NBSOIL

Nature-Based Solutions for Soil Management

Translation guidelines and Glossary

Deliverable [D6.10]

30.11.2023

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[1] **R**=Document, report; **DEM**=Demonstrator, pilot, prototype; **DEC**=website, patent fillings, videos, etc.; **OTHER**=other

[2] **PU**=Public, **CO**=Confidential, only for members of the consortium (including the Commission Services), **CI**=Classified

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MS - Milestone

WP – Work Package

NBS – Nature-based solutions

C&D – Communication and Dissemination Plan

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1 Executive Summary

This document introduces the Translation Guidelines and Glossary of the NBSOIL Project, aligning with the Communication and Dissemination Plan (D6.2). It underscores the necessity of translating key materials, particularly learning resources, into project languages: English, Polish, German, Dutch, French, Italian, and Spanish. Functioning as a vital resource, this document facilitates seamless communication in soil-related projects across diverse linguistic contexts. The primary emphasis lies in ensuring clarity and precision in translations among the designated project languages. The glossary's core objective is to establish a shared understanding of soil-related terminology, enhancing communication efficiency and fostering a unified language among stakeholders. By offering explicit definitions and explanations for key terms, the glossary minimizes ambiguity.

The accompanying guidelines delineate the translation process, having been successfully tested and implemented. They serve as a reference for future translations, providing a guide for project partners. Adherence to the outlined principles empowers NBSOIL Project teams to surmount language barriers, streamline communication, and cultivate a collaborative work environment. The Translation Guidelines and Glossary act as instrumental tools, fostering successful cross-cultural collaboration and ensuring accurate communication of the project's objectives across linguistic boundaries.

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2 Introduction

This document will coordinate translation and adaptation of all project materials, notably learning materials. To train soil advisors and reach land managers effectively it is essential to translate NBSOIL materials and notably the learning materials into the project languages: English, Polish, German, Dutch, French, Italian, and Spanish. This is stated in the Communication and Dissemination Plan (D6.2). A few selected dissemination materials will be translated into Romanian, Danish and Greek. These materials include the project identity materials (leaflets, posters, roll-ups and factsheets), audiovisual content such as the project's video, webinars, workshops (subtitles), practice abstracts and any other important output from the project such as the interactive tools. REVOLVE will coordinate this task with the support of the local partners to ensure the use of correct scientific, technical and local terms.

In this sense, at the end of the first year of the project (M12), this Deliverable 6.10 on Translation guidelines and Glossary offers a practical glossary of soil-related terms and expressions in the project's languages in English, Polish, German, Dutch, French, Italian and Spanish together with recommendations on the translation process to enable fluid communication and ensure the same use of concepts and terms.

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3 Translation process

3.1 Materials

The NBSOIL Translation Guidelines and Glossary emerged as a response to the growing need for seamless communication in the field of soil sciences across multiple languages. Therefore, the NBSOIL Project team embarked on developing a comprehensive first version of a practical glossary of forty-five soil-related terms and expressions. This aims to bridge language barriers within the project and more broadly within the soil science community, facilitating effective communication and knowledge exchange across linguistic boundaries.

The practical glossary of soil-related terms stands as a valuable resource within the project ahead of the launch of the soil academy as well as for researchers, educators, and practitioners in soil sciences worldwide. By promoting a standardized understanding of key concepts, the glossary facilitates fluid communication and collaboration, ultimately advancing collective knowledge in the field. This glossary represents a significant step toward fostering a global community of soil scientists who can engage in meaningful discourse regardless of language differences. The glossary not only serves as a reference tool but also promotes inclusivity and cooperation in the pursuit of advancements in soil science on an international scale.

3.2 Teams

REVOLVE team has been the lead partner of this deliverable. However, it counted with the support of the NBSOIL partners. In particular, with IUCN team guidance to finalise the development of the glossary definitions in English as well as with the support of the appointed partner focal point by language: CDR for Polish; CAFS for German; AERES for Dutch; ITAP for Spanish; CAN for French; and University of Torino for Italian. The IUNG team has also played a pivotal role as the leader of the Work Package (WP) 1 Knowledge Base.

