ecobreed
IMPROVING CROPS

Funded by European Union
Horizon 2020
Grant agreement No 771367

Increasing the efficiency and competitiveness of organic crop breeding

PRACTICE ABSTRACT No. 19

Buckwheat and how to grow it

PROBLEM:

Even though buckwheat is a traditional crop in some European countries, there are still a lot of farmers not familiar with its production.

SOLUTION:

Buckwheat is a flowering plant from the knotweed family (Polygonaceae), which can be used both as a grain and as a cover crop. The grain is a very nutritious food, a source of high-quality protein with a high content of essential amino acids, vitamins and minerals and is even considered by some as a superfood. Buckwheat is a natural source of the bioflavonoid rutin, which reduces the risk of cardiovascular disease and atherosclerosis.

Buckwheat is quick to establish and can be useful as a component of a cover crop mixture following harvest in late summer, as a second crop in a season or where an autumn or early spring drilled spring crop fails. This quick growing nature also means that it is good at suppressing weeds through shading and via the release of allelochemicals which can inhibit the growth and germination of weeds. It is worth noting though, that in fields with high weed pressure, buckwheat may not be able to out compete the weeds.

Buckwheat is not frost resistant and therefore can be killed by sub-zero temperatures. As a result, it should not be drilled until the risk of frost has passed. The lack of frost-hardiness is an advantage when grown as a winter cover crop as the buckwheat is generally killed before it sets seed. Buckwheat is a great source of pollen and nectar for bees and other insects with buckwheat honey being high in antioxidants. Buckwheat is able to take up soil phosphorous more efficiently than other plants. Once the crop is incorporated into the soil, this soluble P is then available to the next crop.

PRACTICAL RECOMMENDATIONS:

- Buckwheat thrives in a wide range of conditions but is susceptible to climatic extremes. The optimum temperature for growth is 20°C while the minimum germination temperature is 7–8 °C. Mature plants die at 2 °C and young seedlings die at -2 °C.
- High yields can be achieved on suitably fertile, not too acidic soils and as the root system is poor, buckwheat thrives best on medium to light soils that are not compacted and well cultivated.
- Manure and slurry should never be applied directly to buckwheat, but it is best to apply to the soil prior to drilling. When applying potassium fertiliser, the use of potassium sulphate is preferable as buckwheat is sensitive to chloride in potassium salts.

Fig. 1: TGW difference in buckwheat. Photo: Adam Brezáni

- Buckwheat is susceptible to boron deficiency; seen in leaf mottling, stunted growth and brittleness. If the B content is < 0.4 mg B/kg of soil, fertilisation with borax (3-4 kg/ha) or other fertilisers containing boron is advisable.
- Buckwheat should be drilled quite shallow – about 2 cm and with large variation in buckwheat TGW it is advisable to drill a plant stand i.e. 200 – 350 seeds/m^2 Rather than by seed weight kg/ha. TGW is also important factor when considering whether to grow the buckwheat for grain or as a cover crop. Mills usually prefer higher TGW of > 27 g since the groat yield is higher.
- Buckwheat can be grown in conventional narrow spacing rows (e.g. 12.5 cm) or in wider rows to enable inter-row cultivation. Wider rows encourage branching of the buckwheat plant and the plant is more robust, which can decrease lodging. Weeds can be a problem in wider rows, it is recommended to have an inter-row cultivator to maintain the rows clean of weeds.
- The vegetation period can differ from 80-150 days, depending on variety.
- It is important to consider whether there are any beehives nearby. It is recommended to have 2-5 bee colonies per hectare to encourage pollination. The addition of nomadic bee colonies can increase the yield of buckwheat by 30-40 %.

- Harvest is the most difficult part of growing buckwheat. The basic premise for success is to minimise losses and to prevent the achenes (or grains) from becoming scorched and mouldy.

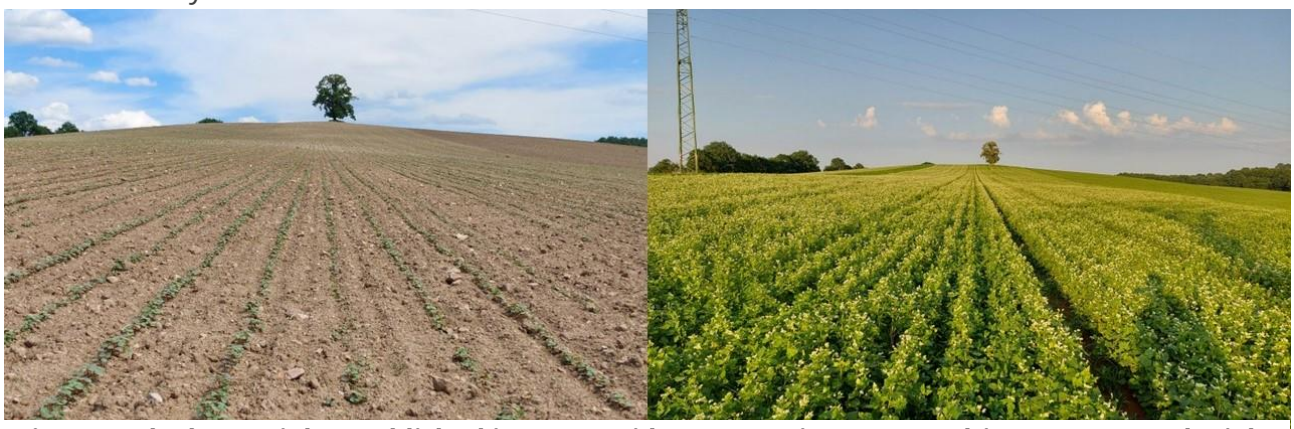

Fig. 2: Buckwheat trials established in 33 cm wide rows, an inter-row cultivator was used. Right picture - 45th day of the vegetation. Photo: Adam Brezáni

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ECOBREED CONSORTIUM

ABOUT ECOBREED:

ECOBREED is a 5-year (2018-2023) project funded by European Union's Horizon 2020 research and innovation programme that will improve the availability of varieties and seed suitable for organic and low-input production. Activities will focus on four crop species i.e. wheat, potato, soybean and common buckwheat, selected for their potential contribution to increasing the competitiveness of the organic sector.

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