

# Encyclopedia pratensis

## Glossary

### A

**Access to shade:** (a) The possibility, within an agro-ecosystem or on a farm, to provide a shaded area or shelter (natural: hedgerows, trees, vegetative cover, groves; or artificial: structures, tarps, buildings) that protects crops livestock, workers, or biodiversity from climatic constraints such as intense solar radiation, excessive heat, rain, or wind. (b) An ecosystem service delivered by “agro-ecological infrastructures” (habitats within agro-ecosystems where spontaneous vegetation or service-cover crops develop) and incorporated into sustainable intensification strategies, contributing to resilience, animal and human well-being, and agricultural productivity.

**Acidosis:** A pathologic condition of acid accumulation or depletion of base in the body. The two main types are respiratory acidosis and metabolic acidosis, due to metabolic acid build up. It is frequently met for ruminants when the diet lacks of roughage and cellulosis.

**Adaptation:** Process by which an agro-ecological system, a community, or an agricultural practice alters its structures, functions, or management approaches in order to cope with environmental, climatic, social, or economic disturbances and to regain or maintain its usual level of activity. In the context of agroecology, adaptation refers to the capacity of an agro-ecosystem (farm, watershed, territory) to adjust its biodiversity, soil health, the knowledge and practices of its actors to address constraints (climate change, market fluctuations, cultural issues) while preserving food sovereignty and the system resilience.

**Adapted breeds:** An animal breed whose genetic, phenotypic and behavioral characteristics are specifically adjusted to the pedoclimatic and sanitary constraints, as well as the limited resources, of a given environment, allowing production to be maintained with minimal inputs and low care requirements.

**Additional feeding:** Feed or food supplied to meet the nutrient requirement of organisms for maintenance and growth when initial diet is inadequate.

**Agricultural field area:** Total surface of the territory devoted to agricultural activity, encompassing the utilised agricultural soils (UAA/SAU): permanent pastures, alpine pastures, summer pastures, low-productivity grassland areas and fallow lands as defined by the Common Agricultural Policy. This area excludes waste lands and lands that are neither cultivated nor grazed and therefore are not part of the UAA/SAU. It represents the spatial measure of the agro-ecosystem at the level of the farm or of the agricultural watershed.



**Agricultural field layout:** (a) Spatial organization of fields and cultivated surfaces within an agricultural territory, including the distribution of crops, conservation zones (hedgerows, grass strips, natural meadows), agro-ecological infrastructures (agroforestry, agro-silvo-pastoralism) and soil-management elements (vegetative cover, rotations, crop sequences). (b) Functional arrangement of land intended to optimize ecosystem services (water retention, biodiversity, fertility) while meeting production demands, economic sustainability and social equity.

**Agricultural field size:** The area of a cultivated parcel, typically expressed in hectares or acres, that determines the spatial extent of an agricultural field. This dimension influences management practices (crop rotations, intercropping, associated crops), the implementation of agro-ecological infrastructures (hedgerows, grassy strips, agroforestry), and the field's capacity to contribute to ecosystem functions and biodiversity within an agro-ecosystem.

**Agricultural field use:** The set of practices, designs, and management approaches applied to cultivated areas or agricultural watersheds, aimed at producing agricultural goods (cereals, fruits, forages, etc.) while delivering ecosystem services (water retention, soil conservation, biodiversity, carbon sequestration). It encompasses cropping systems (crop rotations, inter-cropping, mixed cropping), vegetative covers (service strips, hedgerows, grassy margins), livestock production forms (agro-silvo-pastoralism, grazing), as well as agro-ecological infrastructures (agroforestry, natural pastures) that promote environmental resilience, economic viability, and social equity.

**Agritourism:** Form of tourism that involves making a working farm a travel destination for paying guests for educational and/or recreational purposes.

**Agroforestry:** The interplanting of crops and trees. In semiarid regions and on denuded hillsides, agroforestry helps control erosion and restores soil fertility, as well as supplying valuable food and commodities at the same time.

**Alfalfa:** Perennial forage legume, cultivated all over the world and producing protein rich forage, harvested as hay, haylage or for production of dehydrated pellets.

**Analysis:** Examination or determination.

**Animal breed:** A group of animals of the same species with similar appearance and closely related genetics. The affiliation of an animal to a breed may be accompanied by an entry in a herdbook.

**Animal behaviour and welfare:** The totality of an animal attitudes, reactions, and physiological states, encompassing its subjective experience of the environment, its ability to express natural behaviours, and its level of comfort, health, and satisfaction. This concept covers both the assessment of the animal affective experience



(consciousness, perception) and the consideration of its welfare within an agro-ecological farming system, where animal welfare, the wellbeing of the farmers, and environmental protection are regarded as interdependent.

**Animal control:** A comprehensive set of measures and practices designed to monitor, regulate, and manage animal populations within a livestock system or agricultural operation. It encompasses disease prevention and control (health management), reproductive management, feed optimization, monitoring of animal welfare and health, and the adjustment of stocking density or herd distribution so as to reconcile productive performance with animal welfare standards and environmental requirements.

**Animal diversity:** The set of genetic, taxonomic and functional variations of animals present in a given environment, encompassing species richness, population distribution, and their ecological interactions. In an agro-ecological context, it denotes the diversity of animal species (invertebrates, vertebrates, pollinators, predators, decomposers, etc.) that contribute to ecosystem services (pollination, pest regulation, nutrient cycling) and strengthen the resilience of production systems. Animal diversity therefore constitutes an essential component of biodiversity at the species, population and genetic levels.

**Animal health:** A conceptual framework that encompasses both animal diseases and their management. The issues related to animal health impact food security, agricultural economics, and the broader array of economic activities that stem from it. Additional concerns include public health (zoonoses, xenobiotics, antibiotic resistance), environmental, and animal welfare issues.

**Animal mixtures:** A set composed of two or more animal species, or animal-origin products, combined within a single unit of use or study. This notion applies, in particular, to:

- **Animal nutrition:** a blend of different animal-origin ingredients (e.g., fish meal, meat proteins, fats, etc.) intended to formulate balanced rations for livestock production.
- **Pasture management:** the association of several herbivore species (e.g., cattle, sheep, goats) grazing simultaneously in order to optimise use of the vegetative cover, reduce grazing pressure on specific plant species, and enhance the resilience of the agro-ecological system.
- **Research or conservation:** the combination of different animal species within the same experimental set-up or reintroduction programme to study interspecific interactions, community dynamics, or to restore missing ecological functions.

In all cases, animal mixtures aim to exploit the complementarities among their components to improve nutritional, ecological, or scientific performance.



**Animal products:** Agricultural goods derived from animal husbandry, encompassing foodstuffs and raw materials obtained from animals (meat, milk, eggs, cheese, honey, wool, leather, fur, etc.) as well as the associated by-products, used as food, raw material, or energy sources within an agro-ecosystem.

**Animal release:** Action consisting of releasing animals from an enclosure or farm so that they can graze, move freely, or access an outdoor environment, with the aim of respecting their natural feeding behavior and improving their welfare.

**Animal species:** A group of individuals belonging to the same species within the animal kingdom, characterized by shared morphological, physiological, and genetic traits. In an agroecological context, animal species can serve as providers of ecosystem services (pollination, biological control, organic-matter recycling) or, conversely, be perceived as pests when they damage crops or livestock.

**Animal welfare:** Physical and mental state of an animal in relation to the conditions in which it lives and dies.

**Antibiotic:** A chemical substance, produced by microorganisms and synthetically, that has the capacity to inhibit the growth of, and even to destroy, bacteria and other microorganisms.

**Aquatic habitats:** Natural or semi-natural environments characterized by the presence of water (fresh or brackish)—rivers, streams, ponds, marshes, peatlands, lagoons, etc.—that constitute an element of the “blue network” and deliver essential ecological functions (biodiversity, ecological connectivity, hydrological regulation) by providing living, breeding and feeding spaces for aquatic and semi-aquatic species.

**Arable area:** Extent of land, natural or artificially modified, that is suitable for plant production, where the depth, soil structure (arable horizons, compacted B horizons, and the absence of obstacles to the penetration of tillage implements) and climatic conditions permit the cultivation of annual or permanent crops. It generally corresponds to the utilised agricultural area (UAA) of a farm, encompassing both cultivated fields and soil horizons that are favorable to germination, root development, and harvest.

**Arable crops:** A plant or a group of plants grown on the utilised agricultural area (UAA) of a farm, i.e., on arable land (soils that are suitable for cropping). They are part of a crop sequence, contribute to crop rotation, and are managed through a cropping system: an ordered set of technical operations and agronomic decisions aimed at optimising yield, product qualities, sustainability and ecosystem services (for example, by using crop auxiliaries).

**Arable farming:** Growing crops as opposed to dairy farming, cattle farming, etc.



**Arable field:** A portion of agricultural land characterized by arable soil, designated for the production of a specific crop (species, variety, or species mixture). It represents an operational unit of generally limited duration (an agricultural campaign or cropping period) and is described through a cultural profile, which analyzes the soil horizons and climatic conditions that affect the development of crops and the living communities within the field.

**Arable field configuration:** In agronomy, the term designates the total set of spatial, morphological, and functional characteristics of a cultivable territory. It comprises:

- Field distribution and structuring (size, shape, orientation, continuity or fragmentation) resulting especially from processes of land consolidation or the merging of holdings.
- Arrangement of soil horizons, from the surface (seed-bed, mulch) down to the maximum or potential depth reachable by roots, including the upper and lower limits of the cultural profile.
- Organization of crops and agronomic practices (rotations, catch crops, cover crops) that are embedded within this spatial and soil framework.

This concept enables the evaluation of the conditions in which crops and the living communities of a field develop, as well as the possibilities for agroecological optimisation at the scale of an observation station or an agricultural watershed

**Arable land:** Land used for cultivation of temporary crops in rotation with fallow, meadows and pastures within cycles/rotations of up to five years.

**Arable land size:** Measurement of the area occupied by soils classified as “arable,” i.e., soils suitable for the cultivation of annual or biennial crops intended for agricultural production. It is normally expressed in units of surface (hectares, ares, square metres) and corresponds to the portion of territory that excludes permanent pastures, alpine meadows, fallow lands that are not grazed, and areas designated as “set-aside” or other non-cultivated uses, according to statistical classifications (e.g., Teruti). In an agronomic assessment, arable land size is used to estimate production potential, to plan crop rotations, and to analyse the impact of soil management practices (rest periods, ploughing, drainage, etc.).

**Area:** A period or geographic space bounded by a set of homogeneous characteristics (pedological, climatic, hydrological, morphological, or usage-related) that condition the ecological or agronomic processes occurring within it. In the agricultural domain, an area may refer to:

- A space where the cultural profile (soil horizons, root depth, mulch, seedbed) interacts with the climate of the cropping year;



- A wetland, defined by soil morphology and the prolonged presence of water (with or without hygrophilous vegetation);
- A region (e.g., mountain zones, arid Mediterranean areas, forest covers) where pedoclimatic conditions (relief, water scarcity, solar exposure, soil depth and fertility) influence agro-silvo-pastoral systems.

**Area size:** Measure of the surface occupied by a geographic, ecological, or administrative entity, expressed in units of area (m<sup>2</sup>, ha, km<sup>2</sup>, etc.). It represents the total extent of a defined space, irrespective of its nature (land, water, habitat, protected zone, etc.).

**Area width:** Horizontal dimension measured perpendicular to the main axis of a zone (e.g., a wetland, a cultural profile, an agro-silvo-pastoral area), expressing the lateral extent or physical width of that zone on the ground. It is determined from pedological, hydrological, or morphological reference points and is used to characterize the spatial extent of the studied environments.

**Autumn:** The season that follows summer and precedes winter, characterized in the temperate Northern Hemisphere by a gradual decline in temperature, the shedding of leaves from deciduous trees, and often increased precipitation. In regions with a Mediterranean climate, autumn may be relatively wet compared to the drier winter, and it contributes to a less pronounced Mediterranean character when it alternates with spring.

**Autumn grazing:** A livestock-raising practice that involves allowing cattle, sheep, or other herd animals to feed on pastures during the autumn season, typically as part of a rotational grazing system in agroecology. The practice aims to make use of the residual summer plant growth, maintain pasture health and biodiversity, reduce the need for purchased forages, and increase the self-sufficiency of farms.

**Autumn sowing:** An agricultural practice that involves sowing the seeds of annual or perennial crops during the autumn period, typically after the first frost or as soon as night temperatures become sufficiently cool to allow good germination. This method takes advantage of autumnal climate conditions (adequate moisture and moderate temperatures) to promote early germination, strong root development before winter, and a head start on growth in the spring, thereby reducing the need for irrigation and other inputs. Autumn sowing is commonly used for cereals (wheat, barley), legumes, green manures, as well as certain cover and forage crops, and it often forms part of agro-ecological systems aimed at increasing farm self-sufficiency and optimizing the use of natural resources.

**Average field size:** Statistical measure of the average area of agricultural or land fields within a given territory, obtained by dividing the total cultivated (or total exploitable) land area by the number of fields considered. This information is used to characterize



landscape fragmentation, assess the intensity of agricultural exploitation, and guide soil-management, urbanisation, or resource-conservation policies.

**Avian habitat features:** The ensemble of physical, biological and landscape attributes of a space (linear, areal or point-based) that determine the presence, distribution, behaviour and reproductive success of birds. It encompasses in particular:

- the structure and composition of vegetation (hedgerows, tree rows, copses, flood-prone meadows, wetlands, etc.),
- the availability of food resources (insects, seeds, fruits),
- the presence of nesting or resting sites (isolated trees, low walls, embankments, ponds),
- the configuration of relief and edge features (field margins, banks, ditches), the interaction with agroecological infrastructures (unharvested vegetative cover, semi-natural habitats) that provide biodiversity reservoirs and ecosystem services favourable to bird populations.

## B

**Balanced diet:** In agroecology, a set of foodstuffs (for humans or livestock) that are measured and combined in calculated proportions so as to meet all nutritional requirements (energy, protein, vitamins, minerals) while respecting the economic, environmental, and social constraints of the production system. Its aim is to optimise the health and performance of the organisms being fed while promoting the sustainability and resilience of the agro-ecosystem.

**Bare ground:** Exposed soil lacking any vegetative cover or surface organic residues. This soil type is characterized by the absence of plants, which makes it especially susceptible to erosion, loss of organic matter, and fluctuations in moisture levels. In an agronomic context, “bare ground” often results from sub-soil disturbance (deep tillage) or from inadequate nutrient management (e.g., excess nitrates). It requires conservation practices—such as establishing vegetative cover, applying soil amendments, and managing infiltration—to restore soil structure and prevent degradation.

**Bare soil:** Soil surface devoid of any vegetative cover, organic residue, or mulch, directly exposed to atmospheric agents. This condition promotes erosion, moisture loss, degradation of soil structure and organic matter, as well as a reduction in biodiversity and the associated ecosystem services.

**Barn:** A general name for a farm building used for housing livestock, storing machinery or crops, etc.



**Barn features:** The complete set of characteristics, components, and functional attributes of a barn, encompassing its architecture (shape, dimensions, construction materials), its internal layout (storage areas, livestock enclosures, feeding zones, ventilation and lighting installations, manure-management systems), and the associated equipment (doors, ramps, hatches, heating or cooling systems) that determine its purpose, efficiency, and suitability to agricultural requirements.

**Bio:** A generic term designating anything that pertains to the living world and biology. It applies to all organisms, to biological processes (molecular, cellular, physiological, ecological), to biodiversity, to agro-ecological practices that aim to promote biological diversity, to the bio-economy that exploits bio-resources in a sustainable manner, as well as to biosurveillance methods used to monitor environmental quality. In everyday usage, “bio” qualifies products, services or systems that originate from agriculture or industry while adhering to principles of sustainability, ecosystem preservation, and human health.

**Biodiversity:** The variety of all native living organisms and their various forms and interrelationships.

**Biodiversity area:** A delineated space, natural or managed, within a landscape (particularly agricultural), intended to conserve, promote, and enable the coexistence of the diversity of living organisms (genes, species, populations) and their ecological interactions. It may arise from spontaneous colonisation (associated biodiversity) or from explicit planning (planned biodiversity) and includes semi-natural habitats, ecological corridors, and cultivated plots where ecosystem services (pollination, pest control, soil fertility, etc.) are maintained.

**Biodiversity conservation:** Planned management (i.e. preservation, maintenance, sustainable use, recovery, enhancement) of a natural resource or of a particular ecosystem to halt, reverse or slow-down the loss of biodiversity from impacts of exploitation, pollution etc. to ensure the future usability of the resource, resilience of communities, and ecosystem integrity.

**Biological control:** The use of biological agents (e.g. insects, micro-organisms and/or microbial metabolites) for the control of mites, pests, plant pathogens and spoilage organisms.

**Biological regulation:** A set of mechanisms, processes and practices that mobilise living organisms (individuals, populations or communities) at all levels of biological organisation (molecular, cellular, physiological, tissue, morphological and ecological) in order to control, stabilise or modify the functions of a milieu or an ecosystem. The notion notably includes biosurveillance (monitoring environmental quality through biological indicators), environmental-management strategies that respect biological trade-offs and consume few natural resources, as well as self-regulation processes within communities



(autoecology, biocoenosis, synecology) that can lead to the creation of, or transition toward, new ecosystem states (neo-ecosystems) after an ecological threshold has been crossed.

