

POTATOES IN THE NETHERLANDS: FARM-LEVEL IMPACTS OF DIFFERENT PESTICIDE REDUCTION STRATEGIES

Country:
The Netherlands



**Crop: (Seed)
Potatoes**



Focus:
**Fungal disease
control**



**Agronomic
interventions:**
Robust varieties
Wider crop rotation
Organic conversion



Some of the SPRINT case study sites were selected for a deep analysis into the farm-level economic impacts of various approaches for reducing reliance on synthetic pesticides.

This factsheet provides country-specific results for the Netherlands, based on farm surveys and expert interviews.

15 farms surveyed
7 = organic
3 = IPM
5 = conventional

Current pesticide use on seed potato farms in the Netherlands

- Potato farmers using integrated pest management (IPM) used between 5-17 chemical treatments, while conventional farmers used 8-16.
- Farmers who used the most chemical treatments (16-17) were those who grow potatoes for consumption (not seeds)
- Seed potatoes are harvested earlier than potatoes for consumption, so generally need less pesticides
- Conventional farms growing potatoes for consumption generally start applying fungicides earlier than those using IPM.

Key fungal pressures in potatoes

**Late potato
blight fungus**

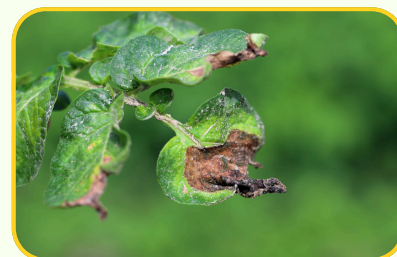
Downy mildew

**Rizoponia
(soil disease)**

Ranking current agronomic practices

Surveyed conventional farms had significantly higher impacts and damage costs than the IPM farms. Those with the highest damage costs were potatoes grown for consumption, which are harvested in August-September, far later than seed potatoes, which are harvested in June-July.

The surveyed organic farmers indicated that they do not use any chemical treatments, so their environmental and human health impacts could not be calculated.



Mildew on a potato leaf.

Agronomic interventions to test

Three agronomic interventions are assessed in this factsheet, based on the expert interviews:

1. **Robust varieties** such as Alouette and Jacky, which are resistant against late potato blight fungus (*Phytophthora infestans*)
2. **Wider crop rotations** (1:4, 5 or 6, instead of 1:3)
3. **Organic conversion**

The second page of this factsheet presents the results of these interviews.



Interventions for reducing synthetic fungicide reliance in potato growing: expert view

Experts were asked to identify ways of reducing pesticide reliance. They highlighted various innovative practices to increase soil quality and biology and plant health, such as the use of manure, green cover (cover crops), wider crop rotations (1:4, 1:5, 1:6 instead of 1:3), and – during the growing season – the use of azotobacter bacteria. The latter can help to generate nitrogen in a natural way, so that no additional nitrogen is needed. Other measures to improve soil quality include the use of mycorrhizal fungi and chitin.

**Seed potato farms are
growing in size and
generally range from
5-500ha.**

**Most potato farms yield
36-40 tons/ha.**



**Full results are available in SPRINT
deliverable 6.3.**



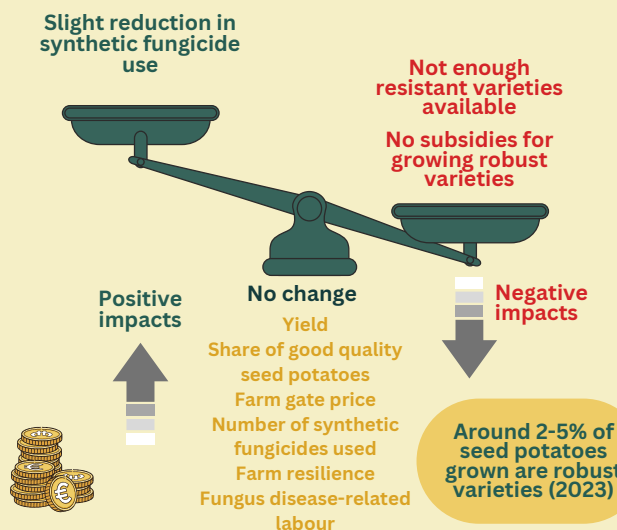
<https://sprint-h2020.eu>

SEED POTATOES IN THE NETHERLANDS: FARM-LEVEL IMPACTS OF DIFFERENT PESTICIDE REDUCTION STRATEGIES

Proposed intervention 1: Robust potato varieties

Experts were asked to assess various indicators for this intervention, and evaluation was undertaken based on current fungicide prices.

Pros and cons of growing robust potato varieties



Proposed intervention 2: Wider crop rotations

Experts suggested that it is difficult to expand crop rotations without an economically competitive crop. Seed potatoes are highly profitable and there are limited crops that can exceed the income from these. Seed potatoes can contribute to 75-80% of a farms' income, bringing in 4-6x as much money as wheat would.

Agronomically, a 1:5 year rotation with potatoes would be best - however, this would be too expensive for many.