3.3 Process

The process of developing the translation guidelines and glossary started almost at the beginning of the project. REVOLVE, as the leader of the project communication and therefore of the translation task, assigned language focal points following the consortium distribution and the staff efforts by partners. Already in the project proposal, Soil Association, CDR, CAFS, AERES, CNA, University of Torino, ITAP, FiBL, IUCN, IUNG-PIB were assigned as contributors to this task.

REVOLVE decided to directly involve the following partners as focal points for their respective local languages: CDR for Polish; CAFS for German; AERES for Dutch; ITAP for Spanish; CAN for French; and University of Torino for Italian. They were informed about this role and confirmed during the first consortium meeting in Pulawy, Poland. These partners agreed and took the responsibility of translating or revising translations in their languages.

As a first step in the development of the translation guidelines and glossary, REVOLVE started the process of consolidating the definitions of the six multifunctional practices that NBSOIL is testing as nature-based solutions (NBS): organic fertilizer; cover crops; bioremediation; paludiculture; forest diversification; and green

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and blue infrastructure. This was done during the first six months of the project and was included in the Knowledge Base section of the NBSOIL website. This process was a first test on how to reach a common understanding on basic terms related to the project's day to day tasks. REVOLVE along with the IUCN team agreed on a first draft of the definitions that were then shared with the different language focal points and the IUNG team for revision and translation. After a process of a few iterations with all the partners involved, the definitions of those six concepts were agreed upon within the framework of the project and translated into the NBSOIL languages.

That first process served as a test for agreeing on definitions and translations among the project partners involved and the And based on this test REVOLVE team stablished the translation protocol as it follows: 1) REVOLVE initiates the process selecting the concepts to be defined according to the main topics of the project and including the definitions found in reliable sources such as the FAO or relevant scientific papers or publications; 2) REVOLVE sends a first draft to the IUCN team for revision and consolidation of the translations in English; 3) IUCN consolidates a final definition of the selected terms after a few iterations (maximum three); 4) REVOLVE shares the selected terms and definitions in English with all the language focal point partners and IUNG for revision and translation; 5) All partners involved share their concerns (if any) and provide the translations of the agreed terms; 6) REVOLVE leads the process of one more iteration between partners and concludes the process collecting and integrating all the feedback in one final document.

REVOLVE has led and developed this process using the project management resources: Outlook and SharePoint. The leader has also used the internal knowledge within the consortium in terms of language and scientific research background.

3.4 Validation

Following the process described in the previous section, for the glossary development, the REVOLVE team did a shortlisting of 45 terms related to NBSOIL Project activities and targets. The terms were selected following the glossaries that other EU-funded projects working on soil had already done, like the Soil Care Project, or EU Commission organisms like the European Soil Data Centre (ESDAC). The first selection was the following: A horizon; Aerobic; Agroecology; Anaerobic; Anthropogenic; Arable land; Arthropods; Bacteria; Bedrock; Biodiversity; Biological control; Biomass; CAP; Carbon cycle; Clay; Composting; Conventional farming; Cover crop; Crop rotation; Desertification; Ecosystem service; Erosion; Eutrophication; Fertilization; Green infrastructure; Horizon; Intensification; Manure; Monoculture; Mulching; Organic farming; Resilience; Soil biology; Soil fertility Soil health; Texture; and Zero tillage, No tillage (NT).

REVOLVE drafted the first version of the definitions and shared it with the IUCN team for revision and feedback. REVOLVE used among other scientific resources the Soil Science Dictionary of the Spanish Society of Soil Science, following the expertise in Spanish language within the team. After a few rounds of iterations, IUCN and REVOLVE teams consolidated a final draft of 45 definitions in English. Those were initially translated using online translation software like Deepl.com to each of the NBSOIL languages: Polish, German, Dutch, French, Italian and Spanish and shared with the partners with the aim to alleviate the translation process for partners so they could focus more on finding the most accurate translation and providing feedback on the barriers to translating certain terms to their local languages.

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All language focal points as well as IUGN team received the first draft in English with the respective translations in their local languages in an excel file. All partners involved had time to give their feedback on the definitions included and suggest changes if they thought were needed. They also revised and adapted the translations to their local language following their own internal knowledge. After one week of iterations between partners and REVOLVE team, the last version validated by IUCN team was consolidated.