**Bird:** Any of the warm-blooded vertebrates which make up the class Aves.

**Bird conservation:** A set of actions and strategies aimed at protecting bird species and their natural habitats, with the goal of maintaining or restoring their populations, preserving biodiversity, and ensuring the ecosystem services they provide (such as pollination, biological pest control, regulation of nutrient cycles, etc.) in both agricultural and natural settings.

**Bird shelters:** Structures or installations (nesting sites, perches, shelters, nest boxes, hedgerows, grassy strips, ditches, stone piles, etc.) placed or maintained in agricultural or natural landscapes in order to provide birds with refuge, nesting, resting sites and protection from predators and inclement weather. These shelters contribute to biodiversity, promote ecosystem services (pest control, pollination) and are part of agro-ecological practices that aim to create habitats complementary to permanent vegetative cover.

**Bloat:** This is a condition in which the abdomen feels full and tight because of swelling of the abdomen, usually due to an increased amount of intestinal/ruminal gas, but occurs sometimes when fluid, substances or mass are accumulating or expanding in the abdomen.

**Blooming vegetation:** The assemblage of plants in a given environment (grassland, herbaceous strip, agro-ecosystem, etc.) that are at the flowering stage, i.e., bearing flowers. This phenological phase marks the period of sexual reproduction for the species, ensures the availability of resources (nectar, pollen) for crop auxiliaries and pollinators, and serves as an indicator of ecological health, biodiversity, and the functional integrity of natural or agricultural habitats.

**Buffer zone:** A strip of land, typically grassed and/or edged with a hedge, sited along the margin of a watercourse or wetland to curb pollutant inputs, reduce soil erosion, and safeguard aquatic biodiversity. Within the framework of the Common Agricultural Policy (CAP), it constitutes an Ecological Focus Area (EFA) and is subject to specific requirements: a minimum width of 5 m, establishment in spring, prohibition of an exclusively Fabaceae composition, prohibition of ploughing and fertilizer application, and maintenance by mowing (not to be used as forage, except by derogation).

**Building:** Something built with a roof and walls, such as a house or factory.



## C

**Calf rearing:** An animal-husbandry practice that involves feeding, growing, and managing young bovines (calves) from birth until weaning or placement on pasture, usually within extensive or semi-extensive systems that aim to limit inputs, preserve soil health, and ensure animal welfare while enhancing ecosystem services and the plant diversity of pastures.

**Calf welfare and health:** The whole physical, physiological, behavioral, and environmental conditions that ensure calves achieve an optimal state of balance, encompassing comfort, the fulfillment of their nutritional, social, and natural expression needs, as well as the prevention, detection (screening), and treatment of diseases. This concept is embedded in an agroecological “One Health” approach, in which animal welfare, soil health, and the environment are interdependent and aim to guarantee sustainable, life-respecting production.

**Catch crop:** An intermediate, often short-duration crop sown or planted between the harvest of a main crop and the sowing of the subsequent crop, during the so-called interculture period. It is used primarily to temporarily exploit the agricultural surface, to protect the soil, to improve fertility, or to diversify the crop rotation.

**Cattle:** Domesticated bovine animals, including cows, steers and bulls, raised and bred on a ranch or farm.

**Cheese:** Cheese is the ripened or unripened soft, semi-hard, hard, or extra-hard product, which may be coated, and in which the whey protein/casein ratio does not exceed that of milk, obtained by coagulating wholly or partly the protein of milk, skimmed milk, partly skimmed milk, cream, whey cream or buttermilk, or any combination of these materials, through the action of rennet or other suitable coagulating agents, and by partially draining the whey resulting from the coagulation.

**Chemical:** Any substance used in or resulting from a reaction involving changes to atoms or molecules.

**Chemical fertiliser:** Fertilizer manufactured from chemicals. It mainly includes nitrogen, phosphorus and potassium fertilisers; excessive use of them can cause pollution, when all the chemicals are not taken up by the plants and the excess is leached out of the soil into rivers and may cause algal bloom.

**Climate:** The average weather condition in a region of the world. Many aspects of the Earth's geography affect the climate. Equatorial, or low, latitudes are hotter than the polar latitudes because of the angle at which the rays of sunlight arrive at the Earth's surface. The difference in temperature at the equator and at the poles has an influence on the global circulation of huge masses of air. Cool air at the poles sinks and spreads along the



surface of the Earth towards the equator. Cool air forces its way under the lower density warmer air in the lower regions, pushing the lighter air up and toward the poles, where it will cool and descend.

**Climate condition:** The set of atmospheric characteristics (temperature, precipitation, humidity, sunshine, wind, etc.) that describe the state of the climate of a specific location and time period, and that determine the suitability of the land for agricultural activities (e.g., availability of working days, crop growth, pedoclimatic constraints).

**Climate stress:** Pressure exerted on living organisms, crops, soils, or ecosystems resulting from abnormal or extreme climatic variations (elevated or low temperatures, irregular precipitation, drought, flooding, etc.). This phenomenon, intensified by climate change, disrupts the pedoclimate, alters soil micro-climates, and creates hydraulic, thermal, or oxidative constraints that impair biological performance, reduce agricultural productivity, and undermine the stability of ecosystem services.

**Clover:** A very large family of legumes, annual or perennial, some species of which are used as a source of fodder and for sowing grassland.

**CMR:** A chemical substance classified as “carcinogenic, mutagenic or reproductive toxicant,” meaning that, under European legislation (CLP regulation, REACH), it exhibits at least one of the following three properties: the ability to cause cancer, to induce genetic mutations, or to impair fertility and the development of the organism. These substances are subject to strict restrictions in agriculture because of their risks to human health, biodiversity, and their environmental persistence.

**Co-grazing:** A livestock-management practice that involves grazing multiple animal species (e.g., cattle, sheep, goats, horses, or even wildlife) together on the same pasture. The goal is to optimise the use of plant resources, enhance pasture biodiversity, and strengthen ecosystem services such as soil fertility, parasite control, and overall resilience.

This approach aligns with the principles of agro-ecology and rotational grazing, fostering the co-production of agricultural products and environmental services.

**Colostrum management:** The set of practices intended to ensure the collection, storage, preservation, and administration of colostrum (the first milk, rich in immunoglobulins, growth factors, and nutrients) to newborns, with the goal of optimizing passive immunity transfer, survival, and the health of young animals.

**Colostrum quality:** Refers to the overall physicochemical and biological characteristics of colostrum—the first milk secreted by mammals after parturition—that determine its ability to provide optimal immune protection and nutritional support to neonates. This quality is typically assessed by the concentration of immunoglobulins (especially IgG),



total protein content, levels of growth factors, vitamins, minerals, and energy sources (fat and lactose), as well as by practical measurements such as Brix value or density.

High colostrum quality indicates a strong capacity to transfer maternal antibodies, promote intestinal development, and support the growth of the young animal.

**Competition:** a) active demand by two or more organisms for a material or condition, so that both are inhibited by the demand, e.g. plants competing for light and water; b) active demand by two or more substances for the same binding site on an enzyme or receptor. alt. competitive binding.

**Complementarity:** In agroecology, complementarity refers to the property whereby different elements (plant species, hedge strata, forage resources, scientific approaches, etc.) combine in such a way that they cover distinct functions or periods in time and space, so that their interaction generates productivity, resilience, and ecosystem services that exceed the sum of their individual contributions.

**Complementary activities:** A set of actions or practices carried out alongside a primary activity (e.g., agricultural production) in order to exploit local resources, link diverse potentials, and incorporate exogenous products or techniques. It seeks to enhance the autonomy, resilience, and sustainability of the system by addressing environmental, social, or economic constraints.

**Concentrate:** Feed that supplements fodder, with a high content of at least one nutrient: energy (UFL), protein (PDI and MAT), minerals.

**Connectivity:** In agroecology, the degree of spatial and functional interconnection among the various habitats, crops, agro-ecological infrastructures, and surrounding environments of an agroecosystem, enabling the movement and exchange of organisms, genes, pollinators, nutrients, energy, and other ecological flows, as well as the continuity of associated socio-economic processes.

**Conservation:** A set of practices and measures aimed at preserving, protecting, and maintaining biological resources, habitats, and biodiversity in order to ensure their long-term viability and ecological functions. In the agro-ecological context, conservation specifically refers to the management of environments and auxiliary species (for example, through composite hedgerows or “resource” habitats) to promote biological pest control by conserving crops and to support ecological corridors within the green-blue infrastructure.

**Consumer:** A consumer is a person or a group who intends to order, or use purchased goods, products, or services primarily for personal, social, family, household and similar needs, who is not directly related to entrepreneurial or business activities. The term most commonly refers to a person who purchases goods and services for personal use.



**Continuous linear structure:** A spatially uninterrupted, elongated element within a landscape—such as hedgerows, riparian corridors, field margins, or ecological pathways—that retains a consistent configuration over time and fulfills multiple functions: linking agricultural production with environmental conservation, providing habitat connectivity, supporting biodiversity, and shaping the morphodynamic and habitability characteristics of the surrounding ecosystem. Its persistence is assessed in terms of structural durability, functional longevity, and its contribution to the long-term organization and dynamics of land-use and natural processes.

**Control:** The action or power to direct, regulate, or limit the behaviour, development, or functioning of an organism, process, or system. In agriculture and agroecology, the term refers to the set of practices, techniques, or measures implemented to manage populations of organisms (pests, diseases, unwanted species), inputs (water, nutrients, energy), or processes (crop growth, soil quality) in order to achieve production, sustainability, or environmental protection objectives. Control can be mechanical, biological, chemical, cultural, or integrated.

**Control of invasive species:** The set of practices and interventions aimed at limiting, eradicating, or containing the spread of non-native or exotic species that become established unchecked in an environment, to the detriment of local species, biodiversity, and ecological functions. It relies in particular on biocontrol methods (use of natural enemies), habitat management (creation or restoration of agro-ecological infrastructures such as service plants), regulation of human activities (monitoring, restrictions on introductions), and ecological monitoring (assessment of impacts on agricultural yields and ecosystem services).

**Cost:** In economics, the value of the factors of production used by a firm in producing or distributing goods and services or engaging in both activities.

**Creek:** A narrow inlet or bay, especially of the sea.

**Crop rotation:** An agricultural technique in which, season after season, each field is sown with crop plants in a regular rotation, each crop being repeated at intervals of several years. Crop rotation minimizes the risks of depleting the soil of particular nutrients and avoids pest proliferation.

**Cross-breeding:** Mating between members of different populations (lines, breeds, races or species).

**Crude protein:** Complex, organic compound made up of amino acids that contain carbon, oxygen, nitrogen, hydrogen and sometimes phosphorus and sulphur.

**Cubicle:** A division or compartment for an animal or animals, usually within a building.



**Cultivated field shape:** Spatial configuration of cultivated fields or surfaces, characterized by their size, shape (rectangular, elongated, irregular, etc.) and arrangement. It results from agricultural land-use planning (land consolidation, property aggregation, pedological and topographic constraints) and influences cropping practices as well as agro-ecosystem functions.

**Cutting date:** Dates during which harvest of the crop actually occurs - combining, picking, cutting, pulling, and so on.

## D

**Decision Support System (DSS):** An information-technology or methodological tool that collects, organizes, analyzes, and presents data in order to assist users—especially farmers, land managers, or policy-makers—in making well-informed decisions. DSSs typically incorporate simulation models, knowledge bases, optimization techniques, and interactive interfaces to explore alternative scenarios and evaluate their economic, environmental, and social impacts.

**Diagnosis:** Identification of the nature and cause of a problem or a disease.

**Dicots:** A plant with two cotyledons. One of the two major classes of flowering plants (along with the monocotyledons). Examples include many crop plants (potato, pea, beans), ornamentals (rose, ivy) and timber trees (oak, beech, lime).

**Diet composition:** The set of elements (feedstuffs, ingredients, additives, and nutrients) that are combined according to a rational calculation to form a ration—that is, the precise blend of commodities intended to satisfy the nutritional requirements of a livestock animal or a human population.

**Digestion:** Digestion is the process of mechanically and enzymatically breaking down food into substances for absorption into the bloodstream.

**Diploid:** An organism or cell whose chromosome number comprises two complete sets (2n), i.e., two copies of each chromosome of a species. In teosinte, the diploid number is  $2n = 20$ , the same as in maize, whereas tetraploid forms possess four sets ( $2n = 40$ ).

**Direct seeding:** An agricultural technique that involves planting a crop directly into plant cover without first tilling the soil. There are two types: one where the cover is destroyed and its biomass is left on the soil surface, and one where the cover is kept alive.

**Direct selling:** A marketing model in which products or services are sold directly to consumers, bypassing traditional distribution channels (stores, supermarkets, etc.). Sales are typically carried out through independent representatives, home demonstrations, group meetings, catalogs, or online platforms, without a permanent commercial intermediary. This system relies on the personal relationship between seller



and buyer, allowing for a customized offering, direct promotion, and often commissions or compensation based on sales achieved.

**Directive 92:** European Directive of 21 May 1992 (92/43/EEC), commonly referred to as the “Habitats Directive”. It is a legislative act of the European Union that creates a general legal framework for the protection of biodiversity, natural habitats, and wild species within the Member States. The directive mandates, in particular:

- the establishment of an ecological network (Natura 2000) comprising sites of Community interest for the conservation of threatened habitats and species;
- the prohibition of killing, capturing, or intentionally disturbing
- non-game species—or any species outside authorized periods and locations;
- the obligation for the contracting states to harmonise their national legislation, including customary rights, with the requirements of the directive;
- the implementation of monitoring, control, and certification measures to ensure compliance with environmental requirements throughout the production chain, from processing to marketing.

In sum, Directive 92 constitutes the European Union’s legal cornerstone for the protection of habitats and wildlife, supporting agro-ecological policies, sustainable natural-resource management, and the prevention of the spread of harmful organisms.

**Drinking:** The action of consuming liquids, usually water or other beverages, by ingesting them through the mouth.

**Dung:** Excrement from the intestines, containing unabsorbed solids, waste products, secretions, and bacteria of the digestive system.

**Dung and urine removal:** A set of practices and techniques aimed at removing, transporting, treating, or valorising animal excreta (manure, slurry, and urine) from livestock areas in order to prevent environmental contamination, reduce health risks, and promote the reuse of these organic inputs (composting, fertilisation, etc.) within a framework of sustainable resource management and bio-security.

## E

**Ecosystem:** A dynamic assemblage of abiotic components (soil, climate, water, nutrients) and biotic components (plant, animal, and microbial species) that interact with one another and with their surroundings, constituting a functional system of energy, material, and flow exchanges (nutrient cycling, pollination, population regulation) within a defined spatial area.

**Ecosystem service:** A benefit or good that humans obtain, directly or indirectly, from ecosystems. It encompasses the functions of the natural environment that contribute to



provisioning (food, fiber, water), regulating (climate, air- and water-quality, pollination, erosion control), cultural services (aesthetic value of landscapes, recreation, spiritual values), and supporting services (soil fertility, biogeochemical cycles). These services can be assessed, sometimes in monetary terms, and are often co-produced by ecological processes and human activities.

**Effluents:** Wastewater (sewage or other liquid waste, esp. toxic waste) that flows into a body of water such as a river or lake.

**Environment:** A concept which includes all aspects of the surroundings of humanity, affecting individuals and social groupings. The European Union has defined the environment as "the combination of elements whose complex interrelationships make up the settings, the surroundings and the conditions of life of the individual and of society, as they are or as they are felt". The environment thus includes the built environment, the natural environment and all natural resources, including air, land and water. It also includes the surroundings of the workplace.

**Environment protection:** Measures and controls to prevent damage and degradation of the environment, including the sustainability of its living resources.

**Equipment:** Any collection of materials, supplies or apparatuses stored, furnished or provided for an undertaking or activity.

**Extend grazing areas:** Verb describing the action of increasing the land area dedicated to livestock feeding by incorporating or expanding grassy parcels (for example, grassed buffer strips along field edges, elementary patches of terrain, or additional pasture zones). This extension aims to improve forage availability, reduce erosion and the dispersion of agricultural inputs, and promote ecological diversity within agricultural landscapes.

**Extensive farming:** A system of raising crops and animals, usually on large parcels of land, where a comparatively small amount of production inputs or labor are used per acre. Compare intensive farming.

**External farm areas:** Areas located outside the cultivated plots of an agricultural holding, characterized by natural or semi-natural habitats (forests, grasslands, wetlands, riparian woodlands, marginal lands, etc.). They are an integral part of the agro-ecosystem and provide essential ecosystem services: water regulation, carbon storage, biodiversity conservation, pollination, biological pest control, and buffering of the negative impacts of agricultural activities. These spaces, often referred to as buffer zones or margins, are not intended for direct production of agricultural goods but contribute to the sustainability and resilience of the production system.



## F

**Facilitation:** Facilitation means “to free from difficulties or obstacles; make easier, aid, assist.” Facilitation aims to make processes or discussions easier and more effective. In ecology, facilitation refers to the process through which a species improves the living conditions for other species within the same community and ecosystem.

**Farm:** A spatial unit of agricultural production, typically a single plot or a collection of plots managed by an individual farmer or a collective entity, where activities such as cropping, livestock rearing, processing, and marketing of agricultural goods take place. It constitutes an agro-ecosystem: a cultivated system whose ecosystem functions (soil fertility, nutrient cycling, biodiversity, pollination services, etc.) are harnessed and valued by humans to deliver agricultural products (cereals, vegetables, meat, milk, etc.) and ecosystem services (carbon sequestration, hydrological regulation, etc.).