Barriers to adoption

- Wider crop rotations may protect against soil disease, but not necessarily against potato blight
- Experts could only see wider crop rotations as realistic for organic farms or as a result of government regulations (which would have to be accompanied with compensation for resulting economic losses).

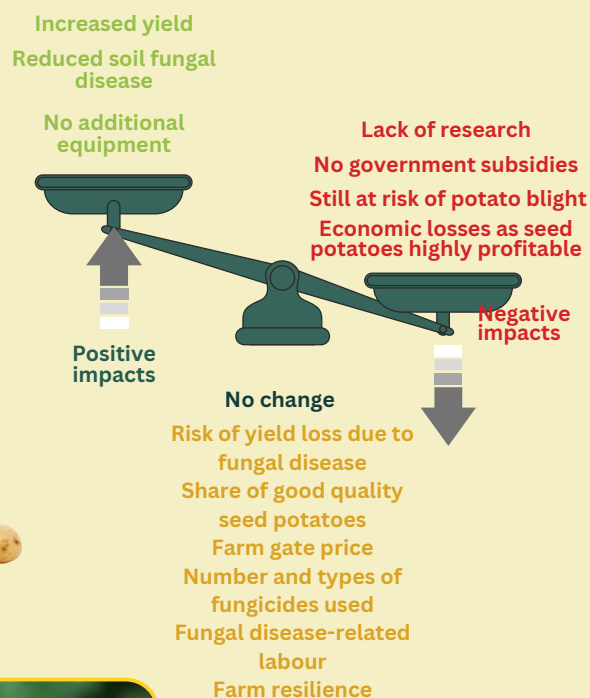


Robust potato varieties

- It is important to note that farmers do not decide which seed potato varieties to grow - this is a decision made by trading companies, who choose based on market demand.
- For instance, there is a very low market demand for organic seed potatoes. therefore, almost none of the seed potato growers is organic in the Netherlands.
- In current seed potato production, a single variety is usually grown for 3-8 years
- Seed potato growers always grow 8-10 varieties at a time, in varied quantities
- Around 80% of seed potatoes grown in the Netherlands are exported to other countries. The demands of these markets affects which varieties farmers can grow
- Alouette and Jacky were the main robust potato varieties referred to during interviews.



Pros and cons of wider crop rotations



< Potato blight on a leaf

Proposed intervention 3: Organic conversion

Incentives for encouraging organic conversion:

- Financial support during conversion
- Higher market price for organic seed potatoes
- No tax on organic crops
- Phasing out the derogation for the use of organic seeds

Barriers to adoption

- Increased weeding
- More labour intensive
- Yield reductions (15-20 tons/ha)
- Limited incentive to convert as conventional seed production is highly profitable
- Low demand for organic seed potatoes
- Conversion costs borne by farmers themselves

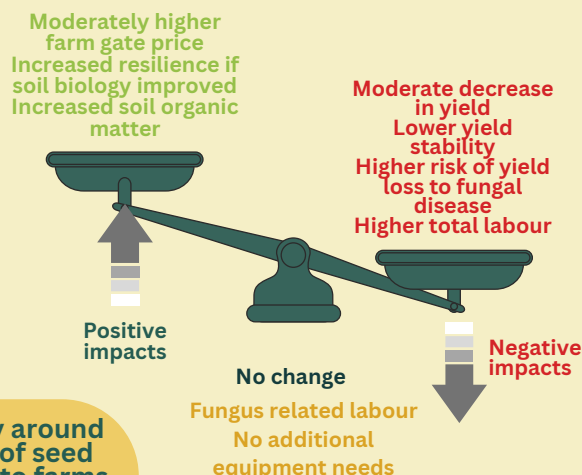
Conclusions

In the Netherlands, **the adoption of robust seed potato varieties mainly depends on market demand**, both in terms of at-home and export markets - with over 80% of seed potatoes produced here sold to other countries.

Seed potato farmers are used to growing new and different varieties simultaneously. When doing so, they receive technical assistance from trading companies as needed. **The adoption of a wider crop rotation is neither perceived as very effective against fungus disease nor economically viable, as seed potato growing is so economically profitable.**

Growing seed potatoes is considerably more profitable than growing alternative crops. Producing conventional seed potatoes is very profitable and demand for organic seed potatoes very low. In addition, additional costs associated with organic conversion are borne by the farm itself. **Converting to organic is, therefore, not very attractive to seed potato producers at present.** However, converting to organic is perceived to lead to a higher farm resilience.

Pros and cons of converting to organic seed potato growing



Only around 2% of seed potato farms are organic (2023)

What comes next?

SPRINT will now work with stakeholders to identify possibilities and opportunities for breaking the pesticide lock-in situation identified here.

We will develop possible pathways which better support the emergence and diffusion of alternatives to chemical pesticides, including through working with those who have already transitioned away from a reliance on chemical pesticide use.



Deliverable 6.3.

Principal authors of the full report: Claudia Meier, Jennifer Mark, Johan Blockeel, Lorin I neichen, Benjamin Blumenstein, Christian Grovermann, Lucius Tamm

Factsheet authors: Charlotte Chivers, Claudia Meier