Economic side**: determined by the production, value and profit. In market-oriented agrosubject, the relationship should apply:

Own production + Purchase needed ≥ Sales + Own consumption

- **Material aspect:** determined by biological, technical and work nature. On this basis, it consists of the industry's claims for individual factors in the production process. In particular, this is reflected in the requirements for:
    - Soil
    - Workers
    - means of long-term tangible assets,
    - outputs from other sectors material side

Links between agricultural sectors

The **relationships** between industries arising from the industry's claims for factors in the production process may be:

a) competitive (competitiveness),

b) support (two-way action),

c) relationships of dependency (unilateral action),

d) mutual replenishment,

e) neutral relationships.

The following links between the industries are affected by **forces** causing changes in production:

- **integration:** which act in the direction of joining or combining industries (e.g. crop rotation, use of universal means, etc.),
- **differentiation**: resulting in the exclusion of certain sectors from the business entity (as a result of the distribution of labor and the concentration of production, egg production and others have been set aside from conventional agro-entities).

Functions of agricultural production

- **Production function**: the assessment of natural-climatic conditions, in particular soil production efficiency, efficient use of production resources and existing capital endowment to achieve the necessary agricultural production and subsequent profit. In doing so, it is necessary to take advantage of the nature of market conditions with regard to the local, regional, national or transnational market.
- **National economic function**: consists of a contribution from the use of agricultural land, a prerequisite or directly helps to develop other economic sectors. In addition, primary production agri-entities can cooperate in the entrepreneurial use of resources (e.g. providing labor for maintaining and developing the territory's infrastructure, thus creating the conditions for recreational activity in the territory, while creating conditions for trade, crafts and small business).
- **Economic function**: consists in the contribution of the industry in the creation of the mass of gross domestic product and in the creation of resources for accumulation, investment and consumption.
- **Social function**: lies in the contribution of the sector in addressing overall employment and the use of available labor resources. The contribution of the sector to the demographic reproduction of the population and its impact on migration and population mobility processes are also significant.
- **Cultural function**: role of the agricultural production sector of a given territory to help preserve the historical structure of settlement, building monuments, settlement communities, etc.
- **Ecological function:** determined by such use of agricultural land and provision of production, which will allow to maintain the relief and character of the landscape, protection of water resources, air and the soil itself, protected natural units and creations, rare biocenosis, etc.

Fundamental differences of agricultural production

a) **The biological nature of production**: determined by the influence of other factors on the living organism (soil, plant, animal). This living organism undergoes different developmental stages, which also results in different demands on inputs and environment. In addition, the continuity of reproduction of biological organisms and also the close follow-up of the production processes of plant and livestock also result from biological nature.

b) **Time mismatch between production & working hours**. An example is the production time of winter wheat, which takes about 300 days, while the working process takes *2-3* days.

c) **Low cyclicality of production:** in most sectors of crop production represents one production process in one year.

d) **Dependence on seasons*:*** which is particularly pronounced in the crop production sectors.

e) **Dependence on soil and climatic conditions:** different according to the production conditions of Slovakia.

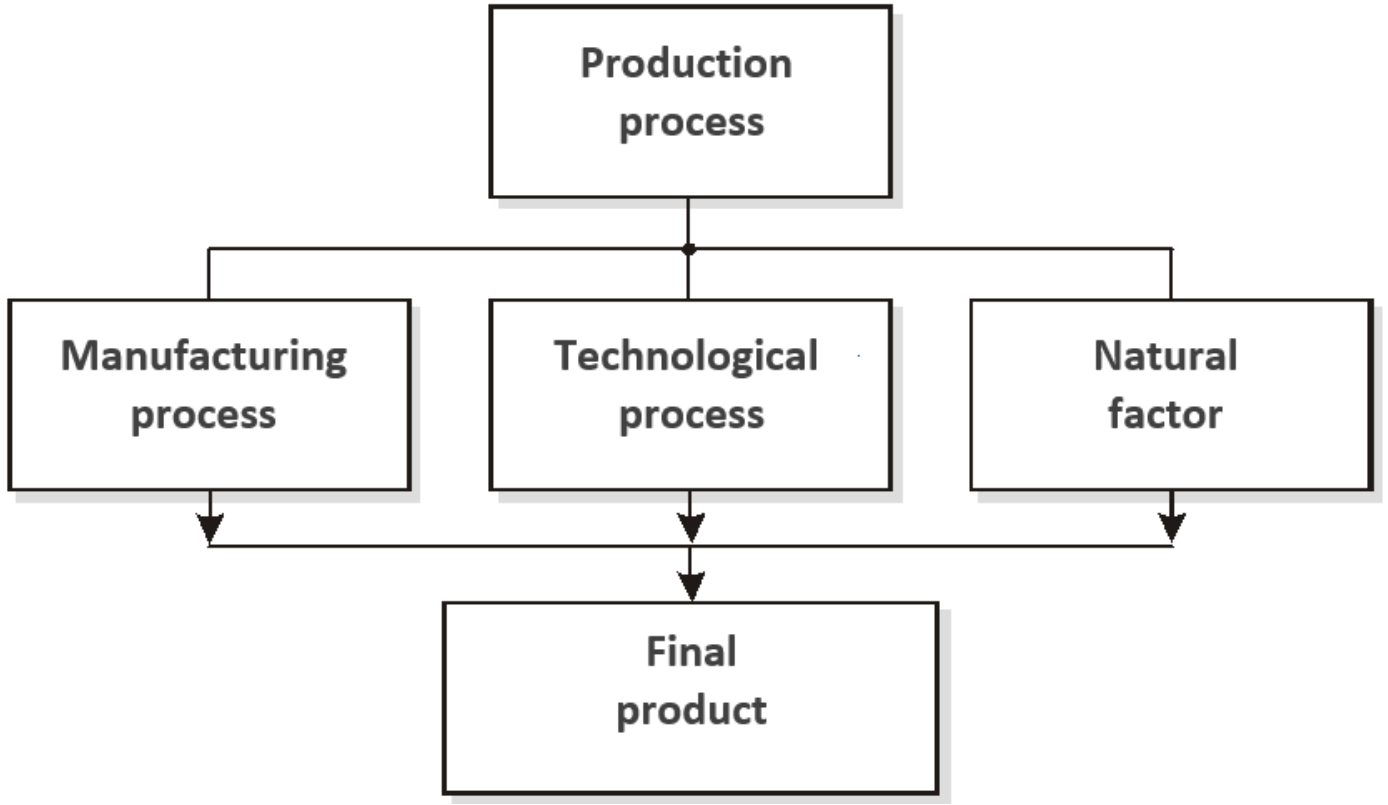
f) ***The risk of*** **production:** characteristic of the leguminous, rapeseed, etc. industries.

g) **High material and technical equipment**, as *a* rule, favorably affects the course of biological processes, but at the same time reduces the risk in agricultural production.

h) **The multi-production** of agricultural production is determined by the fact that several products are based on individual production processes, the collection and processing of which requires additional inputs.

Production process

- The composition of the production process in agriculture:



Source: Paska 2009

Basic terms of agriculture production

- **Production equipment**: a complex of work equipment that helps to obtain several specific products (e.g. housing, building, land, work machine, etc.).
- **The working process**: determined by the worker's relationship with the means of tangible fixed assets in the production of products.
- **The technological process:** a summary of the events in which qualitative and quantitative changes in input elements occur in the production process.

