
Sativa

Green in the winter brings white flowers in the summer

Growing winter legumes as a green manure crop results in more available nitrogen for the subsequent crop and protects the soil from erosion in the spring. Just the right touch is needed, however, for this practice to be successful.

The organic farm as a closed cycle: This ideal concept poses substantial challenges to field crop and vegetable farms that do not have livestock. (All too) frequently it is necessary to buy commercial organic fertilizer from outside sources. "After experiments with maize, in 2009 we began studying how cauliflower, leek, celery and beets responded to green manuring," explains FiBL vegetable production specialist Martin Koller. The farms are located in Domdidier, Fehraltorf, Frick, Stammheim and Wildensbuch. They got interested after the first research findings were published.

Pleasing to the eye, good for the market

"The good results were clearly evident," according to Martin Koller. The effect of green manuring was especially obvious in the lush foliage. "The cauliflower was well-protected by the leaves, resulting in white heads." Because many consumers prefer "attractive" vegetables, this exterior aspect is of benefit to suppliers of wholesale distributors and to direct marketers alike. Martin Koller goes on to name yet more benefits: "In previous experiences with winter legumes followed by maize, yields increased 50 to 100 percent."

Experiments with the winter field pea "EFB 33" (a forage pea) have been in progress since 2007: "As a nitrogen collector, it is very effective in rotation with a heavy consumer, and it forms a green soil cover in the winter," Koller explains. "Sown in late autumn and turned under in May before planting maize or a vegetable crop with high nutrient requirements, the pea serves as a nitrogen fertilizer." As a green manure crop, the winter pea is suitable in a rotation after crops with a long growing season and prior to silage maize or winter storage vegetables (e.g. cole crops, root, bulb and tuber crops), which must be sown or planted between mid- and late May.

The winter pea is making a real comeback. In Germany and especially in France, considerable research has been conducted on the plant in the last 15 years. Thanks to its diverse uses, including as a source of biomass, it is enjoying a resurgence in popularity.

Left: Succeeded in cutting down on commercial organic fertilizer by sowing winter peas ahead of leeks: Alois Steffen, production manager at Gerber BioGreens, Fehraltorf, Zurich (right), and Martin Koller, FiBL.

Right: Winter peas are the only legume that can still be sown right up to late October.

Good for soil and climate

There is a catch to green manuring, however: "It limits the options on a vegetable farm for adapting the rotation to weather conditions on short notice. In other words, green manuring restricts flexibility."

Depending on how the green manure crop is worked in – gentle soil cultivation with equipment such as tillers or disc harrows is practiced as much as possible – and on the weather conditions, the vegetable crop may not grow as well as it would have after winter fallowing and ploughing. "Hence green manuring is not possible in all cases for all crops on a given farm."

Nevertheless the benefits are striking. Calculations have shown that green manuring costs just as much as the most economical organic fertilizer, but offers additional benefits such as a winter soil cover. Plus: The savings in nitrogen fertilizer coupled with gentle soil cultivation promotes the buildup of humus in the soil, which is an important nutrient pool and CO_2 reservoir. Hence green is good for both soil and climate. *jf*

Contact: paul.maeder@fibl.org; martin.koller@fibl.org

Funding: Coop Sustainability Fund