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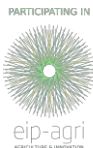


Regione Emilia-Romagna

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Gruppi Operativi
per l'Innovazione



Università
degli Studi
di Ferrara



Project DICO SOS

Significance of cover crops for sustainable farming



DICO SOS

Digestato, Cover Crops e
Operazione Colturali per aumentare
la Sostanza Organica del Suolo

What are cover crops?

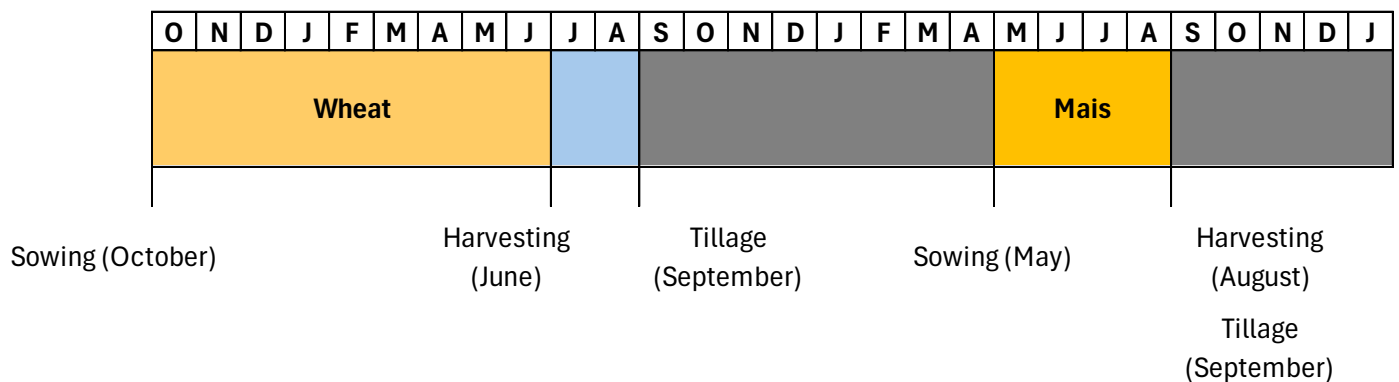
They are intercrops between two main cash crops.

In contrast to normal cash crops, cover crops are cultivated for the production of biomass, which will not be removed at the end of the cycle, but will be left in the soil (above ground or green manured) to bring numerous benefits to the agro-ecosystem making it more resilient and sustainable.

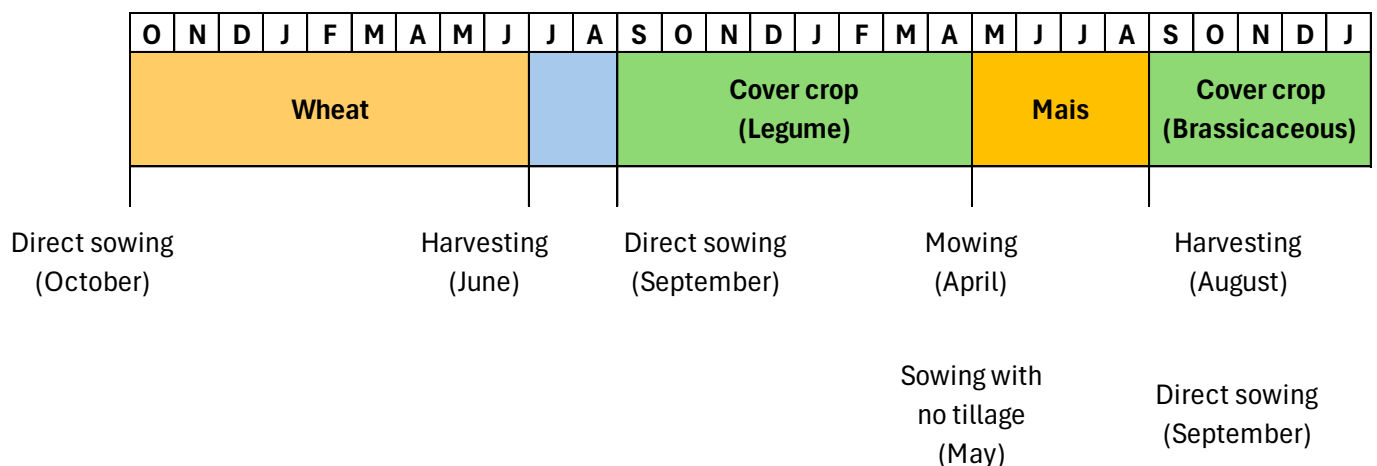
Where should you insert them?


