

# How to set up a simplified on-farm cultivar trial to assess broccoli?

## Problems

Most commercial broccoli cultivars originate from conventional breeding and might not perform well under organic conditions. Cultivar trials, with a complete randomised block design and 3-4 repetitions, are often not feasible for organic farmers, who wish to test the cultivar's suitability for their on-farm conditions.

## Solutions

Field map:

BR	BR	BR	<b>Legend:</b> Border row: BR Reference variety: 0 Varieties: 1-4
BR	0	BR	
BR	1	BR	
BR	0	BR	
BR	2	BR	
BR	3	BR	
BR	0	BR	
BR	4	BR	
BR	BR	BR	
BR	BR	BR	

**Figure 1:** Example for field map using a simplified design for on-farm trials.

Organic farmers can set up a **simplified cultivar trial** with different broccoli varieties. In order to evaluate varietal difference, the trial error (e.g. soil differences in the trial field) has to be minimised. To evaluate the trial error, a reference variety is planted in 2-3 randomly distributed plots (see Figure 1). When comparing the reference plots, differences in performance might indicate a trial error. The trial should be repeated over several years to increase its reliability.

## Practical recommendations

The assessment of broccoli cultivars could include a combination of the following measurements:

- Time of harvest maturity and number of harvests
- Disease incidences, number of damaged spots
- Percentage of marketable plants
- Weight, size, firmness and colour of head

Favourable characteristics of broccoli cultivars for organic agriculture are:

- Adaptation to lower nitrogen supply, mechanical weed management and absence of chemical pesticides
- Low susceptibility to diseases such as downy mildew, verticillium wilt and broccoli bacterial rot
- Resistance to stress, such as heat (summer broccoli) or cold (autumn broccoli)



**Figure 2:** Purple sprouting broccoli (Photo: Organic Seed Alliance)

## Further information

1. [http://orgprints.org/30599/1/2016-BioGreenhouse\\_Research.pdf](http://orgprints.org/30599/1/2016-BioGreenhouse_Research.pdf)
2. <http://orgprints.org/9863/1/hb-1433-versuche-gemuesebau.pdf>
3. [https://seedalliance.org/wp-content/uploads/2018/03/Growers-guide-on-farm-variety-trials\\_FINAL\\_Digital.pdf](https://seedalliance.org/wp-content/uploads/2018/03/Growers-guide-on-farm-variety-trials_FINAL_Digital.pdf)

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