During the translation process, some terms were identified by partners involved in the validation process like more controversial. Those terms have been consolidated and validated by the IUNG team of soil scientists. However, REVOLVE team acknowledges that there might be some adjustments soon of the project of the definitions included as well as a progressive growth of the terms included in the glossary.

3.5 Next steps

These initial 45 defined and translated concepts presented below will also be added to a specific section (Glossary) on the project's website. Additionally, this first version will be expanded with more concepts as the project progresses, and new terms and concepts introduced, discussed and translated. Also, interactions with projects related to soil health, education, and other soil-related initiatives will also be ensured to achieve homogenization in the use of the selected terms.

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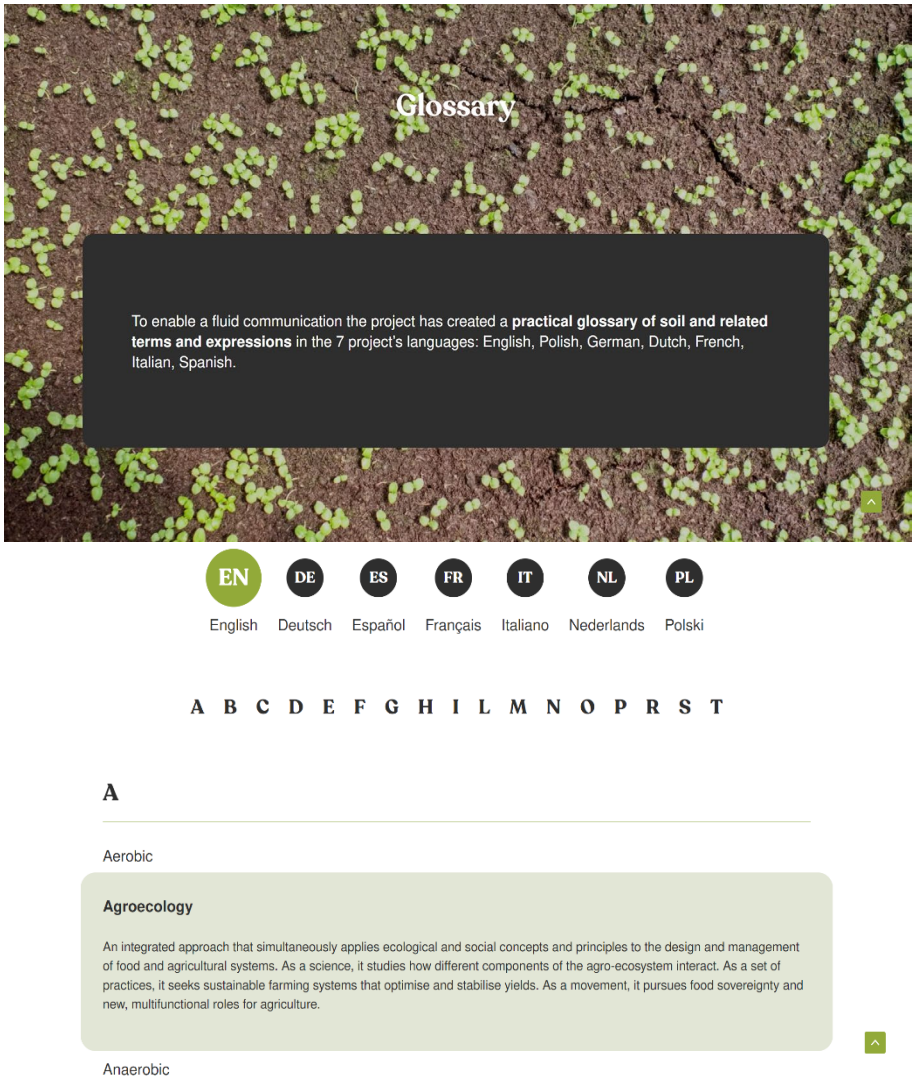
4 Glossary

The final version of the NBSOIL glossary can be found online at the project website translated in the different languages. In this document, the glossary is included only in English but for verification of the translations, the full glossary can be checked here: https://nbsoil.eu/glossary/

Figure 1. NBSOIL Glossary online available on NBSOIL Project website.



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This glossary is subject to slight modifications and growth in the amount of terms included. Any update will be included in the online version and available to any user and Soil Academy students.

