

No-till cultivation of maize in rolled forage peas

Problem

Tilling the maize crop leads to soil compaction and reduces soil quality, which can have a negative impact upon the growing conditions of subsequent crops. No-till processes are soil-conserving, but highly challenging in organic farming.

Solution

For the conservation of soil quality, no-till maize cultivation in a rolled green manure has proved to be successful in practical trials by FiBL. The use of lush peas (EFB33 peas) is recommended as they almost stop growing after being rolled, and cover the soil well. With the mulching process, the trials achieved crop yields virtually equal to the ploughing method.

Outcome

The non-tilled, constantly covered soil has improved water retention and also shows a better carrying capacity during harvest, and is less affected by weed infestation, compaction, nutrient-leaching, and erosion. Stockless farms especially benefit from the nitrogen input of the legume-green manure.

Applicability box

Theme

Soil quality and fertility, crop-specific measure

Geographical coverage

In European maize-cultivation areas with soils that are not too heavy

Application time

Stubble tillage and sowing of the forage peas in October, rolling and sowing of maize end of May

Required time

A single application of the roller. Dispensing with tilling and weed control leads to a reduction of effort of up to 10 % in the mulch process in comparison to using the plough.

Period of impact

Beginning of August (harvest of preceding crop) until end of May (maize harvest)

Equipment

Knife-cylinder roller, direct-seed drill

Best in

Forage or corn maize

Practical recommendation

- At the beginning of August, carry out 1 to 2 stubble-tillage operations after cereal or rape harvest.
- Sow the wintering forage peas in October.
- At the end of May, kink the peas' stems with a knife-cylinder roller, after which you drill in the maize with row cleaners. The green manure lying on the ground must be properly dried off for sowing.
- The mineralisation performance, lowered due to the soil cover, can be compensated for with focused nitrogen fertilisation in the rows.



Picture 1: Rolling the forage peas (to the right) and no-till cultivation of maize in the rolled peas. Picture 2: Seed-drilling into the dry mulch layer. Picture 3: Maize stock with peas mulch. (Photos: Thomas Alföldi, FiBL)