From a circular-economy perspective, the farm integrates environmentally-responsible practices (e.g., small-scale anaerobic digestion, use of co-products, tool sharing, short supply chains, agritourism, etc.) aimed at optimizing efficiency, profitability, and resilience while reducing its environmental footprint. The “High Environmental Value” (HVE) certification may be awarded to farms that achieve an advanced level of agro-ecology and sustainability.

**Farm management:** The administration or handling of a farm, considering the productive, economic, environmental and social dimensions. It includes the management of soil, crops and livestock.

**Farm product:** Agricultural products that are either in their original form or have undergone only primary processing. Examples include cereals, coffee beans, sugar, palm oil, eggs, milk, fruits, vegetables, beef, cotton and rubber.

**Farm shop:** A retail outlet located on a working farm and operated by the producer. It offers consumers a range of farm-produced goods directly from the farm: fruits, vegetables, meat, dairy products, eggs, honey, cereals, artisanal beverages, as well as processed or handcrafted items linked to the agricultural activity.

The farm shop promotes local sales, traceability, and proximity between producer and consumer, and is often part of an agro-ecological approach aimed at reducing intermediaries, enhancing agro-ecosystems, and supporting food sovereignty.

**Feeding:** The collection of foods and practices that ensure to every individual an access to sufficient, quality food that is appropriate to their physiological needs and sociocultural preferences, encompassing the dimensions of rights, justice and food security within food systems.



**Fertilisation:** The application of any organic or inorganic material of natural or synthetic origins to a soil to supply one or more elements essential to the growth of plants.

**Fertiliser:** Substance added to soil for the purpose of promoting plant life, usually containing nitrogen, potassium and phosphorus, e.g. manure, guano, rock phosphates.

**Fertiliser efficiency:** Measure of the ability of a fertilizer input (mineral fertilizer, livestock effluents, sewage sludge, soil amendments, etc.) to be actually utilized by crops. It is generally quantified as the ratio between the amount of nutrients taken up by the plant (or the yield increase achieved) and the amount of nutrients applied, expressed as a percentage or as a yield unit per unit of fertilizer. This efficiency encompasses agronomic dimensions (nutrient uptake), environmental dimensions (minimisation of losses and impacts), and economic dimensions (optimisation of fertilisation costs).

**Fertiliser management:** Set of practices and strategies aimed at planning, applying, and monitoring the use of fertilisers (organic, mineral, or mixed) so as to meet the nutritional needs of crops while respecting the principle of minimum input and the recycling of nutrients. It integrates crop succession, soil work, and agro-ecological objectives (preserving soil health, reducing environmental impacts, optimising ecosystem services, and taking social and economic dimensions into account).

**Fertiliser use:** The set of practices involving the application of substances (synthetic mineral fertilizers, organic fertilizers, green manures) to soils or crops in order to supply the nutrients required for plant growth. Within agroecology, fertiliser use is designed to reduce inputs of mineral fertilizers by favoring organic sources (e.g., inter-cropping with legume sowings) while maintaining productivity, soil sustainability (formation of stable organic matter), and farm competitiveness. It also encompasses the management of environmental impacts, such as limiting the impact on water quality and preserving local resources.

**Field:** A limited area of land with grass or crops growing on it, which is usually surrounded by fences or closely planted bushes when it is part of a farm.

**Field area:** An area inherent in a field, expressed in m<sup>2</sup> or ha.

**Field configuration:** Spatial and functional arrangement of agricultural parcels within a territory, encompassing parcel size, shape, crop distribution, rotation and association systems, as well as their connections to soil, livestock, and material flows, with the aim of optimizing agro-ecological interactions, enhancing the resilience of the production system, and improving the efficiency of cropping practices.

**Field dimension:** Spatial measurement describing the extent of a field, parcel, or homogeneous unit of geographic space. It includes length, width, and area (usually expressed in meters, hectares, or square kilometers) and is used to characterize the size

of a geofacies (typically on the order of a few hundred meters) or of a study area at common cartographic scales ranging from 1:5 000 to 1:25 000.

In agro-ecological and forest contexts, field dimensions provide information on the physical size of the studied space, which is essential for mapping, resource management, and the assessment of environmental functions.

**Field layout:** Spatial and functional organization of agricultural parcels within a territory, encompassing their allocation, arrangement, and management (rest periods, crop rotation, fertilisation, renewal) in order to optimise soil fertility, limit degradation, and meet the requirements of sustainable production.

**Field management:** A set of cultural practices and operations aimed at preparing, maintaining, and optimizing the physical, biological, and agronomic conditions of a field in order to ensure its productivity, quality, and sustainability. It includes soil work (plowing, harrowing, tillage, etc.), management of soil fertility and structure, weed control, plant protection, irrigation regulation, seedbed preparation and monitoring, as well as conservation and restoration actions for the vegetative cover, all generally organized over a seasonal period corresponding to the duration of the crop.

**Field shape:** a) The geometric configuration of a field or cultivated parcel, describing the shape of its perimeter (e.g., rectangular, square, linear, circular, irregular, etc.). b) A characteristic that is affected by topography, soil type, irrigation constraints, cultural practices, and management objectives (e.g., optimisation of mechanisation, erosion control, adaptation to emergent ridges or dikes). c) A factor taken into account in agro-ecology and land-use planning to tailor production strategies, biodiversity, and the environmental functions of the soil.

**Flora:** The sum total of the kinds of plants in an area at one time.

**Flowering:** The process involved in transforming a meristem that produces vegetative structures, such as leaves, into a meristem that produces reproductive structures, such as a flower or an inflorescence.

**Flowering plant species:** Taxon of individuals of the same species belonging to the plant kingdom that exhibit the distinctive characteristic of angiosperms, namely the production of flowers (specialized reproductive organs) which, after pollination and fertilization, develop into fruits containing seeds. This category includes all plant species whose life cycle incorporates a flowering phase, whether cultivated (cereals, legumes, service crops, etc.) or wild, and it plays a central role in agrobiodiversity, and the ecosystem services associated with agro-ecosystems.

**Flowers:** The reproductive structure of angiosperm plants, consisting of stamens and carpels surrounded by petals and sepals all borne on the receptacle.

**Fodder production:** In livestock farming, the set of activities and practices aimed at generating the roughage intended for the herd (green forages, dehydrated forages, straw, fibrous by-products, hay, silage, baled hay, etc.). It includes the management of forage areas (forage crops, pastures, seed-bed crops), agronomic optimisation (fertilisation, variety selection, crop rotation), harvesting, conservation and the year-round availability of forage in order to meet the animals' nutritional requirements.

**Food losses:** Portion of food commodities that, at any stage of the agri-food chain (production, harvest, storage, processing, transport, distribution, or consumption), is not incorporated into human nutrition and disappears because of deterioration, rejection, waste, trampling, physical losses, or any other factor that results in the product remaining unused. When talking about forages, it is possible to mention “feed losses”.

**Food supply for insects:** The collection of nutritional resources (vegetation, pollen, nectar, sugar secretions, other insects, decomposing organic matter, etc.) that are provided or encouraged within an agroecosystem in order to sustain the survival, reproduction, and effectiveness of beneficial insects (predators, parasitoids, pollinators) and, when applicable, their natural preys, within the framework of conservation biological control and the promotion of agroecological production systems.

**Forage:** Refers to plants or plant parts other than separated grains fed to or grazed by domestic animals. Forage may be fresh, dry or ensiled (such as pasture, green chop, hay, haylage).

**Forage crop:** A crop with plants cultivated to feed animal in the form of annual fodder or pasture. Plants cultivated as fodder may belong to the legume or grass family, or to another family.

**Forage security:** Ensuring, for a livestock operation, a sufficient year-round availability of forages in both quantity and quality (grass, hay, silage, baled hay, etc.) so that the herd nutritional needs are met and the risks linked to fluctuations in plant production, climatic events, or market variations are limited. It results from a combination of management practices (rotational grazing, diversification of vegetative cover, storage of reserves) and the development of producers competencies aimed at providing a stable, sustainable and resilient feed supply.

**Forest:** Generally, an ecosystem characterized by a more or less dense and extensive tree cover. More particularly, a plant community predominantly of trees and other woody vegetation, growing more or less closely together.

**Frequency:** The number of occurrences of a periodic phenomenon within a specific amount of time.



**Functional group:** A set of species or organisms that share similar functional attributes and perform comparable roles in ecosystem processes. In an agroecosystem, these groups (or guilds) include, for example, nitrogen-fixing species, non-fixing plants, granivores, and frugivores, and they are used to analyse the relationships among individuals of different species and their environment.

## G

**Genetics:** The science that is concerned with the study of biological inheritance.

**Geological features:** Attributes or properties of the rock substrate and soil of a given area, encompassing its mineral composition, texture, structure, age, origin (formation, tectonics, sedimentation), as well as the physical and chemical processes that shape it. These features influence the pedoclimatic conditions, fertility, water-holding capacity, and, more broadly, the adaptation of organisms (plants, animals, humans) to their local environment.

**Goat:** A hardy domesticated ruminant mammal that has backward-curving horns and (in the male) a beard. It is kept for its milk and meat, and noted for its lively behaviour.

**Grain feeding:** Practice of feeding livestock (cattle, sheep, goats, pigs, poultry, etc.) that consists of providing them primarily with cereals (wheat, corn, barley, oats, rye, etc.) in the form of whole, cracked or milled grains, often supplemented with other ingredients (protein sources, minerals, vitamins). This method aims to increase the animals' energy intake and weight gain, improve production performance (meat, milk, eggs), and meet the density requirements of production in intensive or semi-intensive farming systems. It is distinguished from forage-based feeding (grass, pasture) and generally involves ration management, cereal storage, and monitoring of the animals' digestive health.

**Grass quality:** The set of agronomic, nutritional, and sensory characteristics of a grass or pasture that determine its value for animal production. It includes the available biomass, botanical composition (species diversity), protein content, fibre (cellulose, lignin), mineral and energy content, digestibility, and palatability. These attributes directly influence the productivity, health, and performance of livestock as well as the sustainability of farming systems.

**Grasses:** A very large and widespread family of Monocotyledoneae, with more than 10.000 species, most of which are herbaceous, but a few are woody. The stems are jointed, the long, narrow leaves originating at the nodes. The flowers are inconspicuous, with a much reduced perianth, and are wind-pollinated or cleistogamous. The fruit is single-seeded, usually a caryopsis. Grasses are the most important of all species for food and feed.



**Grassland:** biome found in regions where the average annual precipitation (ca. 25–76 cm) is sufficient to support the growth of grasses and other herbaceous plants but generally insufficient to support continuous tree cover. In wetter regions grassland is maintained as a result of grazing by herbivores.

**Grassland connectivity:** The degree of spatial interconnection among different parcels or strips of permanent grasslands, which facilitates the movement of organisms (herbivores, pollinators, beneficial species), genetic flow, the circulation of ecosystem services (food provision, soil- and water-regulation, carbon sequestration), and the resilience of the pastoral network within agro-ecological systems.

**Grassland cutting schedule:** A pre-established temporal program that defines the periods for cutting (mowing) permanent grasslands. It is set according to agronomic indicators (grass height, phenological stage, leaf number, species composition, length of rest period) and production objectives (quantity and quality of the forage), as well as the preservation of ecosystem services (soil protection, carbon sequestration, biodiversity). The schedule aims to optimise the use of the grassland while limiting losses due to trampling and refusals, and it is incorporated into low-input livestock systems and agro-ecological practices.

**Grassland diversity:** The collective variety of living organisms—mainly plants—that compose a grassland, encompassing genetic, species-level, and agroecosystem diversity, together with their interactions with other taxa (insects, microbes, etc.). This diversity constitutes a resource for the quantity and quality of forage production, the conservation of wild species and the maintenance of habitats for associated wildlife.

**Grassland fertilisation:** The set of nutrient inputs (organic, mineral, or mixed fertilizers) applied to a permanent grassland in order to maintain or optimise its forage productivity, biodiversity, and ecological balance. It includes:

- Agronomic objectives: support grass growth, ensure the availability of high-quality forage for grazing and cutting, and preserve plant species richness.
- Practices: application of fertilisers (nitrogen, phosphorus, potassium, secondary nutrients) according to soil and vegetative-cover needs, taking into account the phenological stage of the plants and the resting period of the grassland.
- Environmental impacts: moderate fertilisation promotes floristic diversity and soil life; intensive fertilisation, especially mineral, can lead to a reduction in species number and impair the ecological functions of the grassland.

In practice, grassland fertilisation is part of an integrated vegetative-cover management system, combined with grazing, mowing and the monitoring of indicators (grass height, leaf number, floristic composition). It also constitutes a component of agricultural heritage, influencing the quality of PDO-protected products (milk, cheese, meat).



**Grassland management:** A set of practices and strategies for the planning, maintenance, and renewal of permanent (or natural) grasslands aimed at optimizing both their agronomic performance (yield, quality, and early availability of forage) and their ecosystem services (species diversity, carbon sequestration, soil protection, water purification, support for beneficial insects and pollinators, and landscape aesthetics). It is particularly applied to low-stocking-density livestock systems, favors natural resources (unseeded or over-seeded pastures with diverse species mixes), and uses species diversity and abundance as indicators of agronomic and environmental potential.

**Grazing:** Feeding on standing vegetation, as by livestock or wild animals.

**Grazing animals:** The collection of livestock activities and management systems aimed at obtaining animal-origin products (meat, milk, eggs, fibers, etc.) from domestic animals. This concept encompasses animal health and welfare, soil preservation and biodiversity, the reduction of inputs (pharmaceutical, veterinary, plant-protective), as well as agro-ecological approaches and the “One Health” principle, seeking to reconcile economic performance, environmental sustainability, and the resilience of production systems.

**Grazing and mowing practices:** In agroecology, a suite of pasture-management techniques that combine the grazing of herbivores (often in rotation – rotational grazing) with the mowing (cutting or harvesting) of vegetation. This dual approach aims to optimise forage production, preserve biodiversity, reduce tractor work, and maintain soil health by exploiting the growth phases of grasses (tillering, mowing) in a complementary manner.

**Grazing date:** The date on which grazing is allowed or carried out on an herbaceous plot, determined according to the developmental stage of the plants (grasses, weeds, forage crops, etc.) in order to optimise forage quality, control the drying of cut grass, and manage plant resources sustainably.

**Grazing design:** The set of principles, methods, and planning decisions used to organize the use of herbaceous land by livestock. It includes:

- Dividing the grazing area into parcels of appropriate size.
- Defining a rotation schedule with specific grazing (presence) and rest (restitution) periods for each parcel (e.g., simplified rotational grazing  $\approx$  10 days, dynamic rotational grazing  $\approx$  1–2 days).
- Choosing the management mode (continuous versus rotational grazing) according to agronomic, ecological, and socio-economic objectives.
- Integrating agro-ecological concepts (ecosystem services, sustainability, respect for the natural functions of the landscape) and, where relevant, the ethical and philosophical dimensions derived from permaculture.



In short, grazing design aims to optimise animal productivity while preserving pasture health and the resilience of agroecosystems.

**Grazing efficiency:** The ability of a grazing system to simultaneously achieve the targeted agronomic, economic, and ecological objectives. It is measured by the pasture capacity to:

- Maximize animal performance (growth, milk production) for a given number of livestock,
- Optimize the use of available vegetative surface\*\* (stocking rate, animal density, grazing duration),
- Maintain or improve the health and biodiversity of the vegetation cover\*\* (service plants, agro-ecological infrastructures),
- Preserve soil fertility and ecosystem functions\*\* (nutrient cycling, water retention),
- Reduce external inputs (bought forage, fertilizers, energy) and environmental impacts (erosion, greenhouse-gas emissions).

In practice, grazing efficiency results from implementing principles such as rotational grazing, the “laws of rational grazing,” and integrated agroecosystem management. It may be expressed, for example, by tripling the animal stocking rate without pasture degradation, or by increasing milk production while conserving local biodiversity.

**Grazing groups:** A set of animals (typically livestock) placed simultaneously on a specified pasture parcel for a defined period as part of a rotational or dynamic grazing management system. This group constitutes the operational unit used to monitor pasture condition indicators (grass height, phenological stage, grazing pressure, rest period, etc.) and to optimize the ecosystem services provided by grazing.

**Grazing management:** Organisation of grazing by the farmer on an annual, seasonal or daily basis, including the allocation of plots to the different groups of animals that make up the herd.

**Grazing period:** The period of time during which livestock are permitted to graze a specific plot or pasture before it is rested, determined according to the grazing plan and the pasture condition indicators (grass height, phenological stage, leaf count, species present, etc.).

**Grazing practices:** The collection of livestock-feeding methods that rely on grazing, encompassing particularly continuous grazing (where the herd remains on the same plot) and rotational grazing (the pasture is divided into smaller paddocks and the herd is moved among them). Rotational grazing may be “simplified,” with a stay of roughly ten days per paddock, or “dynamic,” limiting the stay to one or two days. These practices are



embedded in an agroecological approach that seeks a sustainable agriculture that is economically viable, ecologically sound, ensuring social equity.

**Grazing time:** The period, expressed in days (or hours), during which livestock remain on a given paddock before being moved to another paddock as part of a rotational grazing system. It is one of the key indicators of grazing management, influencing the phenological stage of the grass, pasture rest, and animal stocking rate.

**Green boundary management:** A series of coordinated practices, decisions, and actions aimed at planning, establishing, maintaining, and enhancing agroecological infrastructure habitats (grass strips, hedgerows, trees, service plants, etc.) located along the edges of agricultural fields.

This management seeks to strengthen ecological functions—biodiversity, pollination, biological pest control, soil protection, and micro-climate regulation—while supporting the competitiveness and sustainability objectives of farms and fostering the social and environmental synergies characteristic of collective projects such as GIEE.