Table 1. NBSOIL Glossary with English terms and definitions.

English	English definition
Aerobic	In the context of a medium, it is characterised by the presence of molecular oxygen, O2. For example, well-aerated soils with good drainage conditions.
Agroecology	An integrated approach that simultaneously applies ecological and social concepts and principles to the design and management of food and agricultural systems. As a science, it studies how different components of the agro-ecosystem interact. As a set of practices, it seeks sustainable farming systems that optimise and stabilise yields. As a movement, it pursues food sovereignty and new, multifunctional roles for agriculture.
Anaerobic	Describing organisms capable of living in the absence of molecular oxygen. It's important to distinguish between facultative anaerobes, which can live both in the presence and absence of molecular oxygen, and strict anaerobes, which can only live in the absence of molecular oxygen and use a specific compound as an electron acceptor (anaerobic respiration). For instance, the bacterium Desulfovibrio desulfuricans can use sulfate anions as electron acceptors, reducing them to sulfide anions.
Anthropogenic	Generated by humans. If focusing on soil, it's used to indicate conditions, disturbances, or stresses that are created by human activities.
Arable land	The total areas under temporary crops, temporary meadows and pastures, and land with temporary fallow.
Arthropods	Invertebrate animals with jointed legs, exoskeleton, and a segmented body. They include insects, crustaceans, sowbugs, springtails, arachnids (spiders), and others. Soil arthropods are involved in many soil processes and are used to define soil quality.
Bacteria	Single-celled organisms classified as prokaryotes. They come in different shapes such as spherical, rod-shaped, or spiral cells, and have diverse forms of metabolism that make them highly adaptable to different environmental conditions. Bacteria, as major soil heterotrophs, play key roles in carbon transformations and nutrient cycling, improving soil

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	fertility. They can also regulate soil structure and create healthy soil environments to protect plants from pathogenic agents and increase crop yields.
Bedrock	The mineral substrate that forms the soil. It may consist of more or less consolidated rock and sediments or, locally, be exposed at the surface. The bedrock is also known as the R horizon.
Biodiversity	Biological diversity means the variability among living organisms from all sources, including terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which they are a part. This includes diversity within species, between species, and of ecosystems.
Biological control	The use of biological agents (intact organisms, components derived from organisms) to destroy or deter pests or to promote natural enemies.
Biomass	Biomass is organic material of biological origin (plants and animals). The term can be used for agro-industrial effluents and waste, energy crops, materials harvested from nature (e.g. wood) or the organic fraction of waste. Biomass can be used as a raw material for the production of biofuels, to improve soil fertility and health, to increase carbon storage or as an alternative to fossil raw materials in biorefineries and industrial processes.
Bioremediation	Bioremediation is a process of detoxifying or degrading contaminants present in the soil, wastewater, or industrial sludge by biological means. Microorganisms, plants, microbial or plant enzymes can be used in this process, although plant-assisted bioremediation is often termed phytoremediation. The NBSOIL Project will focus on the application of this as an NBS in the field of brownfield redevelopment where it has great potential as most of the contaminated sites are not managed due to the high economic costs of recovering the soil.
Common Agricultural Policy (CAP)	The Common Agricultural Policy (CAP) is the agricultural policy for all countries of the European Union. Launched in 1962, it is managed and funded at the European level from the resources of the EU's budget. The Common Agricultural Policy (CAP) receives 31% of the EU budget and is structured in two pillars. The first pillar includes direct payments and market measures, while the second pillar focuses on measures to promote rural development.
Carbon cycle	A sequence of transformations whereby carbon dioxide is converted to organic forms by photosynthesis or chemosynthesis, recycled through