Production structure

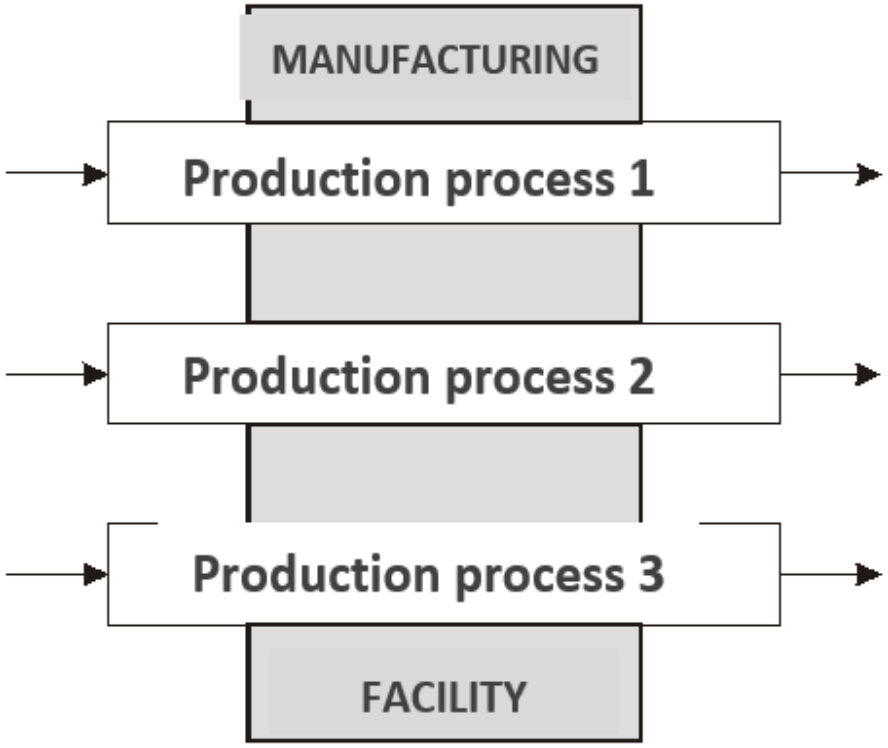
Production structure

- The organization of production processes in the agri-production depends on the nature of the industries and the relationship of the industries concerned to the production facilities.
- An important indicator of arrangement types is the routing and interconnection of inputs and outputs of production processes in the primary and secondary areas of agri processes.
- We distinguish the following ***types of arrangement of production processes****:*
  - **parallel arrangement**,
  - **serial arrangement** in **one** production facility,
  - **serial arrangement** of production processes in **several** production facilities,
  - **combined arrangement** of production processes (serial-parallel).

Production structure

1 Parallel arrangement of production

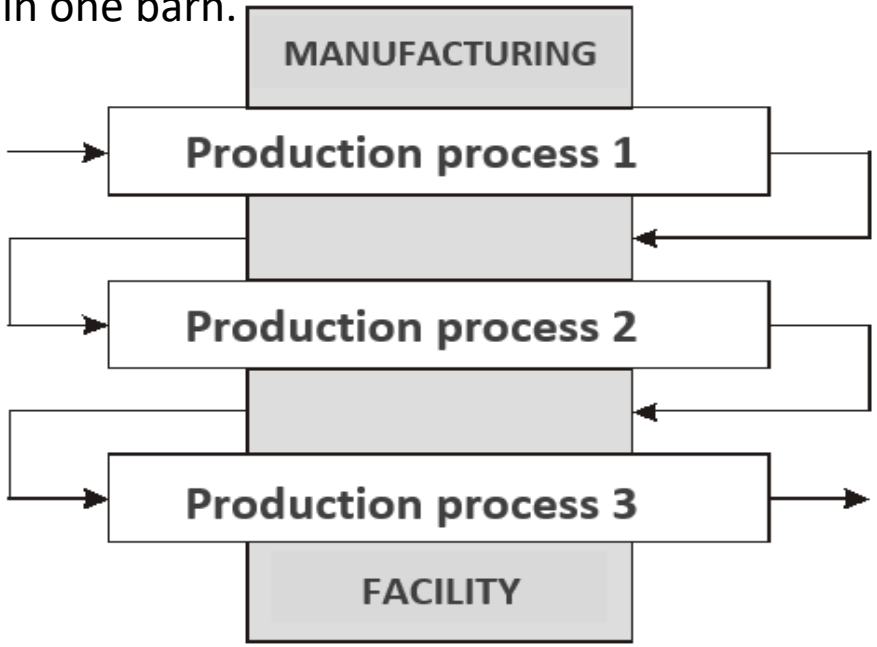
•Parallel arrangement of production processes (side by side) is typical of plant production processes. It is a way of arranging production processes independently of each other in one production facility (i.e. the soil).



Production structure

***2. Serial arrangement of production processes (consecutively) in one production** facility.*

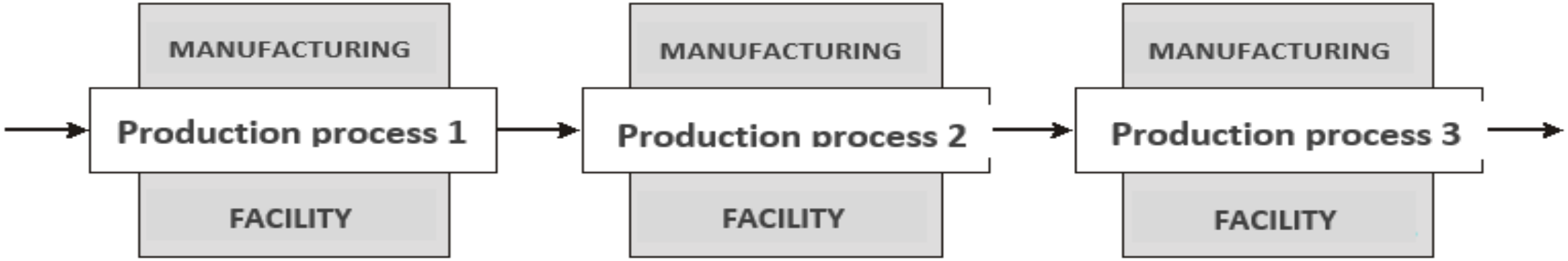
- The essence of this method of arrangement is that the output from one production process is an input into another production process.
- The output from the second production process is, in turn, an input into the third production process in the same production facility.
- This method of arrangement is typical of the production processes of **ordinary livestock** production on private farms or in one barn.