**Ground:** The top layer of the land surface of the earth that is composed of disintegrated rock particles, humus, water and air.

## H

**Habitat connectivity:** Landscape connectivity is defined as the degree to which the spatial configuration of the landscape facilitates or disturbs movement, dispersal, and gene flow between habitat patches.

**Habitat diversity:** The variety and richness in the number and types of habitats (natural or agricultural environments) present within a given area, characterized by a diversity of physical, chemical, and biological conditions that enable the coexistence of multiple species. This diversity represents a component of biodiversity, influencing resource availability, trophic interactions, and ecosystem services.

**Habitat enhancement:** The term “habitat improvement” means restoring, enhancing, or establishing physiographic, hydrological, or disturbance conditions necessary to establish or maintain native plant and animal communities, including periodic manipulations to maintain intended habitat conditions on completed project sites.

**Habitat maintenance:** A suite of management, conservation, and restoration practices applied to natural, semi-natural, or service habitats located within or around an agroecosystem, intended to maintain or enhance biodiversity and ecological functions (such as support for beneficial organisms, pollinators, pest regulation, and ecosystem services). These practices contribute to more sustainable, environment-friendly agriculture.



**Habitat preservation:** The preservation, maintenance, protection, restoration and enhancement of habitats for wild species.

**Harvest:** The amount or measure of the crop gathered in a season, and collecting thanks to the harvesting.

**Harvest system:** A coherent set of operations, agronomic practices, techniques, and equipment organized to ensure the harvest of plant biomass at an optimal stage of maturity. It encompasses:

- Planning – determining the harvest timing based on maturity criteria;
- Implementation – selecting appropriate cutting, threshing, sorting, and storage tools or machines;
- Logistical coordination – handling transport, packaging, and residue management.

All of these elements are integrated within a systemic perspective that aims to optimize yield, quality, and the sustainability of the agroecological system.

**Health management:** A coordinated set of knowledge, practices, and strategies implemented by the actors of a system (farmers, work collectives, institutions) to ensure and optimise the health of an organism or a group of organisms. It is based on a holistic and systemic approach (ecopathology, “One Health”) that integrates:

- Disease prevention;
- Strengthening resistance or tolerance to pathogenic agents;
- Curative care when necessary;
- Reduction of the use of medicinal inputs (antimicrobials, antiparasitics, etc.);
- Improvement of animal or human well-being in connection with soil health, ecosystem health, and consumer health.

This management aims to reconcile sanitary performance, environmental sustainability, and socio-economic viability of production systems.

**Heat stress:** condition in which crop performance or survival is compromised by periods of exposure to high temperatures.

**Hedge pruning:** Maintenance operation involving the selective cutting or trimming of the branches of a hedge (especially a composite hedge) in order to:

- maintain or improve its structure and density,
- promote regeneration and the complementary coexistence of plant species,
- optimise the ecosystem services it provides (run-off control, wind protection, reduction of evapotranspiration, soil enrichment, production of timber or firewood, fruits, forage),



- preserve or enhance its value as a refuge and ecological corridor for wildlife,
- prevent excessive ageing or imbalance of the hedge while ensuring its durability within the context of the agro-ecological transition.

**Hedge size:** A pruning or cutting operation (often applied to composite hedges) intended to control their height, density, and shape. This practice helps maintain or optimise ecosystem services (erosion control, wind-break, habitat provision, ecological corridor), agronomic functions (soil fertility, production of wood, fruit, and forage), and the aesthetic appearance of the landscape.

**Hedge width:** Transverse dimension of a hedge, measured between its two outer edges (from the first twig or shrub on one side to the first twig or shrub on the other side). This measurement, expressed in meters or centimeters, characterises the thickness of the linear vegetative structure and consequently influences, in particular:

- the capacity to provide shade and wind protection;
- the density of vegetative strata and the diversity of habitats offered to auxiliary organisms;
- the amount of resources produced (wood, fruit, forage);
- the aesthetic impact and landscape integration.

In the context of an agroecological composite hedge, hedge width contributes to the delivery of multiple ecosystem services (biodiversity, animal welfare, support to crops) and constitutes a key design criterion for the agroecological transition.

**Hedgerow:** A line of closely planted bushes or shrubs, marking the boundaries of a field. The type of hedge varies between parts of the country, and its age can be dated from the number of species of tree and shrub present. Over the last thirty years hedge-row removal has had a marked visual effect on lowland agricultural landscapes. From the farmer's point of view, in areas of predominant arable or intensively managed grazing, there is little or no economic justification for retaining hedges.

**Herbicide:** A substance that kills or inhibits the germination, growth and development of plants. Herbicides may be synthetic chemicals, natural chemicals or biological agents.

**Heterogeneity:** Diversity or variability of traits within a biological or agroecological set. In agronomy, it denotes a plant population whose individuals possess different genetic/specific backgrounds while maintaining similar characteristics, thereby conferring the collective with evolutionary potential. When heterogeneity refers to the genetic diversity within a given variety/accession, it may the population from meeting the stability and homogeneity criteria required for officially recognized commercial varieties. This is especially an issue for forage grasses and legumes where most species present a open-pollination.

**High-quality feed stock:** A raw agricultural or food product that meets stringent agronomic, environmental, and health quality standards; it originates from a production system that controls costs (by maximizing grazing and limiting inputs), enhances ecosystem services (such as biodiversity and carbon sequestration), and is often certified by an official label guaranteeing its traceability, nutritional properties, and a positive impact on human health.

**High-quality forage:** Forage that meets high agronomic and nutritional criteria, characterized by a sufficient protein and energy density, good digestibility, a low content of undesirable substances (molds, toxins, contaminants), and palatability suited to the herd. It originates from well-managed vegetative covers (pastures, forage crops, grazing areas) and/or agro-ecological infrastructures, and contributes to the farm's forage self-sufficiency while supporting ecosystem services (biodiversity, carbon sequestration). Its recognition is often based on quality indicators (compositional analysis, production yields, compliance with official quality labels).

**Hoof care:** A collection of practices and interventions intended to maintain, treat, and preserve the hooves (feet transformed into hooves) of animals belonging to the orders *Artiodactyla*, *Perissodactyla*, *Proboscidea*, *Hyracoidea*, and *Tubulidentata*, in order to ensure their health, comfort, and functional performance in natural or domestic settings.

**Hoof disease:** In agroecology and ecopathology, a generic term for ailments affecting the hooves (nails) of livestock animals (cattle, sheep, goats, etc.). These pathologies, resulting from multifactorial interactions among the animal, its diet, its rearing environment, and management practices, are considered as “products” of the agroecosystem. They serve as an indicator of overall herd health and the sustainability of the production system.

**Hoof trimming:** Practice of trimming and maintaining the hooves of livestock animals (horses, cattle, sheep, etc.) aimed at preventing lesions, correcting podal imbalances, and ensuring the animal's welfare and mobility.

It involves cutting, filing, or reshaping the horn of the hoof according to biomechanical principles, usually performed periodically by a farrier or a trained professional.

**Horse:** A large plant-eating domesticated mammal with solid hooves and a flowing mane and tail, used for riding, racing, and to carry and pull loads.

**Housing:** a) Dwelling-houses collectively and the provision of these. b) Shelter, lodging.

## I

**Improvement of flora:** In agroecology, a suite of practices and strategies aimed at modifying, enriching, or optimizing the floral composition of an agro-ecosystem. It



involves promoting the development of beneficial plant species (service plants, companion crops, hedgerows, trees) while limiting the presence or impact of undesirable or invasive species, with the goal of enhancing ecosystem functions (soil fertility, biological control, biodiversity), sustainable productivity, and the resilience of farming operations.

**Income:** The gain derived from capital, from labour or effort, or both combined, including profit or gain through sale or conversion of capital.

**Income portfolio:** A diversified set of revenue streams originating from multiple economic activities (e.g., agriculture, oil extraction, agro-ecological services, etc.) that an actor (farm, company, community) develops and manages in order to ensure financial stability, mitigate risks linked to sectoral fluctuations, and optimise the value-adding use of natural resources.

**Increasing:** The act of raising, augmenting the quantity, content, or level of an element. In an agro-ecological context, it particularly refers to the buildup of soil organic-matter stocks or the enhancement of vertical pore continuity, resulting from practices such as intercropping, conservation agriculture, or other techniques aimed at improving the soil's physicochemical fertility.

**Infection control:** A set of preventive, diagnostic, and therapeutic measures, coordinated and implemented within a system (agricultural, veterinary, health, etc.), aimed at reducing, limiting, or eliminating the spread of pathogenic agents; it encompasses prophylaxis, biosecurity, good hygiene practices, vaccination, screening, isolation of sick individuals, and the management of risk factors (vectors, rearing conditions, density, feed, microbiota), in order to preserve the health of the agro-ecosystem and to minimize the use of medicinal inputs.

**Infrastructure:** The basic network or foundation of capital facilities or community investments which are necessary to support economic and community activities.

**Injury:** A stress upon an organism that disrupts the structure or function and results in a pathological process.

**Insect:** A class of the Arthropoda typically having a segmented body with an external, chitinous covering, a pair of compound eyes, a pair of antennae, three pairs of mouthparts, and two pairs of wings.

**Intervention:** An action or series of planned actions carried out within a system (agricultural, livestock, or innovation) to modify its functioning, prevent or treat a disease, or adapt practices or environmental conditions, while taking into account the nature of the work, the equipment used, and the necessity of the action.



**Invasive:** Species that are non-native to a particular ecosystem and whose introduction and spread cause, or are likely to cause, socio-cultural, economic or environmental harm or harm to human health.

**Investment:** Any item of value purchased for profitable return, as income, interest or capital appreciation.

## J

**Job creation:** Action or process of generating new jobs, i.e., creating paid positions within an economy, a company, an industry sector, or a project. This job creation may result from the launch of new productive activities, the expansion of existing activities, public or private investment, public employment policies, or training and professional-integration programmes aimed at increasing the number of employed workers.

**Job satisfaction:** A feeling of accomplishment, well-being, and commitment experienced by an employee toward their work. It results from the employee's subjective evaluation of the multiple dimensions of the job (tasks, working conditions, relationships with colleagues and management, recognition, compensation, opportunities for advancement, work-life balance, etc.). High satisfaction promotes motivation, performance, staff retention, and mental health, whereas low satisfaction can lead to disengagement, absenteeism, and turnover.

## K

**Kale:** A leafy vegetable belonging to the species *Brassica oleracea* var. *acephala*, cultivated for its broad, either curly or flat, dark-green leaves (sometimes tinged with violet). It is part of the cabbage group and is renowned for its high content of vitamins (A, C, K), minerals (calcium, iron) and phytochemical compounds (glucosinolates, antioxidants). Kale is eaten raw in salads, steamed, sautéed, or incorporated into a variety of dishes, and it is prized in agroecology for its resilience to diverse climatic conditions and its ability to contribute to crop biodiversity.

## L

**Label:** A distinctive sign, often in the form of a logo or an official statement, assigned to a product, an agricultural operation, or a service, certifying that it meets a predefined set of criteria (quality, origin, production method, environmental compliance, etc.). The label serves to inform the consumer and to add value to the good or activity according to requirements verified by a certification body or a competent authority.

**Labour intensity:** The degree of magnitude and frequency of cultural or mechanical operations applied to a soil, assessed from the depth, the area worked, the number of



passes, and the energy mobilised (engine power, type of implement). It indicates the force with which the soil is “worked,” i.e., the disturbance of its structure, its aggregates, and its ecological functions, and serves as a criterion for adjusting agro-ecological or intensification practices.

**Lameness:** Lameness occurs when an animal has leg or foot pain that affects how they move.

**Land use change:** Changing the purpose and modalities of land use, such as turning a forest into a grassland. Land use change is a main driver of biodiversity erosion, especially in agricultural landscapes. Land use is one of the 9 planetary boundaries. Incentive-based agri-environmental policies aim at influencing land-use pattern.

**Landscape elements:** In visual assessment work, landscapes can be divided into four major elements: a) Form is the perceived mass or shape of an object that appears unified, and which provides a consciousness of its distinction and relation of a whole to the component parts. b) Line is the real or imagined path, border, boundary, or intersection of two planes, such as a silhouette, that the eye follows when perceiving abrupt differences in form, colour or texture. c) Colour is a visual perception that enables the eye to differentiate otherwise identical objects based on the wavelengths of reflected light. d) Texture is the visual feel of a landscape.

**Landscape features:** The ensemble of visible and functional attributes that define the identity of a terrestrial area, resulting from the interaction between natural factors (topography, climate, soils, biodiversity, ecosystem services) and human activities (agricultural practices, land-use planning, cultural heritage). These attributes encompass the aesthetic, ecological, sociocultural and economic dimensions of the landscape.

**Landscape semi-natural cover:** The ensemble of vegetal elements (trees, shrubs, hedgerows, grassy strips, meadows, wooded areas, orchards, etc.) present on the rural landscape that are not intensively exploited as crops or pastures, but instead arise from low-intensity or non-intensive management, natural succession, or agro-ecological enhancement.

This cover contributes to biodiversity, soil protection, climate regulation, refuge for auxiliary species, and the provision of ecosystem services within agricultural systems.

**Landscape structure:** The spatial arrangement and organization of the various biophysical elements of a territory (agricultural parcels, hedgerows, woods, wetlands, watercourses, fallow lands, natural areas, infrastructure, etc.) together with their connections and degrees of fragmentation. It characterizes the configuration of the landscape and determines ecological functions, ecosystem services (pollination, soil fertility, climate regulation, aesthetic value), biodiversity, and agricultural practices within agro-ecological systems.



**Lay:** A natural or semi-natural grassland often associated with the conservation of hay or silage.

**Leader system:** A set of (organizational, social, or ecological) systems characterized by the presence or emergence of one or more “leader” actors that influence, coordinate, or direct the internal dynamics of the system. These leaders may be individuals, institutions, species, or functional entities (e.g., a dominant tree in a forest, a pilot farmer in an agro-ecological network) whose actions generate feedback loops, steer resource flows, and modulate the behavior of other system components. Leader systems are distinguished by:

- Power or influence asymmetry: the leader(s) wield authority or influence that is disproportionate to that of other agents.
- Articulation capacity: they ensure system coherence and stability by synchronizing the actions of the various elements.
- Feedback-emitting role: their decisions produce feedback loops that can amplify or dampen system responses.
- Adaptability potential: in response to environmental or social changes, leaders can adjust their strategies, prompting evolution of the overall system.

In agro-ecological approaches, leader systems may refer, for example, to pioneering farmers who introduce innovative practices, dominant crops that structure landscape composition, or governance structures that steer territorial food networks.

**Lease:** Any agreement which gives rise to relationship of landlord and tenant (real property) or lessor and lessee (real or personal property). Contract for exclusive possession of lands or tenements for determinate period. Contract for possession and profits of lands and tenements either for life, or for certain period of time, or during the pleasure of the parties.

**Leather:** The dressed or tanned hide of an animal, usually with the hair removed.

**Legume:** Annual or perennial, herbaceous or shrubby species whose fruit is a pod. Many legumes have the ability to fix atmospheric nitrogen, which means that nitrogen fertilisers are not needed for their cultivation. Their seeds are particularly rich in protein (20 to 40% in dry seeds, depending on the species), fibre and micronutrients. They are used for seed production, fodder or ecosystem services.

**Legume proportion:** The share, expressed as a percentage or a fraction, of legumes (seeds, pods, or forage plants) present in a given set—for example the cultivated area of a farm, the composition of a crop rotation, the human or animal food basket, or the share of plant-derived protein in the diet—relative to the total of the elements considered (crops, foods, proteins, etc.). This proportion is used to measure the contribution of



legumes to agro-ecological diversification, nutritional balance, and the resilience of production systems.

**Licence:** Instrument in which power is conferred on someone for some act or activity.

**Liming:** Application of lime or calcareous materials (marl, limestone, chalk, tangle, defecation scum) to an agricultural plot as a basic calcium amendment to correct the soil pH and thus improve its physical and chemical characteristics.

**Linked habitats:** In agroecology, a collection of semi-natural environments (agro-ecological infrastructures) that, through spatial proximity or the presence of corridors (linear, areal, or point-type), are interconnected within an agro-ecosystem. This linkage forms a functional network that enables auxiliary organisms (predators, pollinators, parasitoids) to move, to access complementary resources (food, oviposition sites, refuges), and to complete their entire life cycles between cultivated fields and natural habitats, thereby enhancing biodiversity and the sustainability of agricultural systems.

**Livestock:** Domestic or farmed animals raised for food and fibre such as hogs, sheep, cattle, and horses for production of food and fibre.

**Livestock care:** A suite of practices and interventions aimed at ensuring the health, welfare, and productivity of livestock. These include, in particular, appropriate feeding (grazing management, forages and supplements), disease prevention and treatment, health and reproductive monitoring, protection against environmental stresses (e.g., ground conditions that can support the weight of the animals), as well as hygiene and comfort measures.

**Livestock management:** A set of practices and strategies aimed at organizing, regulating, and optimizing the raising of farm animals (cattle, sheep, goats, etc.) in accordance with sustainable development principles. It includes:

- Planning of feed (grazing, supplemental feed, use of nitrogen-fixing legumes);
- Implementation of grazing systems (continuous or rotational) to preserve soil structure and pasture biodiversity;
- Monitoring animal health and welfare (parasite control, disease prevention);
- Managing environmental impact (preventing soil degradation, protecting water resources, reducing greenhouse-gas emissions);
- Integrating livestock into the local agro-ecosystem by valorizing ecosystem services (natural fertilization, biological pest control, maintenance of vegetative cover);



- Coordinating within collective structures (Economic and Environmental Interest Groupings, cooperatives) to improve the economic, social, and environmental performance of farms.

