PRACTICE ABSTRACT NR.011

Commercial organic fertiliser as supplementary fertilisers in potato crop production

Problem

During the first 35-50 days after emergence, potatoes require an optimal nitrogen supply in order to develop a good haulm and tuber growth. Manure and slurry cannot meet the demand of the crop during its growth stage. High or late fertiliser inputs lead to a late nitrogen supply, which delays the maturing of the plants, complicated the removal of the haulm and decreases tuber quality.

Solution

Effective commercial organic N fertilisers can optimally complement the basic supply for potatoes in spring, which consists of the preceding crop, rotted manure and slurry.

Outcome

Commercial organic N fertilisers allow a relatively accurate dosage of the nitrogen supply without increasing the infestation risk of *Rhizoctonia*. Due to the relatively high costs, commercial fertilisers are, however, only economically viable as an addition to farm manure.

Applicability box

Theme
Nutrient availability, pest and disease control, crop-specific measures

Geographical coverage
Potato cultivation areas

Application time
After emergence

Required time
Additional fertiliser application

Period of impact
Potato crop

Equipment
Standard fertiliser spreader

Best in
Potatoes

Practical recommendation

The **nitrogen requirement** varies depending on variety and usage. The conventional fertilisation amounts to 120 kg of N per ha in table potatoes and potatoes for processing. Early potatoes and seed potatoes require slightly less nitrogen at about 100 kg of N per ha.

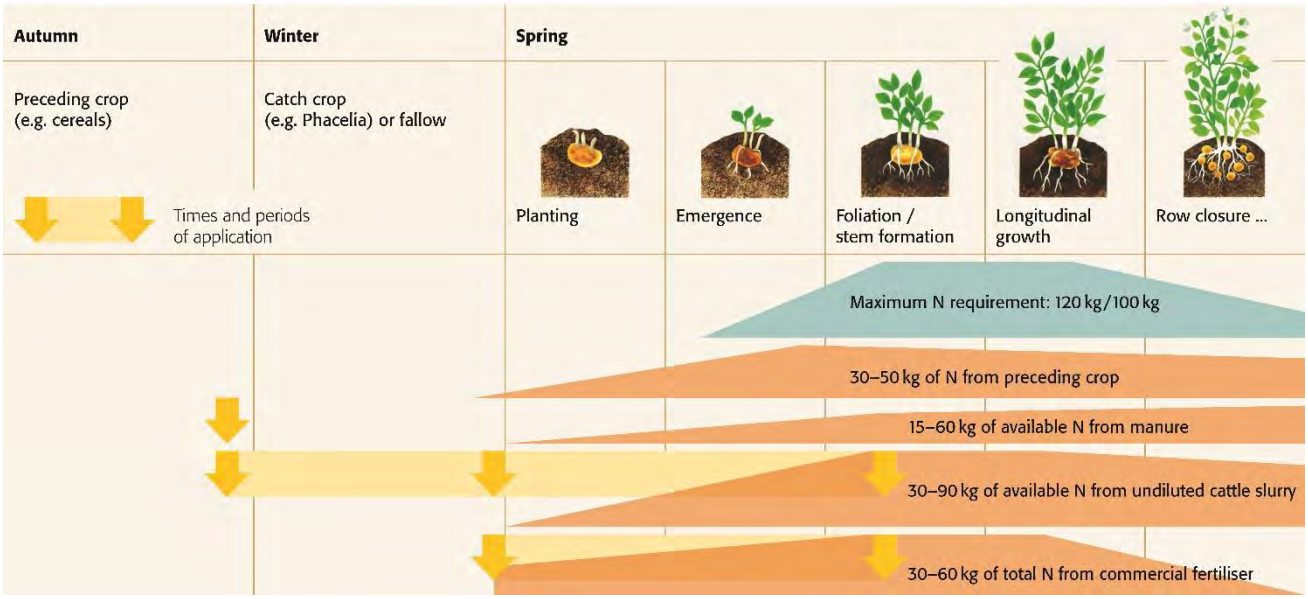

Figure 1: Nitrogen requirement and composition of nitrogen supply during the different growth stages of potatoes

The nitrogen supply strongly depends on the conditions for N mineralisation (weather, humus content of the soil, preceding crop residues). Thus, optimising the N supply is complex (Figure 1).

Research Institute of Organic Agriculture FiBL. Reducing the use of copper in potatoes.
OK-Net Arable Practice Abstract.

Nitrogen from the preceding crop: Grain legumes or cereals in combination with green manure are favourable preceding crops. Field peas may leave behind up to 50 kg net weight of available nitrogen, a mixture of grain legumes and barley up to 30 kg. Depending on the preceding crop and the soil, the nitrogen left behind may amount to zero. Using grass-clover ley as a preceding crop is not an option due to the high risk of wireworm infestation.

Manure as basic fertiliser: A dosage of 15 to maximum 30 tonnes of manure per ha (1-2 kg of available N per t) in autumn during the preceding crop serves as basic nitrogen fertilisation. Mineralisation occurs slowly during the entire growth period. A dosage of manure also covers the high potassium demand of potatoes. Farms without livestock need to cover the K supply by using approved mineral fertilisers. Due to the risk of *Rhizoctonia*, only well-rotted or composted manure should be used. Manure compost has, like other composts, a low N effect.

Undiluted cattle slurry: Depending on the slurry's N content (1-3 kg of available N/m^3), 30-90 m^3 of slurry can be applied to the preceding crop or at a plant height of 10 -20 cm the latest (i.e. before creating the ridges) and worked into the soil. Later applications of slurry only promoted haulm growth and delay the maturation of the tubers.

Commercial fertiliser: An additional dosage of fertiliser of about 30-60 kg of N per ha with a granulated, quickly mineralising commercial N fertiliser can complement the missing nitrogen supply. It should be applied during spring at planting or at the first round of hoeing the latest. In case of lacking farm manure, up to 90 kg of total N can be applied per ha. The coarser the grains, the earlier the commercial fertiliser needs to be applied.

In Swiss trials, the yield of potatoes was increased by up to 30 % with the commercial fertiliser "Biorga Quick" (12 % of N). When using 50 kg of N fertiliser per ha, an additional yield of only 700 kg per ha is required to cover the fertiliser costs. Due to the high costs of commercial organic N fertiliser, its use is profitable in the case of lacking farm manure and low N mineralisation in the soil.

Practical testing

In order to test the efficacy of this method on your own farm, divide the potato crop into two plots and apply the method on one of these plots. Treat the other plot as usual. Compare the development of the potatoes (emergence, tuber formation, maturation) visually in both plots. Compare the yields for a quantitative assessment.

Evaluation and sharing of results

Use the comment section on the Farmknowledge platform to share your experiences with other farmers, advisors and scientists! If you have any questions concerning the method, please contact the author of the practice abstract by e-mail.

Further information

Links

- The technical guide Organic Potatoes by FiBL/ORC (English edition available in spring 2017) offers further information on potato cultivation and appropriate fertilisation.
- The Farmknowledge tool database offers practical follow-up information on organic potato cultivation.

About this practice abstract and OK-Net Arable

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