Production structure

3. **Serial arrangement of production processes in several production facilities**

The serial arrangement of production processes (consecutively) in several production facilities is typical for production processes of specialized livestock production (fish farming), which are carried out in large-scale production conditions of several housing facilities:

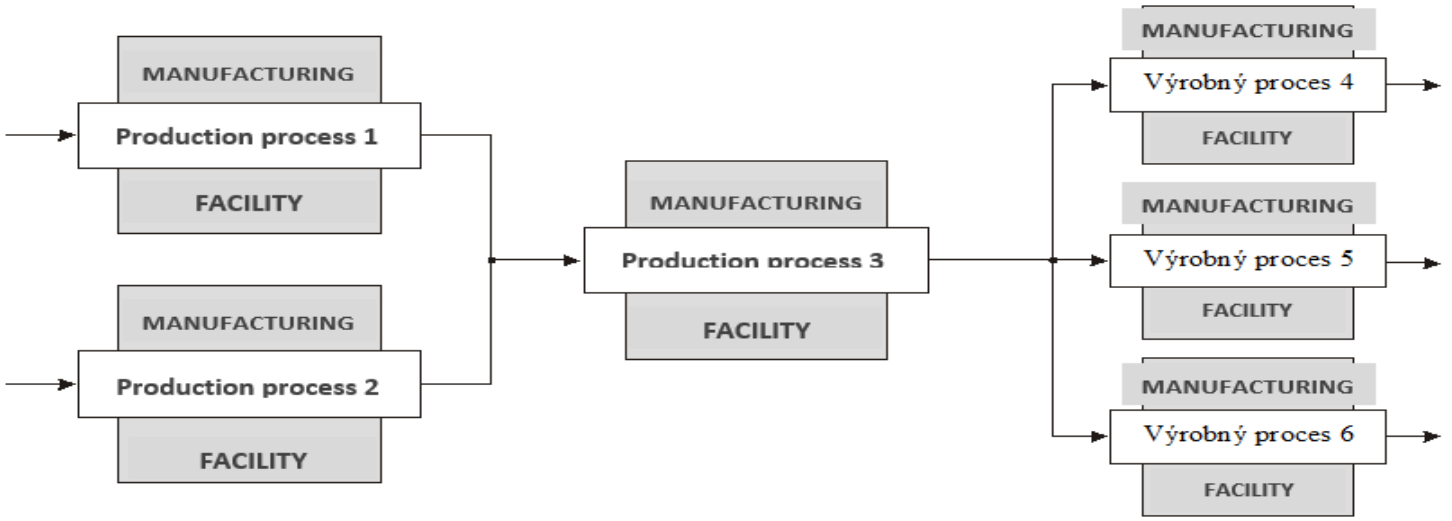


Production structure

4. Combined arrangement of production processes

The combined arrangement of production processes (serial-parallel) is one in which the initial production processes run side by side independently, but other production processes are serially followed.

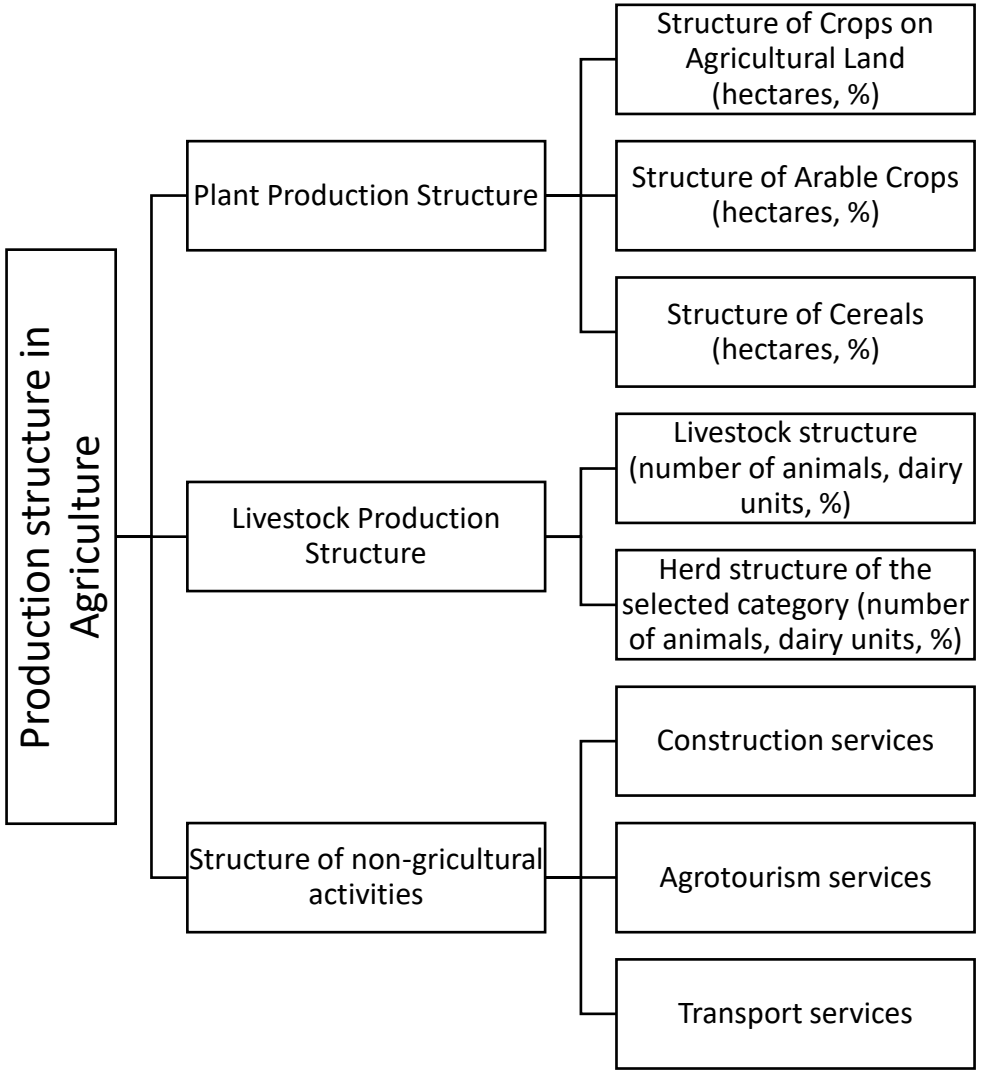
- e.g. the retention of **calves** from two calves and the subsequent transfer to one common fattening house, from where the animals are moved to three other cowsheds after a certain period of time.
- In the past, this type of arrangement of production processes was greatly used in the cooperation **grazing of heifers** between business units from lowland production areas and business units from the foothill and mountain production areas of Slovakia.
- The **aim** was to obtain healthy reproductive material also for the **low-land production conditions** of Slovak farms.



Production structure

- In general, the production structure is a system consisting of a rational representation of the industries and their elements and activities so as to make the necessary profit from a successful business.
- From the production perspective, the production structure represents a system of materially, timed and spatially arranged elements of production in sectors, especially in terms of optimal solution of tangible energy, value and other links in order to create the prerequisites for making a profit.

Composition of the production structure in the primary production agro-subsidy



Factors affecting Production structure

- The production and economic conditions of the entity,
- Results of marketing analyses,
- The level of capital endowment of the entity,
- Efficiency in the use of labor resources,
- Degree of concentration and specialization of production,
- The economic advantage of sectors in relation to a rational system of land management.

Basic Terms

- The participation of man in the production process: determined by involvement of the workforce in the production process. According to the connection, we distinguish:
  - **Work processes** in which worker directly acts on the input elements,
  - **Natural processes**, take place without the direct involvement of man. However, they are the basis of biological processes in agriculture,
  - **Automated processes** in which the transformation of a work object takes place only under the control function of a person. That is, without direct action.
- Technological processes are determined by quantitative and qualitative changes of input elements to the resulting products. If there is no change in input elements, so-called non-technological processes (e.g. material handling, quality control, etc.) take place.