This approach seeks to reconcile animal productivity, the resilience of agro-ecological systems, and the preservation of natural resources.

**Local breeds:** A group of animals belonging to the same breed whose individuals share closely related genetic and phenotypic traits, molded by adaptation to a specific pedoclimatic and sanitary environment within a defined geographic area. This adaptation gives the local breed heightened hardiness, lower dependence on external inputs, and greater resilience to environmental constraints.

**Local conditions:** A set of specific characteristics of a territory—climatic, pedological, social, economic, and institutional—that delineate the framework for agricultural production or a food system. It includes the local climate, soil properties, natural resources, locally developed know-how, and the governance dynamics unique to the place.

**Local market:** A commercial exchange venue where food and agricultural products are sold and purchased within a defined territory, involving the direct participation of local actors (producers, cooperatives, processors, consumers, etc.). It is based on the use of natural resources and locally-developed know-how, promotes the re-appropriation of food, regional food governance, and the economic and social development of the rural environment.

**Local production:** A set of agricultural and food goods produced from natural resources, know-how, and social knowledge that are specific to a given territory, involving the participation of local actors (producers, cooperatives, processors, consumers) in processes of relocalisation, governance, and territorialisation, and aimed at creating material and immaterial goods that are particular to the terroir.

**Lucerne:** Perennial forage legume, cultivated all over the world and producing protein rich forage, harvested as hay, haylage or for production of dehydrated pellets.

## M

**Machinery:** A group of parts or machines arranged to perform a useful function.

**Maintenance:** It is a set of services that include the necessary repairs and adjustments to ensure that any system continues to function or that a production process continues with the highest efficiency and reliability.

**Maize:** An annual cereal belonging to the *Poaceae* family, cultivated primarily for its starch-rich kernels, used as a staple food, forage, and industrial raw material. Within the



ecology of food systems and agroecology, maize is one of the crops integrated into agro-ecological infrastructures, where it can be combined with sustainable management practices (crop rotation, cover cropping, utilization of ecosystem services) aimed at reconciling production with the preservation of environmental resources.

**Management:** Government, control, superintendence, physical or manual handling or guidance; act of managing by direction or regulation, or administration, as management of family, or of household, etc.

**Management of biodiversity:** A set of practices, strategies, and decisions implemented by farmers (and surrounding landscape actors) aimed at conserving, developing, and sustainably exploiting the two components of biodiversity within agro-ecosystems: planned biodiversity (cultivated plant species, animal breeds selected and raised by the producer) and associated biodiversity (organisms that naturally colonise fields and their semi-natural habitats).

This management is grounded in agro-ecological principles: fostering beneficial interactions, strengthening functional biodiversity (species that provide ecosystem services), optimizing soil and plant health, and reducing external inputs in order to maintain the resilient structure and functioning of (agro-)ecosystems. It constitutes a central dimension of agrobiodiversity and the agro-ecological bioeconomy.

**Management of hedgerows:** A set of practices involving the planning, establishment, maintenance, and monitoring of hedgerows (especially composite hedgerows) aimed at optimizing their ecological, agronomic, and aesthetic functions. It includes the selection of complementary species, the creation of vegetative strata, the regulation of density and cutting, as well as the consideration of ecosystem services (biodiversity, crop protection, animal welfare, production of wood, fruits, and forages) within an integrated agroecological approach.

**Manure:** Animal excreta collected from stables and barnyards with or without litter; used to enrich the soil.

**Manure storage:** The collection of techniques and practices aimed at preserving, storing, and managing manure (animal excreta mixed with bedding) on a farm. The objective is to maintain its organic value, minimize nutrient losses and environmental impacts (such as greenhouse-gas emissions, odors, and water pollution), and to make the material available as a fertiliser input or soil amendment within the framework of agroecology and sustainable agriculture.

**Margin:** Transition zone located at the edge of an agro-ecosystem or cultivated field, characterized by the presence of spontaneous vegetation (biennial, perennial, or multi-year species) or a seeded cover crop used for ecosystem services and not harvested. This marginal strip constitutes an agro-ecological infrastructure that provides



ecosystem functions: refuge and corridors for biodiversity, pollination services, biological pest control, soil protection, and water-quality improvement. It links cultivated habitats to the surrounding natural environments.

**Marketing:** A related group of business activities whose purpose is to satisfy the demands for goods and services of consumers, businesses and government. The marketing process includes estimating the demand, producing the product, pricing the product to satisfy profit criteria, and promoting and distributing the product.

**Mastitis (subclinical):** Inflammation of the mammary gland in mammals, particularly dairy cattle, that does not present with obvious clinical signs (no visible swelling, heat, pain, or milk abnormalities detectable by the naked eye). It is mainly characterized by an increase in somatic cell count (SCC) in the milk, which can be detected through microbiological, cytological analyses, or conductivity tests. Subclinical mastitis leads to a reduction in milk production, a deterioration of milk quality (elevated C-reactive protein, altered composition), and represents a significant animal-health and economic problem, requiring regular milk monitoring and appropriate treatment as soon as it is detected.

**Meadow:** Agricultural land with permanent vegetation used for the production of fodder for harvesting and/or for grazing livestock.

**Meadow diversity:** The total plant variability present in a meadow, encompassing:

- **Species diversity:** the richness of species (number of species) and their relative abundances, used to characterize habitats from both ecological and heritage perspectives.
- **Functional diversity:** the range of functional traits (biological characteristics, growth strategies, etc.) of the species, which reflects the meadow's capacity to withstand disturbances, to provide flexible management options, and to deliver ecosystem services (productivity, forage quality, carbon sequestration, erosion protection, etc.).

Thus, meadow diversity represents a significant reservoir of biodiversity that can be harnessed in agro-ecology to reconcile agricultural production with biodiversity conservation.

**Meadow maintenance:** A set of agronomic and management practices intended to preserve the persistence, biodiversity, and productive functions of a permanent meadow. It includes fertilisation (mineral or organic), controlled grazing, mowing or harrowing, limiting soil work, and restricting the use of plant-protective (phytosanitary) products, in order to maintain ecological balance, species richness, and ecosystem services (herbivore feed, soil protection, carbon sequestration, habitats for natural enemies and pollinators).



**Mean field size:** Statistical measure representing the average area of an agricultural plot or a parcel of cultivable land within a given territory. It is calculated by dividing the total surface of exploited land (expressed in hectares, ares, or square metres) by the number of farms or parcels taken into account. This information is used to characterize the organization of the agricultural landscape (small family farms, large industrial farms, etc.), to analyse the dynamics of urbanisation, land degradation or land-use conversion, and to guide land-management policies and rural planning.

**Meat:** The edible flesh of animals, especially that of mammals as opposed to that of fish or a nut.

**Metabolic disease:** A metabolic disease, or metabolic disorder, refers to a pathology characterized by a disturbance of the organism's normal metabolism—that is, the biochemical processes involved in converting nutrients into energy, synthesizing and degrading essential molecules, and regulating hormonal and enzymatic activities. These dysfunctions may arise from genetic factors (mutations, congenital anomalies), environmental influences (diet, lifestyle, exposure to toxins), or a combination of both. Metabolic diseases include, among others, diabetes mellitus, lipid disorders (hypercholesterolemia, hypertriglyceridemia), lysosomal storage diseases, obesity, metabolic syndrome, and certain hereditary disorders of amino-acid or carbohydrate metabolism. They manifest with a variety of symptoms (fatigue, weight loss or gain, organ dysfunction, cardiovascular complications, neuropathies, etc.) and often require multidisciplinary management that may involve dietary therapy, physical activity, pharmacological treatment, and, in some cases, genetic or enzymatic interventions.

**Micro-climate:** A microclimate is a small area with a different climate to its surroundings. This could be due to nearby landmarks, such as lakes or hills, affecting wind patterns or sheltering the area from the sun. They can also be produced by artificial structures such as buildings.

**Milk:** The whitish fluid secreted by the mammary gland for the nourishment of the young; composed of carbohydrates, proteins, fats, mineral salts, vitamins, and antibodies.

**Mineral soil index:** A quantitative indicator that synthesizes a soil's capacity to provide, in mineral form, the essential nutrients required for plant growth; it is calculated from the soil's physicochemical parameters (content of major nutrients: N, P, K, Ca, Mg, etc., pH, cation-exchange capacity, base saturation, and nutrient availability after the mineralization of organic matter).

**Minimising risk:** Attempting to reduce the potential for damage resulting from perils.

**Monitoring:** To check regularly in order to perceive change in some quality or quantity.

**Mortality:** The number of deaths occurring in a given population for a given period of time.



**Mouse:** Rodent mammal of the family *Muridae*, small in size (generally 5 to 10 cm body length, with a tail of comparable length), with fine fur, round ears and large eyes. Mice are omnivorous, highly prolific and widely distributed worldwide. They inhabit a great variety of habitats, including urban, rural and forest environments, where they can play diverse ecological roles (predation, seed dispersal, etc.).

**Mowing:** The cutting down of grass, crops or grain with a scythe or a mechanical device.

**Mowing date:** The specific point in the agronomic calendar at which a vegetative cover (pasture, hay, forage crops, etc.) is cut or mowed to harvest the forage. This date is chosen based on the plant's phenological stage, the quality requirements of the forage, and prevailing climatic conditions (especially evapotranspiration) in order to optimise both yield and the nutritional value of the product.

**Mowing practices:** The set of techniques and methods used to cut vegetative cover (pastures, grazing lands, forage crops) in order to harvest hay or fodder. These practices aim to maintain or improve forage quality, extend the grazing season, optimize the harvest of winter cereals, and contribute to an agro-ecological approach by promoting forage self-sufficiency, functional biodiversity, and a reduction in tractor passes.

**Muddy soil:** Soil whose bearing capacity is insufficient to support mechanical loads (machinery, structures, etc.), typically due to a poor structure, saturation, or excess water that reduces the material's cohesion and strength.

**Multispecies swards:** An intentionally seeded herbaceous prairie composed of a mixture of several plant species (generally more than six), drawn from at least two or three botanical families, the exact composition varying with the intended use (grazing or mowing). This taxonomic and functional diversity is designed to boost agronomic value—enhancing resilience to climatic and biotic stresses and providing operational flexibility—while also delivering ecosystem services such as soil protection, carbon sequestration, and habitats for natural enemies and pollinators. It is distinct from simple or binary species mixtures.

## N

**Native:** Belonging naturally to a given territory, occurring in that space without human intervention. In agroecology, the term applies both to indigenous (originating from the local environment) species and to neo-indigenous species—that is, plants that, through natural extension (dispersed by water, wind, animals, etc.), have become established and stabilized for more than ten years in a territory where they were not historically present. They constitute a spontaneous component of the biotope, often valued in agroecological infrastructures.



**Native plant species:** A plant whose natural origin is located within the territory in question, which has become established and proliferated without human intervention and forms part of the local floristic heritage. It occurs spontaneously in the vegetation (or plant assemblage) of a habitat and can serve as an indicator of the physicochemical or biological characteristics of that environment.

**Natura 2000:** European network of protected natural sites, established under the “Habitats” Directive (92/43/EEC) and the “Birds” Directive (2009/147/EC). It brings together Sites of Community Importance (SCIs) and Special Protection Areas (SPAs) in order to conserve natural habitats, wild fauna and flora, as well as species threatened with extinction, while ensuring the long-term sustainability of ecological functions and environmental services throughout the territory of the European Union.

**Nematode:** A group of unsegmented worms which have been variously recognized as an order, class, and phylum. They may cause damages on crops through damages on roots or tubers. But some nematodes are beneficial and used as biocontrol.

**Nest box:** An artificial device, often made of wood or other natural material, installed within an agro-ecosystem to provide a nesting site for animal species (birds, bats, insects, etc.). As part of agro-ecological infrastructures, the nest box contributes to the preservation and reinforcement of local biodiversity by compensating for the shortage of natural breeding sites, while aligning with a sustainable development approach that integrates ecological, social, and economic criteria.

**Nesting:** The building of nests for egg laying and rearing of offspring.

**Nesting bird protection:** A suite of agro-ecological practices and measures designed to preserve, restore and enhance bird nesting habitats within agricultural landscapes (hedgerows, grassy strips, natural meadows, mixed hedges, agroforestry, etc.). The aim of this approach is to maintain or increase populations of nesting birds, which provide spontaneous or induced biological pest regulation by feeding on pest species (ladybirds, tits, etc.), while also contributing to biodiversity, soil health and the sustainability of production systems. It falls under the umbrella of conservation biological control and integrated crop protection.

**Nitrogen:** The atmosphere is composed at 79% by nitrogen, with a triple link between the two N atoms. It is a very stable gas, used for inerting. There are many forms of reactive nitrogen when a single atom is linked to other atoms (C, H, O,...). Some of these reactive forms are essential in agriculture (ammonia, nitrate) and food (proteins, amino acids). As a consequence, N is essential nutrient in the food supply of plants and the diets of animals. Animals obtain it in nitrogen-containing compounds, particularly amino acids. Although the atmosphere is nearly 80% gaseous nitrogen, very few organisms have the



ability to use it in this form, through the symbiosis with some bacteria. Most higher plants normally obtain it from ammonia or nitrates available in the soil, which they can absorb.

**Nitrogen application:** Operation consisting in introducing nitrogen—either as mineral fertilizers (nitrates, urea, ammonium) or as organic amendments (manure, plant residues, catch-crops)—into the soil or growing substrate in order to meet plants' nutritional requirements. This practice aims to compensate nitrogen deficits, support vegetative growth, and optimise yield, while it can be modulated by agro-ecological strategies (e.g., nitrogen-fixing legumes, nitrate-trapping catch-crops – CIMS) that limit or replace external nitrogen inputs.

**Nitrogen content:** The proportion, usually expressed as a percentage (or in  $\text{g kg}^{-1}$ ), of total nitrogen (N) present in a soil sample, organic matter, plant residue, or agricultural product. It encompasses mineral nitrogen (nitrate  $\text{NO}_3^-$ , ammonium  $\text{NH}_4^+$ ) as well as organic nitrogen (proteins, amino acids, humic substances). Nitrogen content is a key indicator of soil fertility and of the potential nutrient supply to crops, particularly within agro-ecological practices (green-manure effect, CIMS, intermediate nitrate-trap crops).

**Nitrogen plan:** In agriculture, a structured set of measures, practices, and policies aimed at optimising nitrogen management within a territory or production system.

The nitrogen plan brings together, in particular: the reduction of synthetic nitrogen fertilizer inputs; the use of legumes and nitrogen-trapping catch crops (CIMS) to fix or retain soil nitrogen; the application of green manures and organic residues with an appropriate C/N ratio; the monitoring of nitrogen flows (fertilisation, leaching, volatilisation); and the implementation of monitoring tools and regulatory instruments intended to limit nitrogen losses (nitrates, greenhouse-gas emissions) while maintaining soil fertility and crop productivity.

**Nitrogen use:** The capacity of a plant production system to absorb, transform, and mobilize nitrogen that is present in the soil or fixed from the atmosphere (especially via legumes and their symbiotic bacteria) in order to meet the nutritional needs of the current crops, enrich organic residues (green-manure effect), and reduce nitrogen losses (leaching, greenhouse-gas emissions). This use includes the direct supply of nitrogen to plants, the retention of nitrogen in intermediate crops (CIMS) during drainage periods, and the progressive release of that nitrogen to subsequent crops.

**No-till:** A system of sowing crops without tilling the soil with a plow, disk, chisel, or other tillage implement.

**Nocturnal:** Characterized by a primary activity period during the night, as opposed to a diurnal species. Nocturnal animals hunt, feed, reproduce, and move during the hours of darkness and sleep during the day.



Their way of life can be disrupted by light pollution, which turns night into day and alters predator-prey interactions as well as the usual refuges of species.

**Non-native species eradication:** An intentional strategy aimed at completely eliminating or sustainably reducing introduced species outside their natural range (non-indigenous or invasive species) in order to prevent their negative impacts on ecosystems, biodiversity, and ecosystem services. It relies on actions such as physical removal, trapping, biological control, habitat management, or the use of prescribed fires.

**Nutrient:** Chemical elements which are involved in the construction of living tissue and which are needed by both plant and animal. The most important in terms of bulk are carbon, hydrogen and oxygen, with other essential ones including nitrogen, potassium, calcium, sulphur and phosphorus.

**Nutrient management:** Managing the amount, source, placement, form, and timing of the application of nutrients and soil amendments to ensure adequate soil fertility for plant production and to minimize the potential for environmental degradation, particularly water quality impairment.

**Nutrition:** A process in animals and plants involving the intake of nutrient materials and their subsequent assimilation into the tissues.

## O

**On-farm selling:** A marketing approach in which the agricultural producer sells his or her food or non-food products directly to consumers at the farm itself—whether through a farm shop, a stall, a farm-gate sale, a farmers’ market, or subscription schemes such as boxes or baskets. This practice eliminates intermediaries, enhances traceability, strengthens the relationship between producers and consumers, and can contribute to the economic and social valorisation of the farm enterprise.

**Optimal soil fertility:** The level of fertility (the soil’s capacity to supply essential nutrients) that corresponds to the pedoclimatic optimum; that is, the degree of nutrient availability—originating from the soil’s inherent fertility or enhanced by the farmer—that enables the highest agricultural yield appropriate to the local pedological and climatic conditions, without resorting to excessive external inputs and while avoiding unnecessary fertilizer applications.

