ClieNFarms
Climate Neutral Farms

ClieNFarms EIP-AGRI Practice Abstracts

Strip tillage combined with slurry/digestate fertilization

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Strip Tillage is a tillage technology which works only on well-defined strips of soil, while the inter-row spacing remains nearly unchanged (Figure 1).

The tilled strip is 20-25 cm wide and 8-30 cm depth while the inter-row spacing can vary from 45 to 75 cm. This tillage technology is suitable either for main row summer crops or for second crops in summer after winter crops. When to apply strip tillage depends on soil type. On fine-textured soils is advisable to apply strip tillage before winter while on coarse-textured soil in spring.

To get the best results with strip tillage it is necessary to combine fertilization with tillage. Fertilizing under the planting row has several agronomic, climate and economic advantages. Strip stillage is combined with slurry/digestate or mineral fertilizer injection before crop sowing.

Within the ClieNFarms project, it will be demonstrated with targeted strip till machineries, that it is possible to plant and fertilize many cereal and horticultural crops with no yield losses, by injecting liquid (biogas digestate) or slurry. There are many options to combine the strip till machinery with fertilizer distribution (front fertilizer hopper, rear fertilizer hopper, self-propelled slurry tanker or umbilical drag hose system). To reduce processing times, it is also possible to combine strip tillage with planting (via trailed machine or via hydraulic lifter).

The are many economic and climate advantages of strip tillage such as, less working time and faster execution, a 60/70% reduction in fuel consumptions, reduced carbon footprint (GHG emissions relative to field operation), less machinery needed and a reduction of maintenance operations which in turn means a lower investment.

The agronomic advantages are instead:

1. Soil structure improved (70% of soil untouched);
2. Less soil compaction (due to the less passes);
3. Increased soil organic matter and carbon;
4. Less surface evaporation;
5. More surface infiltration;
6. Less surface erosion (2/3 of the soil untouched);
7. More effective fertilization (precision farming);
8. Less soil degradation (fewer passages).

Figure 1: Soybean sown under strip tillage after durum wheat.

Figure 2: Strip tillage with slurry injection and planting.

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