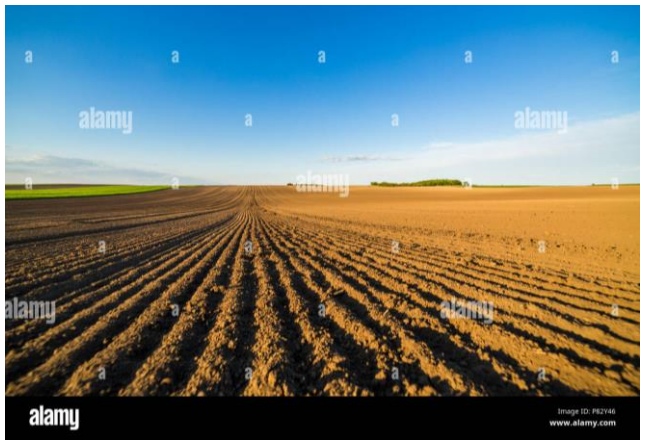
Forms of Production base

- **The production base is organized in <u>various forms</u> of agricultural production.**
- **The most common are:**
  - agricultural cooperatives,
  - public and public-benefit farms,
  - public limited-liability companies,
  - self-employed farmers,
  - commercial and public limited companies,
  - manufacturing and trading companies,
  - trading companies,
  - other forms of production organization.

Soil Management

Soil Management

- The **task of soil management** is the rational arrangement of individual plots or maneuvrators in a certain area, with the aim of making the most efficient use and strict respect for the given agrosystem.
- Agricultural land is both an **essential production condition** and a **production factor** (resource) in the creation of new utility values in the crop production sectors of each primary agri-business entity.
- On agricultural land, plant production processes are carried out, the results of which are mainly realized in addition to the boundaries of the agri-business entity and are also the basis for the economic prosperity of the crop production sectors.
- Soil and natural resources represent valuable resources of the earth, and it is a scarce resource, even if it is not the result of production. Since the amount of land is limited, it is desirable to cultivate even soil of lower quality and with a less advantageous location.
- Agro-enterprises that cultivate land in better conditions then benefit from those that farm in relatively poorer conditions.



Characteristics of the land fund

A **land fund** is land of a certain area of a legal or natural person or a certain territorial unit (district, republic, etc.).

- Economic use: the Land Fund is divided into: agricultural and non-agricultural land fund

The agricultural land fund (agricultural land) consists of:

- Arable land,
- permanent forest stands,
- Vineyard,
- Hops,
- Orchards,
- Gardens.

The non-agricultural land fund (non-agricultural land) consists of:

- Forest land,
- Ponds,
- Other bodies of water,
- Built-up areas,
- Other infertile areas.
- Crop rotation.

Crop rotation

- **Crop rotation** on arable land: the practice of alternating crops grown in a specific field in a *planned pattern or sequence* in successive crop years so that crops of the same species are not grown without interruption on the same field.
- In a rotation the crops are **normally changed annually**, but they can be changed also be multi-annual.
- **Monoculture:** when the same crop is grown continuously, the term can be used to describe the phenomenon.

- **it is commonly accepted to use a threshold of 5 years** to separate arable land from permanent crops or permanent grassland, although there is no limit to the number of crops that are used in a rotation, nor in the amount of time that a rotation takes to complete**.**
- This means that if a plot is used for the same crop for 5 years or more, without in the meantime removing the preceding crop and establishing a new one, then **this plot is not considered to be in crop rotation** and therefore is **not** to part of arable land.
- **Special cases of crop rotation:** There are crops that do not fit this pattern, and that are treated differently.
- For example, **hops** have been chosen to always be an arable crop, despite being **perennial** and often being renewed at intervals **beyond 5 years**, and **berries** are considered permanent crops despite being renewed sometimes annually.

Production stages in plant production

Production stages in plant production

The crop industries are among the **decisive factors** in solving the **nutritional problems** of the population, while limiting the further development of the livestock, processing and pharmaceutical industries. In addition, they ensure the performance of tasks of a reproductive and export nature.

The **key sectors** of plant and agricultural production are cereals, which are internationally classified as strategic sectors, especially in terms of nutrition, commerciality and economics.

From an **economic point of view**, the winter wheat production, sectors of spring barley and grain maize, are among the most stable within commonly grown arable crops in agro-business entities, except for extreme production conditions.

Characteristics of crop production processes

- 1. The **biological nature** of crop production,
- 2. Land as an **essential production factor** in agriculture,
- 3. The **time mismatch** between production and working hours,
- 4. **Dependence** of the processes and results of crop production processes on natural and climatic conditions,
- 5. **Seasonality** in the consumption and use of workers and means of tangible fixed assets,
- 6. Crop production is of a **flat nature**,
- 7. Production processes in plant production are arranged in parallel,
- 8. Multi-production nature of some crop production processes.

Characteristics of crop production processes

From a **sectoral point of view**, crop production processes is characterized by the following:

- Crop production is made up of sectors, divided into groups of sectors (cereals, fodgings, vegetables, etc.).
- Furthermore, groups of sectors form individual sectors such as winter wheat, spring barley, green maize and silage, etc.
- The management and organization of crop production shall be dependent on:
    - the **size** of the entrepreneurial agro-subsidy,
    - the **number of field** seeding procedures in the territory,
    - the **structure** of agricultural crops and the resulting part of the production structure of crop production,
    - forms of assignment of technical means within the production and organizational unit,
    - natural and economic conditions, as well as the ruggedness of the terrain.

Characteristics of crop production processes

From **Economic point of view:**

- Cereals are among the crops achieving the highest level of profitability.
- Cereals provide approximately 40% of the energy value in the diet of the population. Also, they are important because:
    - the bulk of cereal production is consumed for feeding livestock (approx. 70%),
    - cereal production in the range of 6-7 % is used in the food, malting, distillery and starch industry (this includes the production of seeds),
    - some cereals are used as dietetic foods with medicinal effects after treatment,
    - are important for crop rotation in the sowing process,
    - they are allocated to the crops with the lowest production factors,
    - provide a by-product (straw) that is partly used for feed targets or supplies organic matter to improve soil fertility or is used for energy production (e.g. in Austria);
    - it appears appropriate to produce pure ethanol from wheat as an additive to the fuel of tractors,
    - support for the economicization of the energy economy is envisaged in the perspective.