**Optimising fertilisation:** Action involving the precise adjustment of the type, rate, timing, and method of application of chemical fertilizers according to the actual needs of crops and the pedoclimatic characteristics of the soil, in order to maximise economic yield while limiting excess nitrogen and phosphorus. This optimisation relies on a detailed understanding of the environment (soil analyses, crop response forecasts, pest status) and fits within the framework of sustainable or “reasoned” agriculture, where input



efficiency is proportional to the applied dose and any use beyond the optimal efficiency threshold is avoided to reduce environmental impacts (pollution, risk of resistance).

**Optimising organic nutrient of farm:** A set of agro-ecological practices aimed at adjusting the type, amount, and timing of organic inputs (organic fertilizers and amendments) to maximize their nutritional efficiency for crops while improving the soil's physical, chemical, and biological properties. This optimisation is based on taking into account agrobiodiversity (cover crops, soil fauna and flora), reducing chemical inputs, ensuring circularity of material flows (recycling co-products, closing nutrient loops), and enhancing the resilience of agro-ecosystems, with the goal of supplying plants with the nutrients they need while preserving or strengthening ecosystem services.

**Orchards density:** Measure of the number of fruit trees planted per unit of area (usually expressed in trees / hectare or trees / acre) within an orchard. This density determines the intensity of land use, influences competition for resources (water, nutrients, light), the associated biodiversity, and the vulnerability to risks (erosion, soil impermeabilization, over- or under-concentration). In an agroecological approach, the management of orchards density aims to optimize yield while preserving the health of the territory, avoiding over-density that can exacerbate erosion and under-density that diminishes ecosystem services.

**Orchards fruit trees:** Agricultural production systems that incorporate trees cultivated for their fruit, established either as a monoculture or in association with other crops or livestock. Within agroforestry, orchards can consist of inter-cropped plots (e.g., nut or apple trees grown alongside field crops), rows of trees on field margins, fruit hedgerows, or tree-lined bocage. They operate at various scales, from a single plot to a farm or a broader territory. Orchards contribute to planned biodiversity, prophylaxis (health prevention), and ecosystem services while providing horticultural products for direct consumption or processing.

**Organic:** Relating to biology or living organisms, characterized by the involvement of life and natural processes. In agronomy and agroecology, the term specifically denotes inputs of living origin (organic inputs), the activities and functions carried out by the soil community (soil biological activity), as well as farming practices founded on respect for and preservation of biodiversity and natural ecosystems (organic agriculture, permaculture).

**Organic fertilisation:** The set of practices that involve adding to the soil nutrient elements of organic origin (animal manures, compost, plant residues, green manures, etc.) with the aim of enriching endogenous fertility, improving soil structure, water-holding capacity and microbial biodiversity, while limiting the reliance on mineral fertilizers.



**Organic fertiliser efficiency:** The capacity of an organic fertiliser (green manure, compost, manure, crop residues, etc.) to meet the nutritional needs of crops while enhancing soil quality and function. It is measured by:

- the amount of nitrogen, phosphorus, potassium and other nutrients that are actually assimilable by plants;
- the contribution to the formation of stable organic matter that increases water-holding capacity and medium- to long-term soil fertility;
- the reduction of the required input of synthetic mineral fertilisers;
- 4. the overall impact on the agro-ecological sustainability of the system (lower pesticide residues, improved biodiversity, limitation of greenhouse-gas emissions).

A high organic fertiliser efficiency therefore translates into a durable improvement in plant productivity while limiting fossil-based inputs and negative environmental effects.

**Organic matter nutrient:** Nutritive matter derived from the remains of plants and animals and their waste products in the environment.

**Other economic activities:** Economic activity carried out by a farmer or a farm that is not primary agricultural production (crop growing, livestock breeding, etc.) but that generates supplemental income. It includes, for example, processing of farm products, direct marketing, services (agritourism, training, environmental services), renewable energy production, or any other activity aimed at diversifying revenue sources, strengthening the farm's autonomy, and creating links with the local territory, all within a framework of economic, social, and environmental sustainability.

**Outcrops:** Exposure of the parent rock at the soil surface, where the lithic substrate appears directly, not covered by a pedological layer. It contrasts with pedological horizons (e.g., alios, grison, sub-soil, etc.) which, although sometimes confused with rocks, remain soil formations.

**Over-grazing:** Intensive grazing by animals on an area of land, particularly rangelands and grasslands, such that vegetation is damaged and the soil becomes liable to erosion by wind and rain, sometimes resulting in desertification. Overgrazing implies that the stocking rate on a given pasture is too high, i.e., economic resources are used inefficiently and the value of society's output is less than it could be.

**Over-seeding:** An agronomic technique that involves sowing a second crop into the standing cover of an already established primary crop (interseeding). This practice aims to diversify rotations, optimize the use of resources (light, nutrients, water), strengthen both economic and agronomic resilience (income security, reduction of pathogen pressure), and enhance ecosystem services within an agro-ecological framework.



## P

**Paddock:** A usually enclosed area or field used especially for pasturing or exercising animals.

**Paddock shape:** The spatial and geometric configuration of a bounded grazing area, designed according to the characteristics of the land (cultivation profile, agricultural purpose, soil type and compacted layer) and the management requirements (water accessibility, soil aeration, bioturbation, animal needs). The paddock shape can vary (rectangular, circular, strip, “U-shaped”, etc.) in order to optimise the distribution of resources, the recovery of plant residues, and the maintenance of biodiversity within an agro-ecological infrastructure.

**Parasite:** Organism which lives and obtains food at the expense of another organism, the host.

**Parking paddock:** A purpose-built area, usually located in a rural or agro-ecological setting, that combines a vehicle parking space (cars, bicycles) with a paddock intended for the shelter or resting of livestock (especially horses). This type of infrastructure can be monitored, charge a fee, and may provide complementary services such as equipment rental, toilet facilities, etc.

**Paths and roads quality:** The extent to which a path or road satisfies established criteria of usability, safety, durability, and environmental compatibility. It includes the condition of the surface (e.g., the absence of mud ruts or erosion), the adequacy of drainage, the suitability for the intended users (pedestrians, horses, cyclists versus motorised vehicles), and conformity with conservation or land-management objectives in protected or agricultural landscapes.

**Pasture:** Land covered with grass or herbage and grazed by or suitable for grazing by livestock.

**Pasture design:** Spatial and functional layout and organization of paddocks (grazing enclosures) within a farm, aimed at optimizing pasture rotation, water and soil management, biodiversity, and animal welfare, while taking into account the agronomic purpose of the land and agro-ecological objectives.

**Pasture maintenance:** The suite of management and conservation practices applied to pastures used for livestock feeding, aimed at maintaining or improving their productivity, biodiversity, and soil health. It includes: subdividing pastures into parcels; establishing rotational grazing systems (temporal movement of livestock from one parcel to another); controlling animal stocking rates; fertilizing (organic or mineral); weed control; reseeding or overseeding; monitoring floristic composition; protecting against diseases and pests;



leveling or reshaping the terrain; and other interventions intended to preserve ecosystem services within an agro-ecological perspective.

**Pasture management:** The application of practices to keep pasture plants growing actively over as long a period as possible so that they will provide palatable feed of high nutritive value; to encourage the growth of desirable grasses and legumes while crowding out weeds, brush, and inferior grasses.

**Patch:** A parcel (or plot) of land is an area of land with a particular ownership, land use, or other characteristic. A parcel is frequently used as the basis for a cadastre or land registration system.

**Patch mowing:** The operation of cutting or mowing the vegetative cover on an agricultural plot, usually performed with brush cutters, mowers, or tractors. It aims to manage cover crops, control weeds, prepare the soil for subsequent crops, or maintain grassy strips and hedgerows, while also contributing to biodiversity preservation and limiting water pollution within agro-ecological practices.

**Path:** A route or track between one place to another.

**Protected Designation of Origin (PDO):** An official European Union designation that guarantees an agri-food product has a quality, reputation, or intrinsic characteristics linked to its place of origin; it requires that the product's production, processing, and preparation are carried out according to traditional methods and in respect of the terroir, thereby ensuring a distinct typicity compared with standardized industrial production.

**Permanent grassland:** Land used for five years or more to grow grasses or herbaceous forage species, usually characterised by a high species richness in ecological equilibrium under the effect of the environment and agricultural practices, including animal perturbations.

**Permanent grazing field:** A grazing management system in which livestock remain continuously on the same plot or set of pastures, without any rotation or scheduled rest period, as opposed to rotational (or continuous) grazing. This practice subjects the vegetation to constant pressure, affecting the botanical structure, phenological stage of the plants, and the ecosystem services delivered by the agro-ecosystem.

**Pest control:** A set of practices and strategies implemented within an agroecosystem to manage, limit, or eliminate harmful organisms (pests, pathogens, weeds). According to agroecological approaches, it relies on the conservation or restoration of natural habitats for beneficial allies (predators, parasitoids, pollinators) in order to promote environmentally-friendly and sustainable agriculture. The term therefore denotes an action mode—often integrated, biological, or agroecological—aimed at ensuring crop health and productivity without relying exclusively on chemical inputs.



**Pest management:** A set of practices aimed at preventing, controlling, or reducing populations of harmful organisms (pests, parasites, weeds, wildlife) that threaten crops, livestock, or agricultural ecosystems. This discipline relies on an integrated approach (Integrated Pest Management – IPM) that combines knowledge of pest life cycles and their interactions with the environment, the use of natural enemies (conservation biological control), the management and preservation of habitats that favour beneficial organisms, and the judicious application of chemical, mechanical, or manual methods, in order to minimize costs, risks to human health, and environmental impact.

**Pest regulation:** A set of legislative, regulatory and administrative provisions that define the criteria, admissible thresholds and procedures for the prevention, control and management of species deemed harmful or problematic to ecosystems, agriculture, or public health. These rules specify, among other things, the maximum permissible levels of presence or impact of the targeted organisms, the methods for monitoring and evaluation, and the compliance requirements for projects, activities and interventions, in order to ensure adherence to environmental requirements.

**Pesticide:** A pesticide is an active substance or mixture of active substances, either synthetic or natural, intended for killing pests in order to protect crops.

**Pesticide management:** A set of practices, strategies, and procedures aimed at planning, selecting, applying, monitoring, and evaluating the use of phytopharmaceutical products (herbicides, insecticides, fungicides, etc.) in order to protect crops while limiting health, environmental, and economic impacts, in accordance with regulatory requirements and the principles of agro-ecological sustainability.

**Pesticide spraying:** The action of projecting one or several plant-protection products (herbicides, insecticides, fungicides, etc.) onto vegetation, soil, or targeted surfaces as fine droplets, using spraying equipment (hand-held atomizers, motorized sprayers, drones, etc.), in order to protect crops from weeds, pests or diseases while complying with the required dosages and applicable regulations.

**Pesticide use:** Application of plant-protective substances (chemical or biological) intended to protect crops or livestock from harmful organisms (pests, diseases, weeds), based on the assessment of biotic pressures, the needs of the plant or herd, the timing and dosage of application, and in compliance with regulatory authorizations and the goal of reducing inputs within an agro-ecological approach.

**pH:** A measure of the hydrogen-ion activity in solution, expressed on a scale 0 (highly acid) to 14 (highly basic); 7.0 pH is a neutral solution, that is the most suitable for agronomic performances.

**Phosphorus content:** Quantity or concentration of the element phosphorus (P) present in a given sample (soil, water, plant tissue, food, etc.), usually expressed as mass per unit



mass or volume (e.g., mg kg<sup>-1</sup>, mg L<sup>-1</sup>). This measurement indicates the availability of phosphorus, an essential element for the growth of organisms and the functioning of agro-ecosystems.

**Plant:** The plant kingdom, which contains multicellular eukaryotic photosynthetic organisms and, in some classifications, the algae (unicellular and multicellular). It includes the bryophytes (mosses and liverworts), seedless vascular plants (ferns, club mosses, horsetails) and the seed plants (gymnosperms and angiosperms). The algae are sometimes placed in the Protocista.

**Plant spacing:** The distance or interval between individual plants (or rows) in a crop, determined according to resource requirements (light, water, nutrients), pedological characteristics (soil horizons, compaction, stones), the type of cropping system (monoculture, intercropping, polyculture), and agronomic objectives (root development, competitiveness, yield). Plant spacing is a technical parameter of the cropping system that influences rooting, interactions among neighbouring plants, and soil productivity.

**Plant stage:** A distinct phase in a plant's development, defined by the occurrence or completion of a specific morphological or physiological event (germination, leaf emergence, flowering, grain filling, etc.). Each stage marks a key moment in the crop's life cycle and serves as a reference point for monitoring and modelling plant phenology within agro-ecological management.

**Plant trimming:** An action that involves cutting, shortening, or shaping the aerial parts of a plant (stems, branches, leaves, inflorescences) in order to control its growth, improve its form, promote its health, optimise its production (fruits, flowers, vegetables), or facilitate cultural practices. This operation, often referred to as pruning, thinning, or heading, relies on specific techniques depending on the plant species, its developmental stage, and the agronomic or aesthetic objectives pursued.

**Planting:** The establishment of trees by planting seedlings, transplants, or cuttings.

**Ploughing:** Agricultural technique for working the soil, or more precisely the topsoil of a cultivated field, which consists of opening the soil to a certain depth, turning it over, before sowing or planting.

**Pond:** Inland bodies of standing freshwater usually smaller than lakes. They can be man-made or natural but there is no universal agreement as to their exact size. Some consider a pond to be a small body of water that is shallow enough for sunlight to reach the bottom.

**Potassium:** Amonovalent ion (K<sup>+</sup>) macro-element essential for plant growth, occurring in soil as an exchangeable cation adsorbed onto organic matter and clay minerals. It is one of the principal nutrients (nitrogen, phosphorus, potassium) supplied to plants, generally



obeys the law of dilution in agricultural settings, and contributes to both the biological and chemical fertility of the soil.

**Precision farming:** A suite of techniques and practices that, through the use of sensors, positioning systems (GPS, satellites) and data-analysis tools, take intra-field heterogeneity into account in order to adjust inputs (seeds, fertilizers, phytosanitary treatments) spatially, temporally and quantitatively. The goal is to optimise the economic, agronomic and environmental performance of farms by improving knowledge of crops' physiological needs and by providing decision-support tools (modulation maps, predictive models).

**Precision fertilisation:** A set of practices and techniques for applying fertilising inputs that, based on precision agriculture, adjust the dose, timing, and location of application at the intra-field (sub-parcel) scale according to the actual physiological needs of the crops and the local pedoclimatic conditions. It aims to achieve the “pedoclimatic optimum” – the highest yield possible given the soil and climate characteristics – while limiting fertilizer excesses, thereby reducing costs, the risk of under-fertilisation, and negative environmental impacts.

**Precision technology:** A suite of digital devices and systems—including sensors (for movement, temperature, humidity, etc.), detectors (cameras, microphones), remote-sensing tools (drone or satellite imagery), positioning technologies (on-board GPS), analysis and control software, as well as automated actuators (spreader units, sprayers, automatic dispensers)—designed to collect, transmit, process, and exploit high-resolution spatial and temporal data in order to finely and continuously adjust interventions (inputs, treatments, livestock actions) on agricultural plots or animals, with the aim of optimizing economic, agronomic, and environmental performance.

**Precision treatment:** Targeted, modulated application of inputs (plant-protective products, fertilizers, etc.) at the intra-parcel level, based on the recognition of the spatial and temporal heterogeneity of crops' physiological needs. It relies on digital tools (sensors, mapping, decision-support models) to adjust the dose, timing and place of intervention in order to optimise economic, agronomic and environmental performance.

**Prey:** In ecology and biology, denotes any organism that is captured, killed, or consumed by another organism (the predator) within a trophic relationship. The term is also used figuratively to refer to a target or a potential victim.

**Prophylaxis:** Administration or application of management or hygienic methods or antimicrobial agents to an individual or a group of plants/crops or animals at risk of acquiring a specific infection or in a specific situation where infectious disease is likely to occur if the antimicrobial agent is not administered or applied.



**Protection of natural area:** Active management of nature areas in order to ensure that wildlife is protected and the quality of its environment is maintained.

**Protein:** Organic macromolecule composed of amino acids.

**Pruning:** The cutting off or removal of dead or living parts or branches of a plant to improve shape or growth.

## Q

**Quality:** Degree to which a set of inherent characteristics fulfils requirements.

**Quality label:** Official designation granted to a product, a production system or an agricultural operation that confirms compliance with a specific set of specifications (health, environmental, social or agronomic requirements). The label assures consumers that the product meets recognized quality criteria, often related to sustainability, biodiversity preservation, limited inputs, or traceability, and it is issued after an inspection carried out by an accredited body (e.g., European certification, French AB label, HVE).

## R

**Rain:** Precipitation in the form of liquid water drops with diameters greater than 0.5 millimetres.

**Rat:** A rodent mammal of the genus *Rattus*, generally of small to medium size, with a thick coat, crescent-shaped incisors, and a long tail. Native to Asia, it has spread widely across the globe through human activity: it has been transported intentionally or accidentally with goods, thereby becoming an allochthonous or feral species (animals that have reverted to a wild state after domestication or introduction). The rat can live in immediate proximity to humans (in urban habitats, dwellings, and agricultural establishments) or establish populations at a distance, sometimes partially relying on human resources. In the absence of natural predators in new environments, it can reach high densities and exert a strong influence on native fauna, notably through competition, disease transmission, and habitat alteration (soil bioturbation). Consequently, the rat is considered a major vector of ecological and health impacts in anthropogenic ecosystems.