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	the biosphere (with partial incorporation into sediments), and ultimately returned to its original state through respiration or combustion.
Composting	Composting is the aerobic microbial decomposition of organic materials, such as agricultural wastes, urban organic waste, and mowing residues. This process is typically accomplished by regularly turning and aerating organic biomass stored in heaps with a geometry that promotes effective aeration. During this transformation, the most readily degradable organic fractions undergo oxidation and are converted into stable organic matter, which can be utilised in agriculture as a fertiliser and as a method of biological control. Simultaneously, the resulting product becomes more homogeneous and reduces in volume due to water loss and fragmentation by organisms. In addition to these benefits, composting helps decrease the initial phytotoxicity of the organic materials used, disinfects the materials, and reduces the germinability of any weed seeds.
Conventional farming	Conventional farming systems are described (not exclusively) as being based on intensive use of agrochemicals to maximize agricultural productions, and encompassing the use of machinery and intensive tillage to manipulate the soil physical properties and to control weeds, mono-cropping, and limited recycling of materials.
Cover crop	Cover crops are a close-growing crop that provides soil protection between periods of normal crop production. Cover crops can enhance soil conservation, climate resilience, and improve soil health, all the while mitigating various environmental impacts linked to conventional soil management in agriculture.
Crop rotation	The temporal alternation of different crops and crop types (monocots vs dicots, annual vs perennial) on a piece of farm land.
Desertification	The process in which relatively dry land becomes increasingly arid, typically losing its bodies of water as well as vegetation and wildlife. Desertification can be a natural process or be caused by climate change or indirectly via soil degradation resulting from poor management.
Ecosystem service	The contributions of ecosystems to benefits used in economic and other human activity. Ecosystem services can be broadly grouped under these three categories, following the United Nations System of Environmental Economic Accounting (SEEA) Ecosystem Accounting: 1) Provisioning services, which represent the material and energy contributions generated by or in an ecosystem (i.e. fish or plants with pharmaceutical

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	properties); 2) Regulating services, which result from the capacity of ecosystems to regulate climate, hydrologic and biochemical cycles, Earth surface processes, and a variety of biological processes; 3) Cultural services, which are generated from the physical settings, locations, or situations that give rise to intellectual and symbolic benefits obtained by people from ecosystems through recreation, knowledge development, relaxation, and spiritual reflection.
Erosion	The wearing away of the land surface by water, wind, ice, gravity, or other natural or anthropogenic agents that abrade, detach, and remove soil particles or rock material from one point on the earth's surface, for deposition elsewhere, including gravitational creep and so-called tillage erosion.
Eutrophication	Eutrophication is the process by which a water body, such as a lake or a soil solution, becomes enriched with dissolved nutrients, primarily nitrogen and phosphorus. While it can occur naturally, it is often the result of pollution. Eutrophication may lead to algal blooms, which can deplete oxygen in the water and harm aquatic life.
Fertilization	The application of mineral or organic compounds to maintain or increase soil fertility. In some cases, (e.g. liming) the purpose of fertilization is also to improve specific soil properties (pH, stability of soil structure).
Forest diversification	Forest diversification is the practice of managing forests to increase their biodiversity by introducing variability in its composition (multiple species and varieties), structure (mixed tree heights in mixed age stands and heterogeneous arrangement and density of the tree plantation) and genotypic complexity (diverse genetic sources). NBSOIL aims to boost moving away from clear-cutting timber harvesting and monoculture tree plantation to prevent erosion and landslides, improve water quality and increase resistance to wildfires and wind storms.
Green infrastructure	Green and blue infrastructures are a strategically planned network of interrelated natural and semi-natural areas with environmental features designed and managed to deliver a wide range of ecosystem services. Green (land) and blue (water) can improve environmental conditions, support the green economy, and enhance climate change adaptation in cities as they provide evaporative cooling, rainwater infiltration surfaces, wind speed reduction, and improve air quality.
Horizon	A horizon is a layer, approximately parallel to the surface of the soil that is distinguishable from adjacent layers by a distinctive set of properties produced by the soil-forming processes. Most soils have three major