Cereal Production Process

Cereal Production Process and its organizational characteristics:

PHASE	PRE-PRODUCTION	PRE-MAKING	MAKING	POST-MAKING (FINISHED)
1	selection of the hone	autumn soil preparation	Finding	grain drying
2	selection of cultivated crop	spring soil preparation	mechanical treatment of stands	cleaning and sorting of grain
3	determination of cultivation technology	seed preparation	chemical treatment of plantations	dispatch and storage of grain
4			biological control	
5			harvesting of grain and straw	

Source: Paska 2009

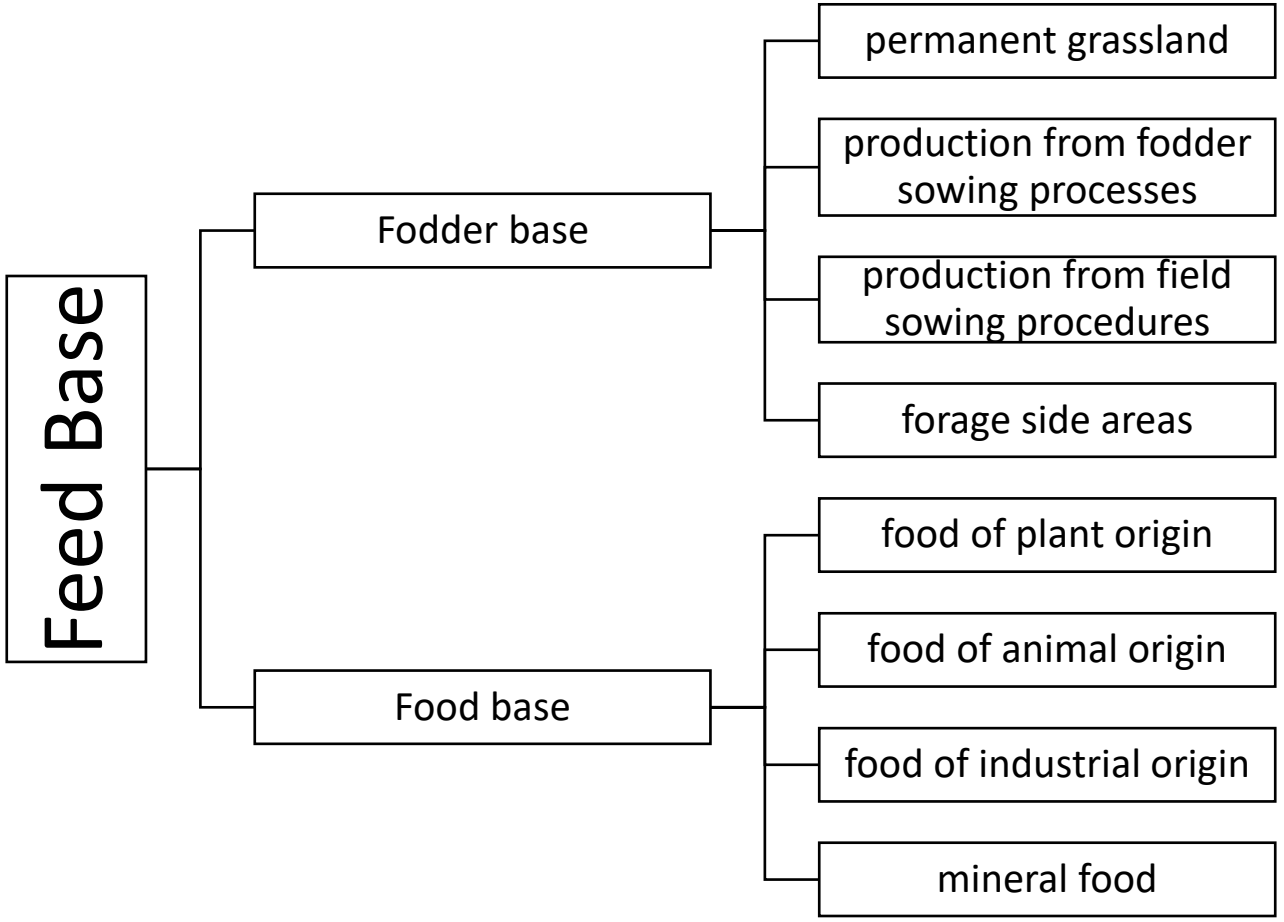
Feed base management

Feed: also called animal feed, food grown or developed for livestock and poultry.

• The **source** of feed production is the industry, which provides a feed product designed for nutritional purposes when feeding livestock.

• The **task of the management** of the feed base is to determine the species and extent of feed sources and to ensure their acquisition and use so that the requirements for full nutrition of livestock are met in a smooth and efficient way, taking into account the development of stocks, performance and production of other animal products.

Feed base Overview



Source: Paska 2009

Feed base Overview

1. Permanent grassland (permanent grassland and permanent pasture)

- In our soil-climatic conditions, it produces the necessary organic matter, used in particular for the feeding objectives of the 2000s.
- An area whose permanent grassland is used only in a pasture way, i.e. without obtaining at least one hay forage, is generally referred to as permanent pasture.
- Conversely, an area whose permanent grassland provides at least one mowing of hay material is referred to as a permanent meadow.
- The production of grassland and pasture constitutes an intermediate product for agricultural operators and is therefore not intended for market production and….
- Therefore, its turnover and/or yields are not allocated.
- The areas under permanent grassland and the use of their production represent a significant margin of feed base, which in our conditions is used below half its production potential.

Feed base Overview

3. Areas of feed sowing procedures

- They are typical of specialized and large-capacity production-organizational units of cattle or sheep farming.
- In feed sowing procedures, stewardess forageshould occupy at least two or more hons.

4. Forage areas in field sowing practices

- is typical of normal agricultural primary production operators.
- At the same time, in these units, they represent the second most important group of industries in the framework of the crop production structure.
- Forage in field sowing procedures consists mainly of:
    - multiannual fodgings (alfalfa, woodpeke red double-bevel ai.),
    - annual fodgings (green and silage maize and other annual fodgings),
    - feed seasonings (beet, potatoes, topinambur ai),'
    - feed catch crops (summer, dimming and winter mixers).

Feed base Overview

5. The sub-areas of forage shall

- are those which, in addition to the production of the main products, also provide a by-product usable for feed purposes.
- Such an area is e.g. the harvest area of cereals, which also provides a by-product - a feed straw and often with a sowing, suitable for feed purposes.
- Similar are the sugar beet harvesting buds, which provide leaf and other products, as well as the harvesting areas of some of the vegetables, feed beet, etc.

Management of Animal Production

Management of Production

Introduction

- At present, it is desirable, as in EU countries, to view animal production as a result of ecologically sound, economically viable and socially just production.
- Modern and prospective livestock sectors must be both environmentally friendly to humans and animals themselves, with a clearly defined attitude towards natural resources and their management.

Livestock production

- **Main Objective**: regularly ensure the necessary quantity and quality of products of animal origin with a high content of components of full-fledged nutrition of the population, with a strong view to increasing production efficiency and labor productivity.
- The **importance** of production processes in the livestock sectors **lies in particular**:
    - in the production of animal products and the nutritional function for the population,
    - provides raw materials for the processing industry,
    - contributes to the economic stabilization of primary production agri-entities,
    - main producer of organic fertilizers,
    - maintain a biologically equally balanced system of land management,
    - meet reproductive, breeding and commercial objectives.

Characteristics of Livestock production

1. *The **biological nature*** lies, as in the crop production, in the fact that the basic means of production is biological material - animals, which form one of the decisive parts of the results achieved.
2. *The **link to the crop production sectors is determined by the appropriate level of ensuring the feeding and nutrition*** **of livestock**. On the other hand, the livestock industries provide sufficient quantities of organic matter, which significantly affect soil fertility.
3. ***Continuity results from biological nature*** – i.e. the need for constant production. Production processes are carried out constantly and also without interruption, among other things, chicks must be born, which are further kept for the resulting product.

