Onion seedlings versus onion sets in organic onion production

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Background

Present stage

- Onion sets imported to Finland are contaminated by several *Fusarium* species
- There are no effective biological treatment of onion sets

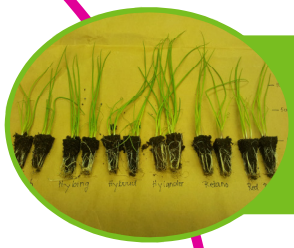
Problems

- Severe yield losses during growing period and storage time
- Poor onion quality in retail trade

Solving

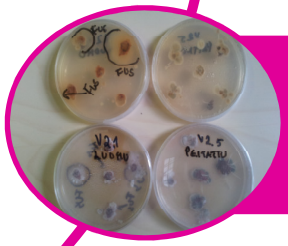
- Onion seeds are almost free of pathogenic fungi
- Use of onion seedlings instead of onion sets could reduce yield losses and increase onion quality

Objectives of our studies



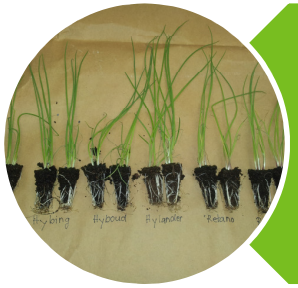
To find high-yielding onion varieties suitable for seedling cultivation in our growing conditions

The yield quantity, quality and long-term storage durability of onions produced either seedlings or sets are compared



Rot incidence and combosition of pathogen populations in diseased onions is monitored

Field experiment 2016



Tested varieties: Hybing, Hybound, Hylander, Hytech, Red Baron and Retano

Complite randomised plock desing with four replicates

The yield, yield quality, disease development and storage durability were studied