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	layers: A horizon (or topsoil); B horizon (or subsoil); and C horizon (or substratum). Some also have an organic horizon (O), an eluvial horizon (E), and a bedrock (R).
Intensification	Intensification in agriculture is a process that aims to increase production per hectare by increasing the use of various inputs, including labor, information, energy, fertilizers, pesticides, and machinery, relative to the available land area. However, when intensification can lead to elevated environmental pressure, particularly in terms of excessive fertilizer and pesticide use.
Land health	The capacity of land, relative to its potential, to sustain the delivery of ecosystem services.
Manure	Manure is a type of fertilization composed of livestock excrements, as such or including bedding material.
Monoculture	Monoculture is a prevalent practice in industrial agriculture, involving the cultivation of a single plant species, often the same variety, over a large area for several consecutive years.
Mulching	Mulching is a farming practice that involves covering the soil surface, typically with organic materials or plastic sheets, to promote soil and water conservation, control weeds, deter pests, and maintain favorable and stable conditions for plant growth.
Nature-based solution	Actions to protect, sustainably manage, and restore natural or modified ecosystems, which address societal challenges effectively and adaptively, while simultaneously providing human well-being and biodiversity benefits.
Natural capital	Natural capital is regularly understood as the stock of ecosystems on Earth, including air, water, biodiversity, and geodiversity. This stock underpins our economy and society by producing value for people, both directly and indirectly. Goods and services provided to humans by sustainably managed natural capital include a range of social and environmental benefits, including clean air and water, climate change mitigation and adaptation, food, energy, places to live, materials for products, recreation, and protection from hazards.
Organic farming	Organic farming is a production system that avoids synthetic chemicals and promotes natural practices to grow crops and raise livestock. It prioritizes environmental and soil health while avoiding GMOs, synthetic pesticides, and antibiotics. It relies on ecological processes, biodiversity,

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	and cycles adapted to local conditions, rather than the use of inputs with adverse effects.
Organic fertilizer	Organic fertilizers consist of plant or animal-based materials that result from byproducts or end products of naturally occurring processes, such as animal manure and composted organic matter. In the NBSOIL Project we consider organic fertilisers that produced from locally available biowastes and distributed based on proximity criteria. Organic fertilising comes with several benefits in soil health, plant growth and productivity and prevent the emission of CO2 from fossil fuel-derived fertilisers.
Paludiculture	Peatlands are a type of wetland critical for climate change mitigation. Paludiculture is the productive land use of wet and rewetted peatlands that preserves the peat soil and thereby minimizes CO2 emissions and subsidence. The NBSOIL Project will focus on wet agriculture and forestry on peatlands, involving the rewetting of European temperate peatlands.
Resilience	The ability of a system and its component parts to anticipate, absorb, accommodate, or recover from the effects of a hazardous event in a timely and efficient manner, including ensuring the preservation, restoration, or improvement of its essential basic structures and functions.
Soil biodiversity	Soil biodiversity has been defined as the variety of life below ground, from genes and species to the communities they form, as well as the ecological complexes to which they contribute and to which they belong, from soil micro-habitats to landscape.
Soil biology	Soil biology is the scientific discipline that studies the living organisms and their interactions within the soil ecosystem.
Soil fertility	The ability to sustain plant growth by providing essential plant nutrients and favorable chemical, physical, and biological characteristics.
Soil health	The continued capacity of soil to function as a vital living system, within ecosystem and land-use boundaries, to sustain biological productivity, promote the quality of air and water environments, and maintain plant, animal, and human health.
Soil quality	Soil's ability to perform its functions in natural or managed ecosystems, maintain plant and animal productivity, preserve or enhance water and air quality, and provide favorable conditions for human health and settlements.

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Texture	The relative proportions of sand, silt, and clay particles in a mass of soil. Texture can be coarse (sand particles predominate), medium (equal parts of sand, silt, and clay), or fine (clay particles predominate). The basic textural classes, in order of increasing proportion of fine particles, are: sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay, and clay. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."
Tillage	Tillage is the agricultural preparation of soil by a mechanical process, which may involve various activities like digging, stirring, and overturning. These activities are carried out to prepare the soil, ensuring it achieves suitable physical conditions for sowing and the growth of crops. Tillage serves various purposes, such as breaking compactions, incorporating crop residues, manures, fertilizers, or weeds, preparing the seedbed, and controlling weeds.
No tillage (NT)	No-tillage is a key agronomic practice in Conservation Agriculture for annual crops. It is defined as a farming method that avoids disturbing the soil through tillage. In no-tillage, at least 30% of the area should be covered by plant residues immediately after crop establishment. Crops are sown using machinery capable of placing seeds through the plant residues from previous crops. No-tillage is the primary agronomic practice that characterises Conservation Agriculture for annual crops, and it offers the highest level of soil conservation. This is because it completely eliminates mechanical tillage of the soil. Additionally, in arid climates, no-tillage helps retain water in the soil by reducing evaporation losses from the soil surface, which are typically increased by conventional tillage involving soil inversion.

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