Characteristics of Livestock production

4. ***High concentration of factors of*** **production in a small area**. Livestock industries are not as blanket as crop production. Individual sectors can be placed on a small area where a high number of game can be concentrated. The determination of the optimal concentration of animals should be based on: marketing analyses, feed sources, in particular their own origin, traffic conditions, level of inputs and environmental impact.
5. ***Mass production*** is the result of higher concentrations of animals and the application of large-scale production technologies in the livestock sectors (e.g. milk, egg, meat production). At the same time, conditions are created for the application of a high degree of specialisation, the introduction of interchangeability, the achievement of high labour productivity and efficiency at lower unit costs.
6. ***The multi-production of animal*** **production processes makes it possible to obtain several by-products in addition to the main product**. For example, in dairy farming, in addition to milk production, calves and livestock manure are also obtained.

Characteristics of Livestock production processes

- ***Livestock are decisive factors (factors), acting as a means of long-term tangible assets and as input elements***. If farm animals provide the resulting product or activity and humans generally act on input elements (e.g. feed) in their unchanged form, then livestock, *unless they change their form*, act as assets.
- A person, by his activity (feeding, watering, cleaning, etc.), **acts as an input with assets**, livestock is transformed into a desirable product.
- ***The limited impact of*** **natural conditions on animals occurs by rational housing in the appropriate objects**. Some mediated impact on animals is caused by feed of plant origin, its quantity and quality.
- *The cyclicality and rhythm of production processes* depends on production technology. The production of individual products is repeated regularly and rhythmically. Cyclicality consists of:
    - work cycles that are short-lived and repeated by man two or more times a day,
    - technological cycles that are long-term and depend on the category of animals and the technology.

Greening in production management

Green management

There are 3 major terms used in connection with green management

- Corporate environmentalism
- Environmental management
- Corporate sustainability

Corporate environmentalism

- Corporate environmentalism revolves around the objective of reducing waste, which in turn contributes to the organization‘s ultimate goal of making money .
- However, it can be also defined as ….something much more broad and profound than financial returns derived from waste reduction.
- …The organization-wide recognition of the legitimacy and importance of
the biophysical environment in the formulation of organization str ategy, and the integration
of environmental issues into the strategic planning process.
- While this definition stresses the importance of environmental issues and the need to integrate these issues into the strategy of the organization, some factors critical to the practice of green management seem to be missing or need to be specified; factors such as continuous improvement, sustainability, and innovation.

Environmental management and Corporate Sustainability

- Both concepts seem to extend beyond simply reducing waste, and therefore more accurately embrace the ideal of green management than the description of corporate environmentalism.
- **Environmental management** focuses on continuous improvement and environmental management systems have been looked upon with much favour by large organizations, policy makers, consultants, and researchers as an effective approach for proactively dealing with environmental issues. However, some have defined environmental management simply in terms of economic profit.
- **Corporate sustainability** also stretches beyond waste reduction and requires continuous improvements to achieve its challenging objectives.
- In order for sustainability our economy must radically shift from a focus on growth to a steady-state economy, which requires that rates of consumption do not exceed rates of regeneration, rates of non-renewable resources do not exceed the rate at which sustainable renewable substitutes are developed, and the rates of pollution emissions do not exceed the assimilative capacity of the environment.
- Hawke (1993) applies an economic golden rule to define what it means to be sustainable when he advises everyone to —"***leave the world better than you found it, take no more than you need, try not to harm life or the environment, [and] make amends if you do***"

GREENING THE SUPPLY CHAIN

In building a child's crib, a manufacturer must focus on every step of the process—from the trees used, to transport, to ease of recycling.

ETHICAL SOURCING
Trees are tagged for tracing. Logging practices protect communities, air, water and wildlife habitat.

MANUFACTURING
Parts are milled to specifications that are safe for workers, consumers and the environment.

PACKAGING
Crib assembled and packaged in boxes made from post-consumer recycled materials.

TRANSPORT
Trucks use cleanest technology, reduce idling and travel the most direct route.

POINT OF SALE
Information for consumer includes place of origin and chemicals used in manufacture.

CUSTOMER USE
Crib is easily assembled. Packaging is curbside recyclable.

REUSE
Crib is not a disposable product, rather is passed on to family and friends.

END OF LIFE
No longer useful as a crib, recyclable parts are recycled.

Environmental management

The Concept of environment in Management

- Originally, the French concept of environment: environment; human environment or external living conditions.
- The combination of this concept and the concept of management creates environmental management/management, i.e. **management with emphasis on environmental protection**.
- Environmental management is one of the most effective tools for achieving the priority objective - minimising the negative impacts of production activity on individual environmental components - in the field of industrial (but also agricultural) production and services.
- A company seeking success on the foreign market is facing an increasing demand for certification of environmental quality of products, production and services.
- Quality of production, safety and hygiene of work and reduction of environmental burden are currently the three most important factors of interest of management, especially of industrial enterprises.

Environmental Profile of Enterprise

- The environmental profile of an enterprise is **defined by external criteria**, given by legislative and legal requirements (laws, regulations, etc.) that apply to the activities, products and services of the enterprise.
- **The internal** criteria determining the environmental profile shall include management systems, their staffing and accompanying documentation oriented towards environmental activities.
- The **undertaking's external and internal criteria** help an organisation with defined objectives of reducing or eliminating the environmental impact of a given environmental aspect to define short, medium and long-term environmental objectives and targets.
- **Environmental objectives and targets** need to be regularly reviewed and evaluated at the appropriate management level.

EMS – Environmental management System and Programme EMAS

EMAS monitors the continuous improvement of the environmental profile of the company ***through (EMAS objectives):***

- EMS destinations and applications in organization
- systematic, objective and regular evaluation of the effectiveness of the ESM,
- publication of information on its environmental profile,
- responsibilities of employees.

ISO 14001

- specifies the requirements for an environmental management system that an organization can use to enhance its environmental performance.
- it is intended for use by an organization seeking to manage its environmental responsibilities in a systematic manner that contributes to the environmental pillar of sustainability.
- it helps an organization achieve the intended outcomes of its environmental management system, which provide value for the environment, the organization itself and interested parties.
- Consistent with the organization's environmental policy, the intended outcomes of an environmental management system include:
  - · enhancement of environmental performance;
  - · fulfilment of compliance obligations;
  - · achievement of environmental objectives.

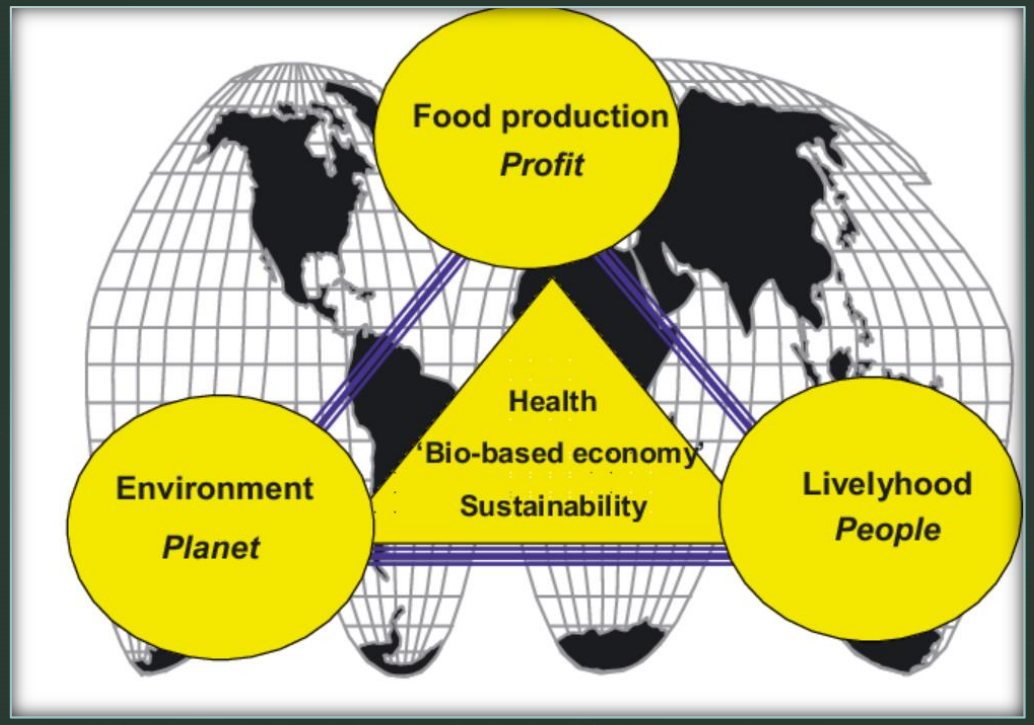
ISO 14001 can be divided into 5 sections:

- Environmental policy – establishes and communicates the position of the organisation in relation to the environment and energy consumption,
- Planning – identifies energy and environmental objectives and requirements, defines the activities and resources necessary for their implementation and simultaneous fulfilment of economic objectives,
- Implementation – describes procedures, programmes and responsibilities for key activities leading to the achievement of objectives,
- Control and remedial measures – regularly monitors and evaluates the effectiveness of the company's energy and environmental activities,
- Management evaluation – evaluation of the efficiency of the management system as a whole in terms of continuous improvement and achievement of business goals.

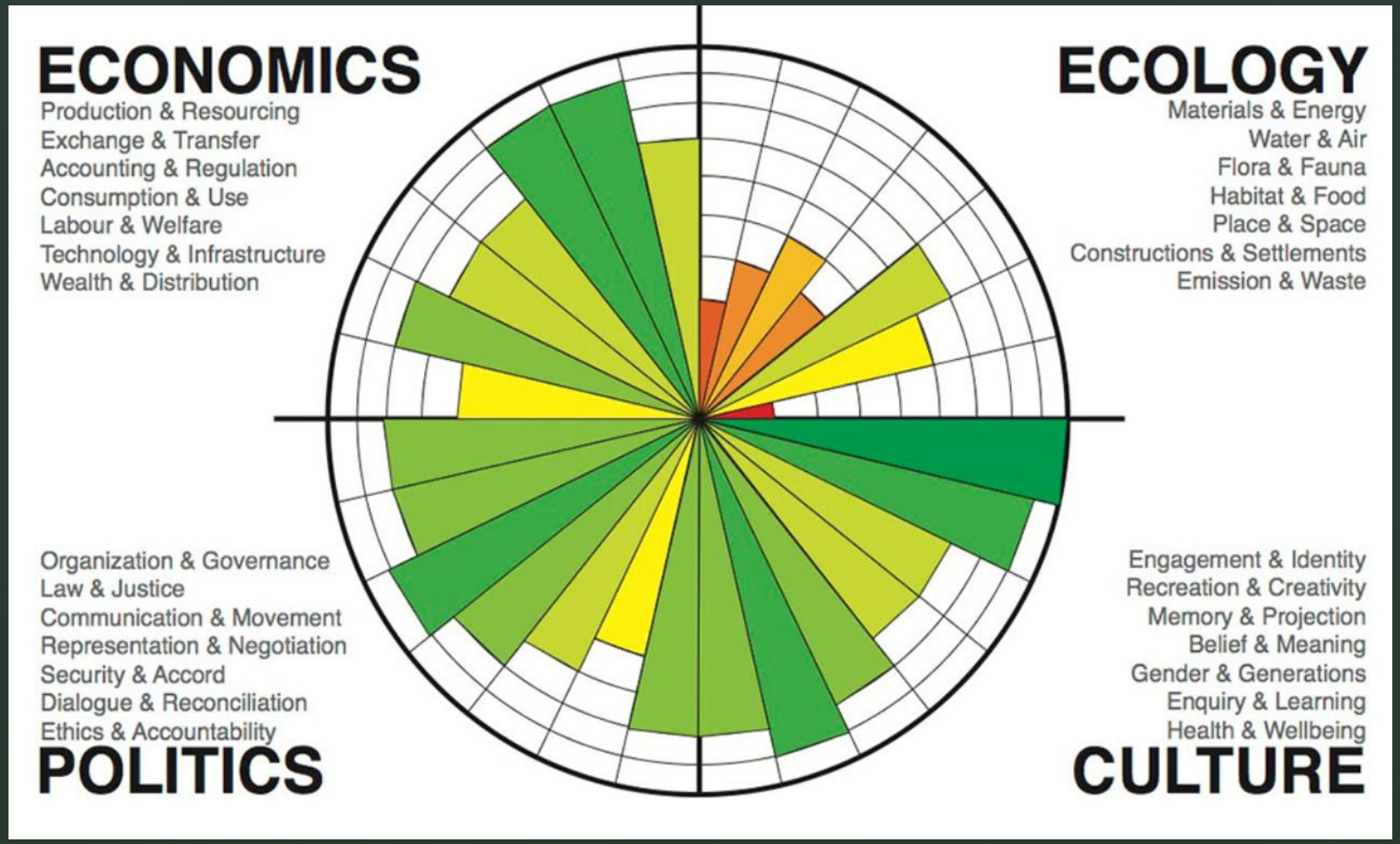
Sustainable agriculture

Sustainable agriculture

- Agriculture is currently facing fundamental changes.
- Farmers are not only expected to produce adequate agricultural products at affordable prices in order to meet the demand for food, feed or biofuels, but are also expected to do so in the face of ever-increasing production costs, increasing populations, dlingering reserves of natural resources and a changing climate.
- Moreover, agricultural production has occasionally had unintended effects, which have caused expectations of environmental protection or animal welfare to rise in society.
- The term alternative agriculture has increasingly been used, which has been transformed over time into the concept of sustainable agriculture.



Indicators of Sustainability



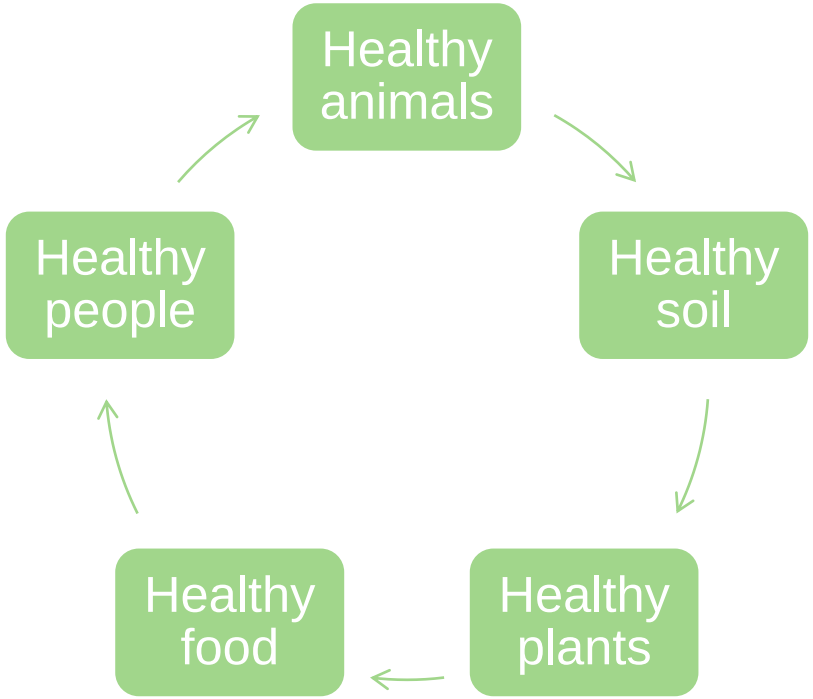
Organic Farming

Basic concepts and objectives of organic farming

Organic farming can be defined in a simplified way as a belief or philosophy of returning to nature.

