

Testing peas for legume fatigue

Problem

Among legume crops, forage peas show the most symptoms of legume fatigue. This is due to infestation with *Mycosphaerella*-, *Phoma*-, *Fusarium*-, *Aphanomyces*- and other soil-borne pathogens as a result of over-cultivation of peas or other legumes such as lupins, field beans, vetches, red clover, or lucerne. A heavy infestation may lead to a total loss of the peas.

Solution

With the help of a simple method, the soil can be examined for legume-fatigue symptoms prior to cultivation with field peas.

Outcome

The method offers reference points regarding the soil's contamination with these pathogens, and thus indication for a possibly required cultivation break. Refraining from cultivating on contaminated soils helps avoid the situation of a high yield loss due to legume fatigue.

Applicability box

Theme

Nutrient supply, soil quality and soil fertility

Geographical coverage

Generally, and especially in clayey and shallow soils

Application time

3 months prior to cultivating the field with peas

Required time

About 4 hours (baking time not included)

Period of impact

Entire crop rotation

Equipment

Baking oven, aluminium trays, flowerpots, seed

Best in

Crop rotations with a high share of legumes; prior to cultivating peas

Practical recommendation



1. Extract 10 litres of humid soil from the field plot you wish to examine and sieve it down to a grain size of 10 mm.
2. Moisten dry samples and mix them up evenly.
3. Fill four aluminium trays with the humid soil and store the remaining soil.
4. Cover the trays filled with soil with tinfoil and place them in the baking oven. Sterilise the samples for at least 12 hours at 70-100 °C in the oven.
5. Let the aluminium trays cool for 12 hours after sterilisation.
6. Mark four flowerpots with "R" (for untreated reference) and another four with "H" (for heat-treated soil).
7. Fill the four H-flowerpots with the heat-treated soil and fill the four R-flowerpots with the untreated soil.
8. Place 5 field-pea seeds in each pot and cover them with 0,5 cm of soil.
9. Place the pots in a tray with some water and keep them in a sheltered place with at least 18 °C and daylight.
10. Keep the pots humid during about 6 weeks by pouring water into the trays.