**Redclover:** Perennial fodder legume used as fodder for creating artificial and temporary grasslands. Red clover is also used as a service plant because it improves soil structure (cover crop) and enriches the soil with organic matter (green manure).

**Reduce workload:** An action that involves decreasing the amount, complexity, or intensity of work assigned to an individual, a team, or a system, in order to lighten the workload, improve efficiency, prevent overwork, or optimize task distribution. This



reduction can result from process re-organization, automation, delegation, activity prioritization, or the elimination of non-essential tasks.

**Reducing feed inputs:** Action or strategy aimed at decreasing the quantity of feed bought by households, communities, or businesses, with the purpose of limiting the consumption of natural resources, reducing environmental impact and food/feed waste, and fostering a more modest and sustainable diet within agri-food systems.

**Reducing inputs:** In agroecology, a practice that aims to lower both the amount and the reliance on agricultural inputs (fertilizers, plant-protective chemicals, synthetic amendments, etc.) by promoting the use of biological or organic inputs, the incorporation of plant material, diversified cropping techniques, and ecosystem services, with the goal of limiting the environmental, economic, and social impacts of agricultural production.

**Reducing waste:** Process or set of measures aimed at decreasing the amount of waste generated, limiting losses and the waste of resources (especially water), and improving the management of residual flows. This includes behavioral changes, the adoption of more efficient technologies or devices, and the optimisation of production and consumption practices in order to reduce environmental impact and the costs associated with waste disposal.

**Refuses:** Plants or vegetation that are not eaten by livestock and that, in the absence of grazing, can become established and progressively invade pastures, thereby constituting an undesirable form of vegetation or a “refusal” for livestock production.

**Region:** A designated area or an administrative division of a city, county or larger geographical territory that is formulated according to some biological, political, economic or demographic criteria.

**Regrowth:** Vegetative bud and shoot elongation, either after shoot is cut or after shoot has attained sufficient maturity.

**Reseeding:** The practice of sowing seeds again on a surface that has already been cultivated, degraded, or impoverished, with the aim of restoring, maintaining, or improving vegetation cover. This technique is part of sustainable agro-ecosystem management, enhancing soil resilience, agricultural productivity, and ecosystem services (e.g., erosion control, fertility enhancement, biodiversity support). It is commonly applied after disturbances such as intensive grazing, fire, or heavy exploitation, and is also used within crop-rotation schemes or permanent vegetative-cover systems.

**Resilience:** The ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient

manner, including through the preservation and restoration of its essential basic structures and functions.

**Resource:** Any component of the environment that can be utilized by an organism.

**Retailer network:** A set of retail outlets (grocery stores, supermarkets, local markets, specialty shops, etc.) that are interconnected and ensure the distribution of food products from producer to final consumer within a given territory. This network, often integrated into territorial food systems, promotes short food supply chains, food relocalization, local resilience, and food justice by structuring the interrelationships among production, processing, distribution, and consumption.

**Riparian:** Frequenting, growing on, or living on the banks of streams or rivers.

**Riparian margins:** Vegetated strips that line watercourses (rivers, streams, lakes, or wetlands). These riparian zones, situated between the aquatic environment and the adjacent land, are characterized by typically hydrophilic vegetation and play a key role in bank stabilization, pollutant filtration, regulation of the hydrologic regime, preservation of biodiversity, and the connection of terrestrial and aquatic habitats. Consequently, they constitute a fundamental component of riparian ecosystems and of sustainable water-resource management.

**Risk:** The expected number of lives lost, persons injured, damage to property and disruption of economic activity due to a particular natural phenomenon, and consequently the product of the probability of occurrence and the expected magnitude of damage.

**Risk management:** The process of evaluating and selecting alternative regulatory and non-regulatory responses to prepare for the probability of an accidental occurrence and its expected magnitude of damage, including the consideration of legal, economic and behavioral factors.

**Riverbank flora:** The assemblage of plant species inhabiting the terrestrial zone of a riverbank, encompassing trees, shrubs, herbs and grasses that grow on the riparian zone (or ripisylve). This vegetation forms a transitional edge between water and land, influencing bank stability, controlling lateral exchanges, providing shade, moderating water temperature, supplying organic material (leaves, twigs) and contributing to the overall ecological functionality of the watercourse.

**Roadway:** Infrastructure constructed to provide a passage for traffic (vehicles, pedestrians, livestock) between two points or habitats. The surface, typically paved or covered with a stable material, may—within agro-ecological approaches—be partially or entirely overlaid with soil or natural material so as to allow the establishment of spontaneous vegetation or a service cover.



**Robust:** Exhibiting a strong capacity to resist disturbances, to maintain its functions or performance despite variations, shocks, or constraints. In ecology and agroecology, robustness refers to the stability of an indicator (e.g., the IBGN/IBGA index) or of a system when faced with environmental changes, reflecting the reliability of the assessment and the persistence of ecological interactions.

**Rock:** A compact, consolidated mass of mineral material, typically formed by the crystallisation or consolidation of its parent rock, constituting a distinct lithospheric unit separate from soil and pedologica horizons. It is characterised by its density, mechanical strength and the lack of any significant organic structure, thereby differing from pedological horizons such as alios or grison.

**Rock formations:** Natural geological structures resulting from the accumulation, deposition, consolidation, or transformation of rocks, visible at the surface or below ground. They may assume a variety of shapes (layered strata, domes, arches, columns, cliffs, etc.) and arise from geological processes such as sedimentation, volcanism, plate tectonics, erosion, and metamorphism. They constitute the basic elements of Earth's relief and are frequently studied in geology, geomorphology, and ecology to understand Earth's history and the associated habitats.

**Rocky outcrops:** The exposure at the soil surface of a mass of rock (parent rock, sandstone, etc.) that is not overlain by a pedological horizon. It is a location where the lithological substrate appears in the open air, visible without excavation, typically resulting from erosion or from a very thin edaphic cover.

**Rodent:** A gnawing mammal of an order that includes rats, mice, squirrels, hamsters, porcupines, and their relatives, distinguished by strong constantly growing incisors and no canine teeth.

## S

**Scheme:** A set of coordinated and planned actions, often organized as a timetable or a computerized tool, intended to achieve a specific objective. In an agricultural context, this could be, for example, a harvest schedule programmed according to vegetable tenderness, or an action plan structuring the implementation of an environmental initiative such as the High Environmental Value (HEV) certification.

**Seasonal grazing:** Seasonal grazing means that grazing occurs only during part of the year on a given site.

**Security:** State of being protected from harm or other danger. Safety can also refer to the control of recognized hazards in order to achieve an acceptable level of risk.



**Seed:** Originating from the development of an ovule, what is referred to as "seed" is the simplest type of seed, consisting of three essential parts: the embryo, the reserve tissues, and the integuments.

**Seed mixture:** A blend of two or more seed types, from one or more species, intended to be sown together in order to maintain or enhance cultivated biodiversity, strengthen the resilience of agro-ecological systems, and ensure better adaptation to low-input farming practices.

**Self-sufficiency:** State in which a person, being, or system needs little or no help from, or interaction with others.

**Selling channel:** A network of actors, infrastructures, and logistical flows that ensure the transport, marketing, and provision of agricultural or food products to consumers, typically within a defined territory. It brings together production, processing, and distribution organizations and their interrelationships.

**Shadow:** In agroecology and agroforestry, refers to the absence or reduction of direct sunlight on a plot or plant, typically caused by the presence of trees, hedgerows, or other vegetative structures. This condition creates a distinct micro-climate (temperature, humidity, light intensity) that influences crop growth, physiological development, and qualitative value (e.g., enhancing the cheese-making quality of milk in mixed-breed herds), as well as ecosystem functions such as soil protection, biodiversity, and other environmental services within the farm.

**Shape:** The external configuration of an object, a surface, or a collection, determined by its dimensions, its contours, and its proportions. In biology and ecology, the term can refer to the silhouette or the spatial configuration of an organism, a population, or a habitat.

**Sheep:** Domesticated animals of the species *Ovis aries* kept in flocks mainly for their milk, wool or meat.

**Short selling:** A distribution system in which the distance between producer and consumer is minimized, largely eliminating or strongly limiting intermediaries. It relies on direct sales (farmers' markets, community-supported agriculture boxes, producer shops, on-farm sales, agritourism) or on local networks (buying groups, nearby-area platforms). The short-supply-chain promotes the relocalisation of agriculture, enhances transparency of production methods, strengthens the economic viability of farms, creates added value within the territory, and often incorporates an agro-ecological dimension and social-justice considerations.

**Shrub:** A small-sized woody plant, typically with multiple stems and a bushy habit, that grows naturally or is cultivated within agro-ecological systems (agroforestry,



agro-ecological infrastructures, hedgerows, field margins). It contributes to the functions of the agro-ecosystem—such as biodiversity, habitats for beneficial insects, biological control, pollination, and organic-matter recycling—without being intended for harvest or grazing.

**Shrub care:** The set of cultural and management practices applied to shrubs present in agricultural or agroforestry systems, aimed at maintaining or enhancing their health, vigor, and ecological functions (biomass production, ecosystem services, crop protection). It includes, in particular, pruning, thinning, weeding, fertilization, appropriate irrigation, control of pests and diseases, as well as the establishment of service cover crops or mulch, in accordance with the principles of agroecology and integrated resource management.

**Silage:** Feed preserved by an anaerobic fermentation process in which lactic acid and volatile fatty acids (produced by fermentation) lower the pH of the silage.

**Silvopastoralism:** Production system that combines pastoralism (extensive livestock grazing) with a forested or arboreal environment, integrating livestock raising and forest resource management on the same land. This practice aims to enhance agro-ecological sustainability, close biogeochemical cycles, and promote forage self-sufficiency for rural farms.

**Site specificity:** The set of biological, cultural, social, economic, and heritage characteristics that are unique to a given territory, arising from the interaction among its natural resources, its biocultural heritage, its know-how, and its local dynamics, and that confer a distinct, non-substitutable identity to its productions, goods, and ecosystem services.

**Size:** The magnitude of a quantity, such as length or mass, relative to a unit of measurement.

**Slaughter house:** A place where animals are killed and butchered for food.

**Slurry:** A liquid mixture of animal faeces and urine and straw collected from stables and spread on agricultural land.

**Slurry additive:** A substance mixed into slurry (liquid manure) with the purpose of enhancing its agronomic, sanitary, or technical properties. It may promote the breakdown of organic matter, reduce odors, stabilize nutrients (nitrogen, phosphorus), facilitate transport and storage, or otherwise optimize the use of slurry as a biological fertiliser input.

**Slurry and manure management:** A set of practices and processes aimed at collecting, storing, treating, valorising, and applying livestock slurries and manures. It includes the implementation of storage systems (tanks, pits, silos), conditioning (dehydration,



composting, anaerobic digestion), regulation of gas emissions and odours, calculation and adherence to nutrient-application rates, and targeted application to soils in order to preserve soil structure, prevent water pollution, and contribute to sustainable and agro-ecological agriculture.

**Soil compaction:** An increase in bulk density (mass per unit volume) and a decrease in soil porosity resulting from applied loads, vibration, or pressure. More compacted soils (or other materials) can support greater loads (load-bearing capacity). Bulk density can be increased by controlling the moisture content, compaction forces and treatment procedures, as well as by manipulating the type of material being compacted.

**Soil cover:** The observed physical and biological cover of the Earth's land surface including natural features such as vegetation, soils and waterbodies, as well as human-made features such as buildings and roads. Land cover is distinct from land use, which refers to the activities people undertake on a particular land cover type.

**Soil fertility:** The status of a soil with respect to the amount and availability to plants of elements necessary for plant growth.

**Soil health:** The capacity of a specific kind of soil to function, within natural or managed ecosystem boundaries, to sustain plant and animal productivity, maintain or enhance water and air quality, and support human health and habitation. In short, the capacity of the soil to function.

**Soil management:** Good management of soils assures that mineral elements do not become deficient or toxic to plants, and that appropriate mineral elements enter the food chain.

**Soil nitrogen content:** Total amount of nitrogen (N) present in the soil profile, encompassing both organic forms (nitrogen contained in organic matter, plant residues, green manures) and mineral forms (nitrates, ammonium). It is usually expressed in milligrams or grams of nitrogen per kilogram of soil ( $\text{mg N kg}^{-1}$  or  $\text{g N kg}^{-1}$ ) or as a weight percentage. This content reflects the soil capacity to supply the nitrogen required for crop growth, conditions its physicochemical fertility, and depends on the C/N ratio of plant residues, the management of intermediate nitrogen-trapping crops (CIMS), and agro-ecological practices aimed at increasing organic matter and maintaining soil pore continuity.

**Soil organic matter:** Any measurable characteristic related to the organic matter compounds of the soil.

**Soil test:** A set of analyses carried out on a soil sample with the aim of better understanding the physical, chemical and biological characteristics and properties of soils.



**Sorghum:** The word “sorghum” typically refers to cultivated sorghum (*Sorghum bicolor* [L.] *Moench* subsp. *bicolor*), a member of the grass family *Poaceae*, tribe *Andropogoneae*, and subtribe *Sorghinae* that is grown for its grain (grain sorghum), its sugary sap (sweet sorghum) or as a forage (forage sorghum). A variety of common names are used in different regions to refer to cultivated sorghum, including great millet, guinea corn, broomcorn, kaffir corn, durra, mtama, milo, jowar or kaoliang.

**Sowing:** A major operation in crop establishment that involves creating a soil profile conducive to crop establishment, planting seeds, and various other operations aimed at promoting the establishment of the crop by modifying the various components of its physical or biological environment.

**Sowing dates:** Calendar dates when a crop is sown. Setting these dates influences plant development, competitiveness against weeds, and the implementation of conservation practices (e.g., delayed sowing, staggered sowing, direct sowing under a vegetative cover). They are determined according to agronomic and climatic requirements as well as the objectives of sustainable soil management.

**Space allowance:** The portion of land that is actually usable or available within a given territory, assessed in relation to physical constraints (e.g., wetlands, flood-prone areas), attractiveness dynamics, and the requirements of human activities (agriculture, industry, pastoralism) or biodiversity. It enables the identification of “winning” areas (dynamic, attractive) and those under pressure, as well as habitats that are sufficient to sustain species’ life cycles and maintain the continuity of ecological functions.

**Special area of conservation:** A geographically defined space, usually integrated within the green-and-blue infrastructure, designed to preserve and restore natural habitats and biodiversity. It aims to ensure the continuity of resources (such as reservoirs, corridors, and refuges) required by auxiliary species used in biological control, pollinators, and other ecosystem services, while promoting more sustainable and environmentally-friendly agriculture.

**Species:** In sexually reproducing organisms, a group of interbreeding individuals not normally able to interbreed with other such groups. A species is given two names in binomial nomenclature (e.g. *Homo sapiens*), the generic name and specific epithet (italicized in the scientific literature), similar and related species being grouped into genera. Species can be sub-divided into subspecies, geographic races, and varieties.

**Spraying:** A technique that involves projecting a liquid (water, phytosanitary solutions, fertilizers, bioremediation agents, etc.) onto plant surfaces, soil, or other media in the form of fine droplets, using a hand-held or motorized sprayer.

- **Agronomic objectives:** protection of crops against pests, diseases, and weeds; targeted delivery of nutrients or biostimulants.



- Environmental objectives: controlled application of decontamination or site-rehabilitation agents (bioremediation) to neutralise or reduce contaminant concentrations on a disturbed site.
- Key issues: optimisation of yield and product quality, minimisation of losses and adverse impacts on ecosystems, compliance with agro-ecological principles and positive-energy agriculture.

**Spreading:** Fertilizer application refers to the application of nutrients for the benefit of plant growth in general. It includes applications for agricultural and other purposes, including recreational and sporting facilities, public and private gardens and lawns.

**Spring grazing:** A livestock-feeding practice that involves allowing animals to graze on pastures during the spring, taking advantage of the rapid growth of young shoots and flowers that follows the frost period.

This seasonal management is embedded in transdisciplinary agro-ecological systems, aiming to optimise plant resources, reduce the risk of damage from late frosts, and support the transition toward sustainable agriculture.

**Spring sowing:** Agricultural practice consisting of sowing crops during the spring, after the period of spring frosts, in order to exploit favourable soil and climate conditions for germination and the early development of young plants. This type of sowing is often accompanied by complementary techniques aimed at:

- Preventing the early emergence of weeds (e.g., postponing the sowing date, false sowing);
- Maximising the duration of soil cover;
- Compensating for losses associated with mechanical weed control (by increasing sowing density).

It is incorporated into agro-ecological or conventional production systems that seek to balance yield, sustainability and resilience to climatic hazards, notably spring frosts.

**Squirrel:** Member of the family Sciuridae, a family that includes small or medium-sized rodents. The squirrel family includes tree squirrels, ground squirrels (including chipmunks and prairie dogs, among others), and flying squirrels.

**Stone:** A general term for rock that is used in construction, either crushed for use as aggregate or cut into shaped blocks as dimension stone.

**Stony habitats:** Localized features composed of one or several rocks or an exposed rock formation, providing a hard substrate and a variety of micro-habitats (crevices, fissures, warm or shaded surfaces) that are conducive to the colonisation of specialised plant and animal species; they are considered part of “agro-ecological infrastructures” (AEI) when



incorporated into the agricultural landscape as elements of biodiversity and ecosystem services.

**Storage:** A series of actions undertaken to deposit or hold goods, materials or waste in some physical location, as in a facility, container, tank or dumping site.