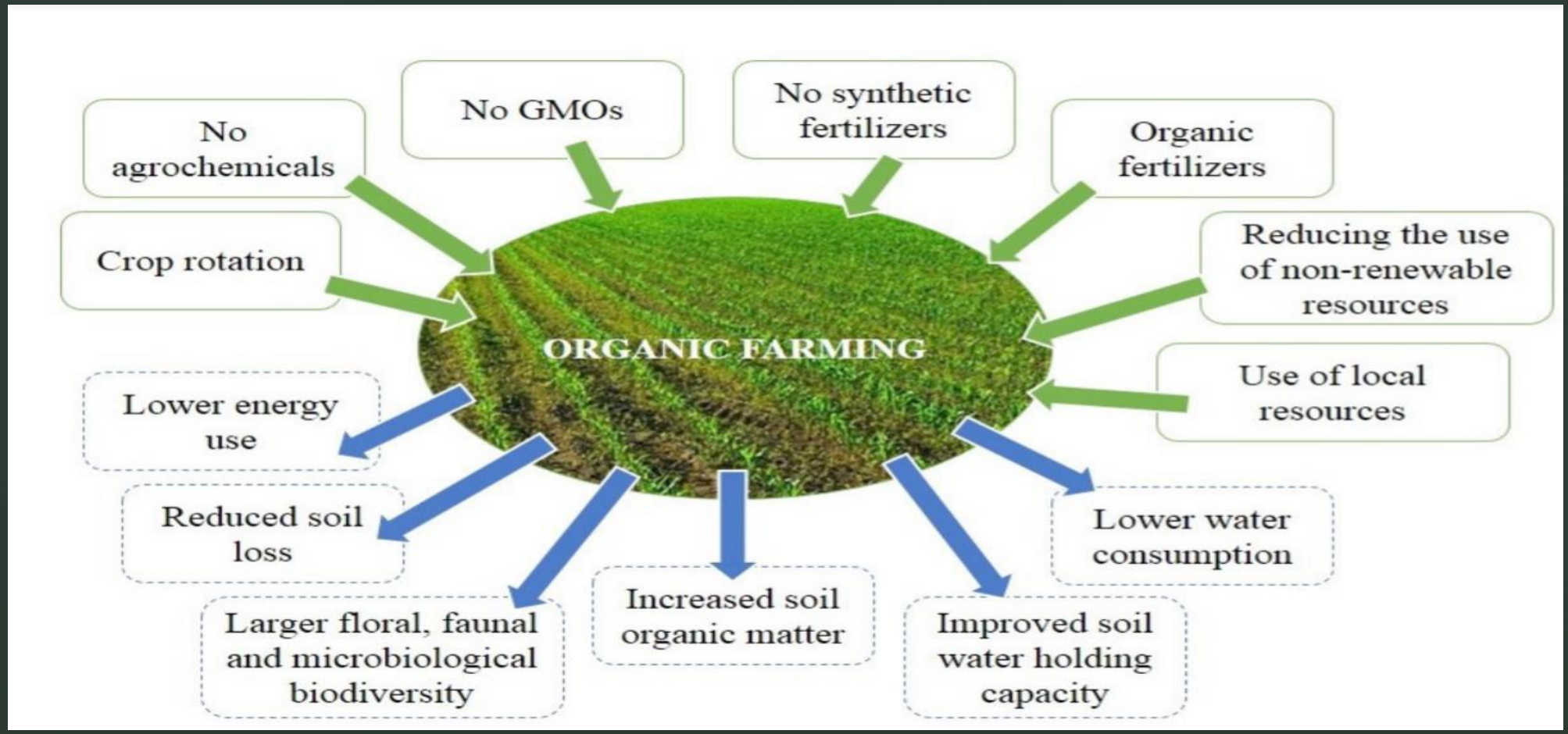
It is a balanced agri-system of a lasting nature, based primarily on local and renewable sources, using plant and livestock farming technologies that minimise environmental damage, thereby ensuring the production of quality and full-fledged food and ultimately taking into account future generations.

Organic farming cycle



Basic principles of organic farming

- Created by combining centuries of experience of our ancestors and the latest modern scientific knowledge.
- In general, it uses the country in a way that does not threaten it: it can cooperate with it, take the fruits of the earth, and in doing so, ensures favourable conditions for its other abilities and functions.
- ***In particular, organic farming does not bring foreign substances into the environment in the form of various chemicals.***
- ***It does not exert any pressure on nature, nor does it reshape it by force.***
- ***It also contributes to maintaining a balanced cultural landscape and creates the conditions for rural prosperity.***


No agrochemicals
No GMOs
No synthetic fertilizers
Organic fertilizers
Crop rotation
Reducing the use of non-renewable resources
ORGANIC FARMING
Use of local resources
Lower energy use
Reduced soil loss
Lower water consumption
Larger floral, faunal and microbiological biodiversity
Increased soil organic matter
Improved soil water holding capacity

Organic production

CONVENTIONAL SYSTEM	ORGANIC SYSTEM
Priority of quantity.	Quality priority.
The profitability of production is put before biological and ecological balance.	Biological and ecological balance is put before the economic requirement.
Production is highly specialized.	Production is multifaceted.
Unilateral crop rotation.	Varied crop rotation.
The use of inorganic, easily soluble fertilizers.	Use of organic, slowly soluble fertilizers.
Use of agrochemicals and growth regulators.	Trying to make the production system itself regulate the occurrence of harmful agents.

Positives and Negatives of Oranic Farming

POSITIVES	NEGATIVES
Production of healthier and better quality food.	Higher production labour and a high share of labour costs in total costs.
Prioritising the quality of organic food over quantity.	Complex ecological and economic ties increasing the demands on the organisation of work.
Ensuring control of production at all stages of production and processing.	High demands on professional skills of managers.
Managed use of natural resources and elimination of negative environmental impacts.	Variability of production results and higher riskiness of production.
Maintaining the natural fertility of the soil.	Legislative difficulty and increased control with the parties of state institutions.
Promoting the sustainable development of rural areas.	Sales ending failure.

Organic label

- As in the other EU member states, no food producer in Slovakia can arbitrarily use BIO or ECO labels.
- Only plant and animal products for which a certificate of organic origin has been issued may be designated as organic products.
- This indication is the placing of the logo on the product, which can only be used by producers who have complied with the requirements and have subsequently been granted a certificate.
- They must compulsorily place a unified logo on the products, which is a trade mark guaranteeing that the products have been inspected at every step from the manufacturer to the final consumer.

Thank you for your attention