

Winter field peas as green manure before maize

Problem

On arable farms without livestock, nitrogen insufficiency can occur when cultivating nutrient demanding crops like maize. This can lead to yield losses and weed infestation.

Solution

Use a green manure of winter field peas before growing crops that have a high nitrogen demand in the rotation.

Outcome

Ploughing in winter field peas in spring provides 100 kg of nitrogen to the succeeding crop and increases yield. The improved development of the crop also leads to an improved weed control.

Possible disadvantages are the growing costs and restrictions when cultivating peas as a main crop in the rotation.

Applicability box

Theme

Nutrient supply, Weed control

Geographical coverage

Temperate climate

Application time

In autumn after late crops before cultivating nitrogen needy crops like maize or field vegetables.

Required time

Sowing and treatment of green manure.

Period of impact

Succeeding crop

Equipment

Plough, disk harrow, rotary harrow, mulching device

Best in

Arable farms without livestock

Practical recommendation

Position of green manure in the crop rotation

- After late crops like potatoes, sun flowers and field vegetables. After grains, green manure is possible after repeated stubble treatment against root weeds.
- Possible succeeding crops are maize, potatoes or field vegetables that require nitrogen (e.g. spinach). Not grain legumes.
- The earliest point for repeating the pea fertilization on the same field is after 6 years. In between this time frame, peas must not be cultivated as a main crop.

Cultivation of winter field peas

- In case of soil compaction, primary soil tillage should be carried out. Seedbed preparation with a rotary harrow or a tined rotor.
- Ideal seeding period: Beginning of October to middle of November. Sowing depth: 3-5 cm.
- Quantity of seeds: End of September/beginning of October: about 1,5 kg/a (100 seeds/m²), middle to end of October: 2 kg/a, frost seeding in winter: max. 4 kg/a

Mulching

- Do not incorporate the peas too early as the N fixation of the peas does not start until April.
- Ideally, use with a mulcher mounted at the front end to ensure the shredding of all stems.
- After 1-3 days, mix dried-in green matter into the soil surface (10 cm deep) – on light and medium soils with a disk harrow or a flat cultivator, in heavy, smooth soils use a skim plough.
- In no-till farming of maize, compress the peas after blooming in May with a crimper-roller and allow them to dry.

Precautions

- Green manuring is less suitable before sunflowers, flax and millet, as they do not require so much nitrogen and more than 60kg N per ha from the winter peas could be lost.
- The seed quantity can vary depending to the weight of a thousand seeds of field peas.