**Streamside vegetation:** Plants growing in areas adjacent to rivers and streams.

**Sufficient forage production:** The amount of forage (green forages, dehydrated forages, straw, fibrous agri-food by-products, hay, silage or baled silage) produced on a farm and available for feeding the herd, which meets the livestock's nutritional requirements (in terms of mass, energy or protein) over the period in question, thereby ensuring the farm's forage self-sufficiency.

**Summer:** The season of the year that falls between spring and autumn, characterized in the Northern Hemisphere by the longest days and the highest temperatures. It roughly spans from June 21 (the summer solstice) to September 22 (the autumnal equinox) in the Gregorian calendar. In the Southern Hemisphere, the term denotes the opposite period, from December 21 to March 20.

**Summer grazing:** The practice of feeding livestock on pastures during the summer season, typically in mountainous areas, often based on a system of rotational grazing. It involves regularly moving the animals from one parcel to another according to a pre-defined schedule (ranging from a few days to about ten days, depending on the system) and requires monitoring a set of pasture-state indicators: grass height, leaf count, species composition, phenological stage, growth rate, rest period of the parcels, and livestock stocking density. This management aims to preserve the biodiversity of the natural heritage and to optimise the ecosystem functions of the agro-ecosystem.

**Supermarket:** A large-scale retail establishment offering a very wide assortment of food products (fresh produce, grocery items, beverages, frozen goods, etc.) and everyday consumer goods (personal hygiene items, cleaning products, household articles, etc.). A supermarket is characterized by a department-based layout, competitive pricing policies, self-service where customers freely move through the aisles, and often additional services such as self-checkout counters, fuel stations, and dining areas. The term refers both to the physical store and, more broadly, to the mass-distribution model employed by local outlets or large chain operators.

**Supplementation:** Refers to the addition of micronutrients to a food irrespective of whether the nutrients were originally in the food before processing or not.

**Supply chain:** The network created amongst different companies producing, handling and distributing a specific product. It encompasses the steps it takes to get a good or service from the supplier to the customer.



**Sustainable farming:** A type of agriculture that applies the principles of sustainable development to the agricultural world: its goal is to enable farms to be autonomous, economically viable, ecologically sound, transferable, socially acceptable and active players in their local area. By adopting these principles, sustainable agriculture aims to enable farmers to make a decent living from their work while reducing their environmental impact and playing an active role in their local area.

## T

**Target treatment:** Practice of applying a treatment (pharmaceutical, phytosanitary, etc.) only to the individuals, plots, or zones that are actually affected, based on a precise diagnosis, in order to limit product use, preserve ecosystem services, and fit within an integrated management approach to animal or plant health.

**Temporary field layout:** Provisional spatial arrangement of the parcels on a farm, set up for a defined period to allow crop rotation, rotational grazing, the establishment of agro-ecological structures (grass strips, hedgerows, etc.) and to optimise environmental, economic, and social functions. This layout is revisable and adapts to the agronomic, ecological, or societal needs of the farm.

**Temporary grassland:** Fallow that is planted with species such as grass or legumes to regenerate the soil more rapidly.

**Temporary pasture:** Grassland sown and composed of forage grasses, either alone or mixed with forage legumes. Grassland used for grazing or mowing to produce hay and silage. Grassland with a lifespan of 0 to 5 years. Artificial grasslands, sown exclusively with perennial forage legumes, are sometimes counted as temporary grasslands.

**Tetraploid:** An organism whose chromosome number is four times the haploid number ( $4 \times n$ ). In plants, this condition is manifested by a karyotype that contains four copies of each chromosome (e.g., tetraploid teosinte:  $2n = 40$ ). The tetraploid status usually arises from a duplication of a diploid genome, often conferring greater genetic robustness, an enhanced capacity for adaptation and a poorer seed production.

**Traditional breeds:** Livestock breeds whose genetic and phenotypic characteristics have evolved over centuries within a specific pedoclimatic and sanitary environment, often in connection with local farming practices. They exhibit high rusticity: low requirements for care and inputs, the ability to exploit variable and opportunistic feed resources, autonomous parturition, and behavioral adaptation to environmental fluctuations. Because of their local adaptation, traditional breeds contribute to the food autonomy of farms and to the resilience of agro-ecosystems.

**Transhumance:** The seasonal migration of livestock to suitable grazing grounds.



**Treatment:** A process in which the act is intended to modify or alter some other material entity.

**Tree:** Any large woody perennial plant with a distinct trunk giving rise to branches or leaves at some distance from the ground.

**Tree species:** A woody plant taxon possessing a trunk and branches, integrated into agroforestry systems or agro-ecological infrastructures. It is planted—either intentionally or spontaneously—in simultaneous or sequential association with crops or livestock in order to provide ecosystem services (windbreak, habitats for beneficial organisms, pollination, biological control, carbon sequestration, soil improvement, etc.) and to contribute to the diversification and the social, economic, and environmental sustainability of agricultural enterprises.

**Trough:** A place or device, often incorporated into an agro-ecological infrastructure, intended to supply potable water to livestock or wildlife. It can be a basin, tank, natural or artificial water point, designed to ensure a sustainable water supply within the framework of Integrated Water Resources Management (IWRM).



## U

**Under-grazing:** Insufficient grazing pressure relative to a pasture's forage capacity, resulting in selective grazing where animals consume only the most palatable plants, allowing less- or non-consumed species of low pastoral value to proliferate.

**Understorey structures:** The assemblage of vegetative and physical components located beneath the canopy of a natural or artificial forest, including shrubs, young trees, herbaceous plants, lianas, and other low-lying vegetation, together with their density, height, cover, and diversity characteristics. These structures provide essential ecological functions: habitat for wildlife, micro-climate regulation, soil protection and fertilisation, and the continuity of forest dynamics.

**Urine:** Wastes removed from the blood stream via the kidneys and voided as a liquid.

## V

**Variety:** A grouping of plants defined by the reproducible expression of its distinctive characteristics such as growth habit, color, size, disease resistance, or other traits. Essentially, a plant variety is characterized by its uniformity, stability, and distinctiveness from other groupings within the same species.

**Vegetation:** The plant cover of an area, considered generally, and not taxonomically.

**Vegetation coverage:** Number of plants growing on a certain area of land.

**Vegetation maintenance:** The set of management practices (grazing, mowing, organic or mineral fertilisation, sowing of service plants, selective cutting, etc.) intended to maintain, structure, and optimise vegetative covers (permanent pastures, agro-ecological infrastructures, indicator vegetation) within an agro-ecosystem, so as to reconcile agricultural production (yield, grass quality) with biodiversity conservation and the provision of ecosystem services (carbon sequestration, soil protection, anti-pest effect, etc.).

**Vegetation patch dimensions:** In ecology and land-use planning, the term refers to the spatial measurements that characterize the extent of a vegetation patch—that is, its area, shape (length, width, perimeter) and scale of a continuous zone where the floristic composition is homogeneous.

These dimensions enable the description of a stand's relative size (whether uniform or heterogeneous), the distinction between small woodlots embedded within agricultural fields and large forested expanses, and the assessment of vegetation cover within a landscape.



**Vegetation pruning:** The selective cutting or trimming of vegetation in a natural or cultivated setting in order to influence its structure, composition, and ecological functions. This practice involves removing all or part of stems, branches, shoots, or foliage in order to:

- reduce the density or height of the plant cover,
- promote the regeneration of desired species,
- control invasive or competitive species,
- improve light penetration, aeration, and gas exchange,
- modulate dynamic processes (succession, resilience) and the geographic distribution of plant communities.

Vegetation pruning is part of the approaches of syntaxonomy, synecology, and syndynamics, and it is applied in silvicultural management, agro-ecology, restoration of aquatic and terrestrial habitats, as well as in landscape design.

**Vetch:** A plant belonging to the genus *Vicia* (family *Fabaceae*), usually annual or biennial, cultivated as a service crop: green manure, cover crop, or forage. It fixes atmospheric nitrogen, improves soil structure and fertility, helps combat erosion, and promotes biodiversity within agro-ecosystems.

**Veterinary:** A person registered or licensed by the relevant veterinary statutory body of a country to practise veterinary medicine/science in that country.

**Veterinary services:** The combination of governmental and non-governmental individuals and organizations that perform activities to medically treat and care for animals.

## W

**Walking distance:** Length of the route that an organism, a population, or an agent must traverse from an origin point to a destination point, especially between two biodiversity reservoirs along an ecological corridor. It is expressed in units of length (metre, kilometre, etc.) and constitutes a key metric for assessing habitat connectivity within a green-blue network.

**Water:** A natural resource indispensable to the survival of ecosystems and humanity, occurring in various forms (surface water, groundwater, fresh or marine water). It is the primary constituent of the hydrological cycle, meets biological, agricultural, industrial, domestic, and recreational needs, and must be managed sustainably to prevent scarcity, pollution, and imbalances between supply and demand, while preserving the quality of natural environments.



**Water access and quality:** The set of conditions that ensure the availability of a sufficient quantity of water (fresh surface or groundwater) to meet human needs (domestic, agricultural, industrial, energy, recreational) and the conformity of this resource with health, environmental, and socio-economic requirements. Water access implies the equitable distribution of the resource at the watershed scale, while water quality refers to its physico-chemical and microbiological state, its ability to sustain ecosystems, and its compliance with public-health standards within an Integrated Water Resources Management (IWRM) framework.

**Water resource:** Water in any of its forms, wherever located - atmosphere, surface or ground - which is or can be of value to man.

**Watercourse habitat:** A natural or managed environment along rivers, streams, and other watercourses, encompassing the riparian zone, the channel bed, the banks, and adjacent wet areas, where plant communities (biennial, perennial, and long-lived species) and animal assemblages adapted to variable hydrological conditions develop. This habitat ensures ecological continuity, water filtration, flow regulation, erosion protection, and serves as a refuge for biodiversity (fauna, flora, and associated organisms) that is essential for sustainable agricultural practices and the preservation of water resources.

**Waterway:** A river, canal, or other navigable channel used as a means of travel or transport.

**Waterway protection:** A set of measures, practices, and strategies aimed at preserving the quality, quantity, and biodiversity of rivers and streams. It is part of Integrated Water Resources Management (IWRM) and includes, in particular: limiting diffuse and point-source pollution, preserving riparian habitats, regulating water withdrawals, restoring natural water bodies, coordinating stakeholders (farmers, local authorities, water agencies, basin committees), and taking into account environmental, socio-economic, and climate challenges in order to ensure a balance between water supply and demand while maintaining the health of aquatic ecosystems.

**Weather conditions:** Atmospheric conditions at a particular time in a particular location, including temperature, humidity, precipitation, cloudiness, wind, and visibility. Weather conditions do not happen in isolation, they have a ripple effect. The weather in one region will eventually affect the weather hundreds or thousands of kilometres away.

**Weed control:** Freeing an area of land from weeds in order to limit or avoid their competition with crops. This is achieved by several means, such as herbicides, tillage, burning, mowing, and crop competition.

**Wet condition:** State of a soil or environment characterized by a high moisture level due to the prolonged presence of water of natural origin. This condition is expressed by a soil morphology typical of wetland areas (saturation, texture, structure that favour water



retention) and, when appropriate, by the presence of hygrophilous plants. It entails a limited capacity of the soil to drain excess water and strongly influences evapotranspiration processes and water availability for crops.

**Wetland:** Area habitually saturated with water. It may be partly or wholly covered permanently, occasionally or periodically, by fresh or salt water up to a depth of 6 metres. Wetlands include bogs, fens, wood meadows, marshland and salt marshes, shallow ponds, river estuaries, and intertidal mudflats, but exclude rivers, streams, lakes and oceans.

**Wetland conservation:** Strategy and processes to preserve an area that is saturated by surface or ground water with vegetation adapted for life under those soil conditions.

**Width:** Measure of the extension of an object or surface in the direction perpendicular to its length. In the agricultural sector, width specifically denotes the transverse spacing of a furrow or a field parcel, determining the space occupied by a crop row or the passage of a soil-working implement. It is usually expressed in meters (or centimetres) and affects water-retention capacity, seeding density, and the efficiency of tillage operations.

**Wildflower presence:** Condition that characterizes the spontaneous, uncultivated occurrence of indigenous or naturalized flowering species within a setting (field, meadow, margin, agro-ecosystem). It serves as an indicator of biodiversity and habitat health, reflecting soil quality, the availability of resources for beneficial organisms, and the sustainability of agricultural systems.

**Wildlife conservation:** A series of measures required to maintain or restore the natural habitats and the populations of species of wild fauna and flora at a favourable status.

**Wildlife management:** The application of science-based and local knowledge in the stewardship of wild animal populations (including game) and their habitats in a manner that is beneficial to the environment and to society.

**Wildlife refuge:** An area, often incorporated within an agro-ecosystem or an agro-ecological infrastructure, where a permanent (or semi-permanent) vegetative cover and a variety of habitats (shelters, nesting sites, food sources) are maintained so as to provide protection, resources, and breeding conditions for wild animal species, thereby contributing to biodiversity and to the resilience of agricultural systems.

**Wood:** Wood that is harvested from trees, specifically those that are suitable for use in construction, carpentry, and other applications.

**Woody:** Having a structure or appearance of wood; used of plants whose stems, trunks, or underground parts are reinforced by woody tissue, as well as of residues, pedological horizons, or soil formations that contain this woody material. In agronomy, the term specifically denotes woody vegetation that develops after land abandonment or

pedological horizons that become hardened by the accumulation of woody matter and metallic oxides.

**Woody area:** a) Land area whose vegetation cover is dominated by living trees, which may also include understories of shrubs and herbaceous plants. b) In the context of agro-silvo-pastoralism, a woody area denotes the portion of a pasture where the presence of trees creates an arboreal stratum, supplying forage resources, protecting against wind and precipitation, and contributing to the climatic resilience of the system. c) It is distinguished from non-woody grazing zones (heaths, coppice, grasslands) and contributes to habitat diversification, soil conservation, and the provision of ecosystem services (biodiversity, carbon sequestration, water-quality improvement).

**Woody plant coverage:** A collective of woody-stem plants (shrubs, trees, hedgerows, woody perennials) that are sown or permanently established on an agricultural plot to provide, throughout the year, soil protection, erosion reduction, biodiversity enhancement, and the delivery of ecosystem services (water retention, nitrogen fixation, habitats for beneficial organisms). It represents a form of permanent vegetative cover, distinct from annual crops or turfgrass, and contributes to agro-ecological strategies such as “high environmental value” certification.

**Woody plant maintenance:** The set of management and care practices applied to woody vegetation (trees, shrubs, hedgerows) within an agro-ecosystem. It includes pruning, weeding, fertilization, health monitoring, the establishment or upkeep of agro-ecological infrastructures, and any other interventions aimed at preserving the health, vigor, and ecological functions (biodiversity, biological regulation, carbon sequestration, pollination services, etc.) of these plants for the benefit of the sustainability of agricultural production.

**Woody plant management:** A set of practices for the planning, control, and utilization of woody vegetation (shrubs, trees, hedgerows) present on or emerging in agricultural fields, especially following land abandonment. It aims to integrate these plants into the agro-ecosystem in order to harness their ecological functions—biological regulation, soil improvement, biodiversity enhancement—while limiting their potentially negative impacts on crops (competition, rooting obstacles, risk of allelopathy). Woody plant management is embedded in an agro-ecological approach that seeks to strengthen ecosystem services and the sustainability of farms.

**Woody specie:** A plant belonging to the group of vegetation whose tissues are reinforced with lignin, giving it a rigid and perennial structure. It chiefly includes trees, shrubs and other forms of woody vegetation (stumps, woody stems) that can develop naturally, especially in abandoned sites or as components of agro-ecological infrastructure. These species contribute to biodiversity, soil stabilization, and a range of ecosystem services (habitat provision, carbon sequestration, etc.).



**Worm control:** A set of methods, practices, and products intended to manage, limit, or eradicate populations of harmful worms (including phytophagous earthworms such as gray grubs, beetle larvae, or nematodes) that can damage crops, ornamental plants, or agricultural systems. Worm control may rely on chemical approaches (insecticides, nematicides), biological approaches (natural predators, pathogenic agents, repellent plants), mechanical approaches (trapping, crop rotation), or cultural approaches (adjusting fertilization practices, irrigation management, and soil-cover practices) in order to reduce yield losses while limiting environmental impacts.

**Work time:** Actual time spent working per day, week, month or year.

**Workload:** Quantity of work, tasks, or processes that an individual, a group, a computer system, or an organization must accomplish within a given period of time. A workload can be expressed in number of operations, transactions, work hours, physical or mental work loads, and is used to assess performance, capacity, efficiency, or stress level of an actor or of an infrastructure. In ergonomics and human-resources management, it denotes the work load assigned to an employee or a team, including the complexity, duration, and frequency of the tasks.

**Working conditions:** Use for the social, physical and psychological environment of human labourers.

## Y

**Yarn:** Long continuous length of interlocked fibres, suitable for use in the production of textiles, sewing, crocheting, knitting, weaving, embroidery, or ropemaking.

**Yoghurt:** Yogurt, yoghurt, or yoghourt is a food produced by bacterial fermentation of milk.

**Young stock:** The group of farm animals that are still young, prior to their placement in a finishing or breeding program (calves, lambs, piglets, broiler chickens, etc.). These individuals have specific nutritional and behavioural needs—for example, grazing for herbivores or a diet based on whole grains for poultry—and require special management aimed at ensuring optimal growth, health, and welfare, in order to secure the long-term sustainability of the herd.



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