A practical example of conservation agriculture

Conventional system



Highly sustainable system



 Soil covered by residues of the previous crop

 Untilled soil

Example of a cultivation scheme before and after the insertion of cover crops

Types of cover crop:



Brassicaceae

Species: White mustard, brown mustard and common horseradish
Rapid initial development
C/N ratio Intermediate
Taproot
Nematocidal and biofumigant action



Leguminous

Species: Hairy vetch, Annual clover, Fodder pea, Favino.
Slow initial development
Low C/N ratio
Taproot system
High N supply by symbiotic fixation



Gramineous

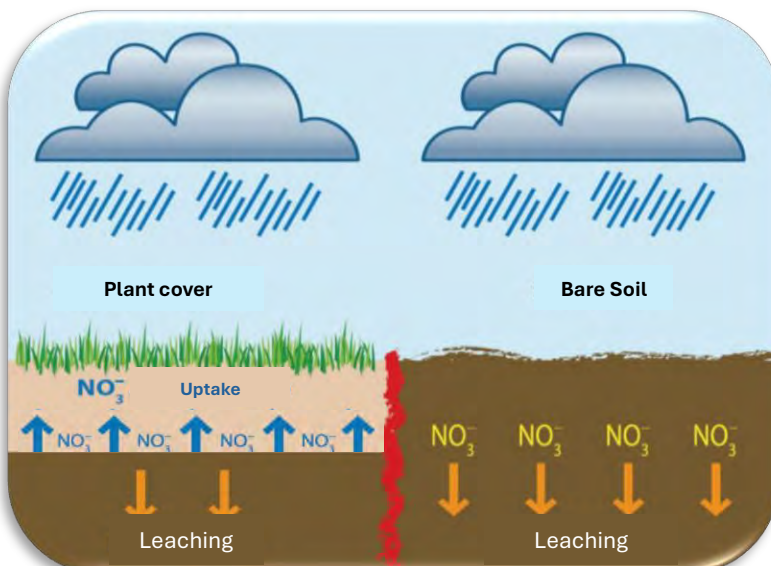
Species: Strigosa oats, Rye, Loiesa, Barley, Rye.
Rapid development
High C/N ratio
Fasciculate, well-developed root system that allows retention of nutrients, including N (Catch crop)



Mix

Species: multiple species belonging to the 3 families with the inclusion of species such as Facelia and Buckwheat to synergistically achieve multiple agro-environmental benefits.

Cover crops for nitrate leaching reduction



During the autumn, nitrates may accumulate in the soil due to nitrogen fertilisation of the newly harvested summer crop and the mineralisation of organic nitrogen by microorganisms in the soil. In the absence of plants, mineral nitrogen tends to accumulate in the soil.

Through their growth, cover crops allow this important element to be retained for the nutrition of the next cash crop.

Cover crop termination methods

The mode and time of termination influence:

- the rate of decomposition of cover crop biomass
- the release/immobilisation of nitrogen in the soil with effects on the nutrition of the main crop.

For these reasons, the termination technique and the time of its execution must be carefully chosen in the planning phase of the crop succession.



Rollercrimper

The biomass of the cover crop is bedded on the soil surface, creating a mulching layer



Mowing

The biomass of the cover crop is shredded.

It can be left on the soil or subsequently green manured



Green manure

The tissue of the cover crop breaks down and is incorporated in the soil, accelerating its decomposition.