

How to set up an on-farm cultivar trial to score for leaf blight in carrots?

Problems

In organic production, attack by carrot leaf blights (Fig. 1), caused by fungal (*Alternaria dauci*, *Cercospora carotae*) or bacterial pathogens (*Xanthomonas campestris* pv. *carotae*), can result in yield loss. The choice of resistant varieties is crucial; however, commercial varieties differ greatly in their susceptibilities. Additionally, official variety testing does not test for the suitability for organic growing conditions, and often takes place under ideal conditions on a limited number of locations.

Solutions

Organic farmers can set up a simple, on-farm cultivar trial to assess the varieties' susceptibility to leaf blight. For this, different varieties are cultivated in 2-3 strips, distributed in the trial field, to minimise the influence of heterogeneous soil conditions. A variety with a well-known tolerance level serves as a reference. Farmers can use their own machinery for cultivation. Throughout the growing season, scoring of disease symptoms (Fig. 2) should be conducted.

Symptoms include:

- Spots at margin of leaves
- Lesions on petioles and stems
- Curling of leaves
- Defoliation

Practical recommendations

Other strategies, to manage carrot leaf blight, include:

- Use of vigorous and decontaminated seeds
- Avoid favourable microclimate through wider row spacing and planting on raised ridges
- Crop rotation, with at least 2-3 carrot-free years in crop rotation
- Use of organic fertilisation and irrigation if necessary, to reduce plant stress and promote foliage development
- Harvesting on time, to reduce crop loss
- Ploughing of crop debris to avoid survival of inoculum

Further information

1. <https://ecommons.cornell.edu/handle/1813/43265>
2. <https://ecommons.cornell.edu/handle/1813/42892>

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Publisher: ÖMKi Hungarian Research Institute of Organic Agriculture

Date: April 2020

LIVESEED: Boosting organic seed and plant breeding across Europe. LIVESEED is based on the concept that cultivars adapted to organic systems are key for realising the full potential of organic agriculture in Europe. Research project 2017-2021.

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Figure 1: Carrot field attacked by carrot leaf blights (Gugino et al., 2004).



Figure 2: *Alternaria* leaf blight, *Alternaria dauci*, with insert showing leaf lesions (Gugino et al., 2004).