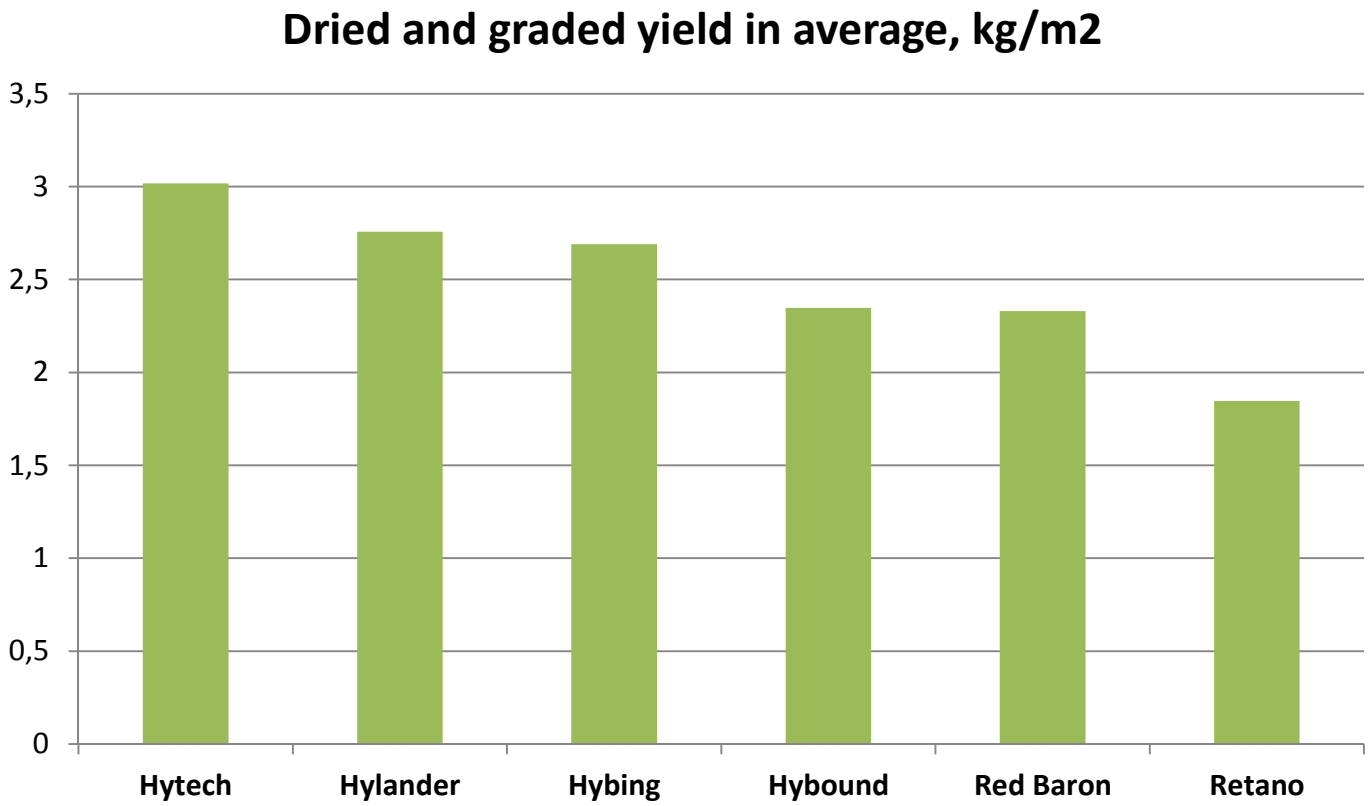
On-farm trials 2016

Four on-farm trials were carried out at organic farms

The objective was to compare onion seedlings and onion sets in actual farm conditions

The yield, yield quality, disease development and storage durability were studied

Key results of field experiment 2016



- The average yield was quite low for all of the varieties

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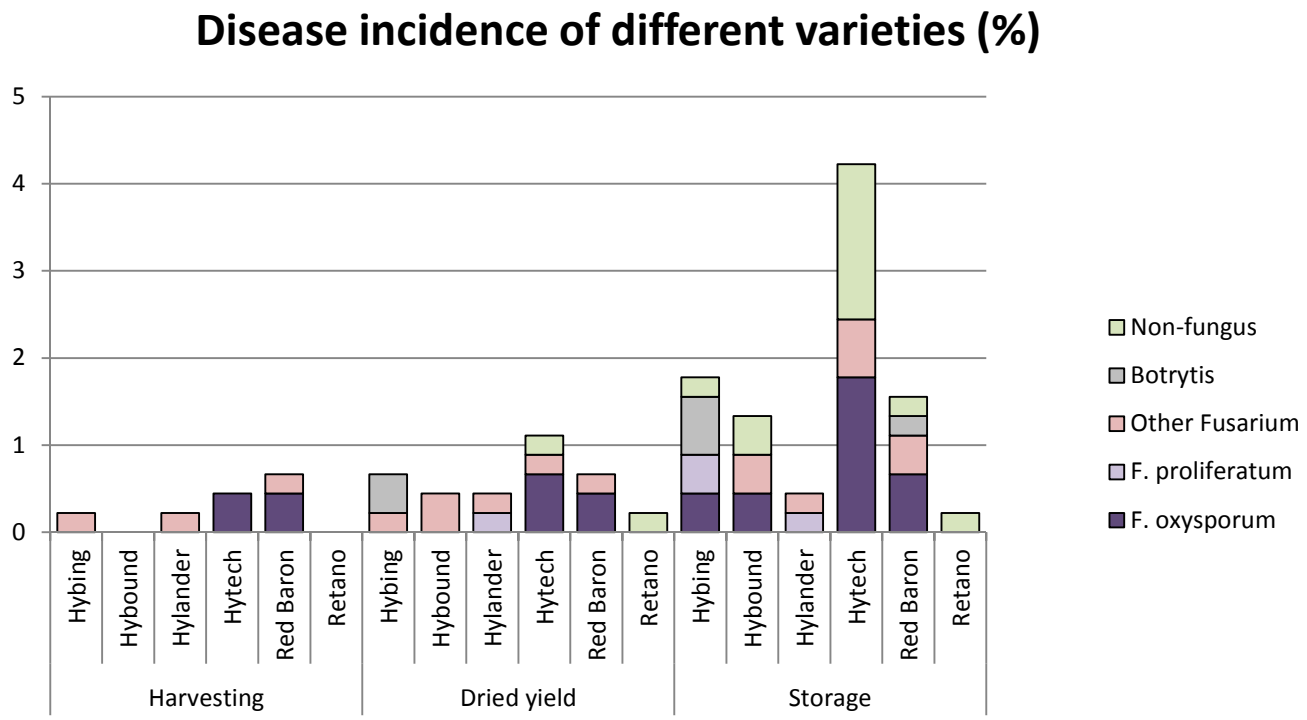
Key results of field experiment 2016



- During the growth period, at the harvest and in storage the portion of diseased onions was low
- Onions were stored at room temperature (+18 ºC) for three months

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Key results of field experiment 2016

Unequal size and small onions

Good appearance with shine skin

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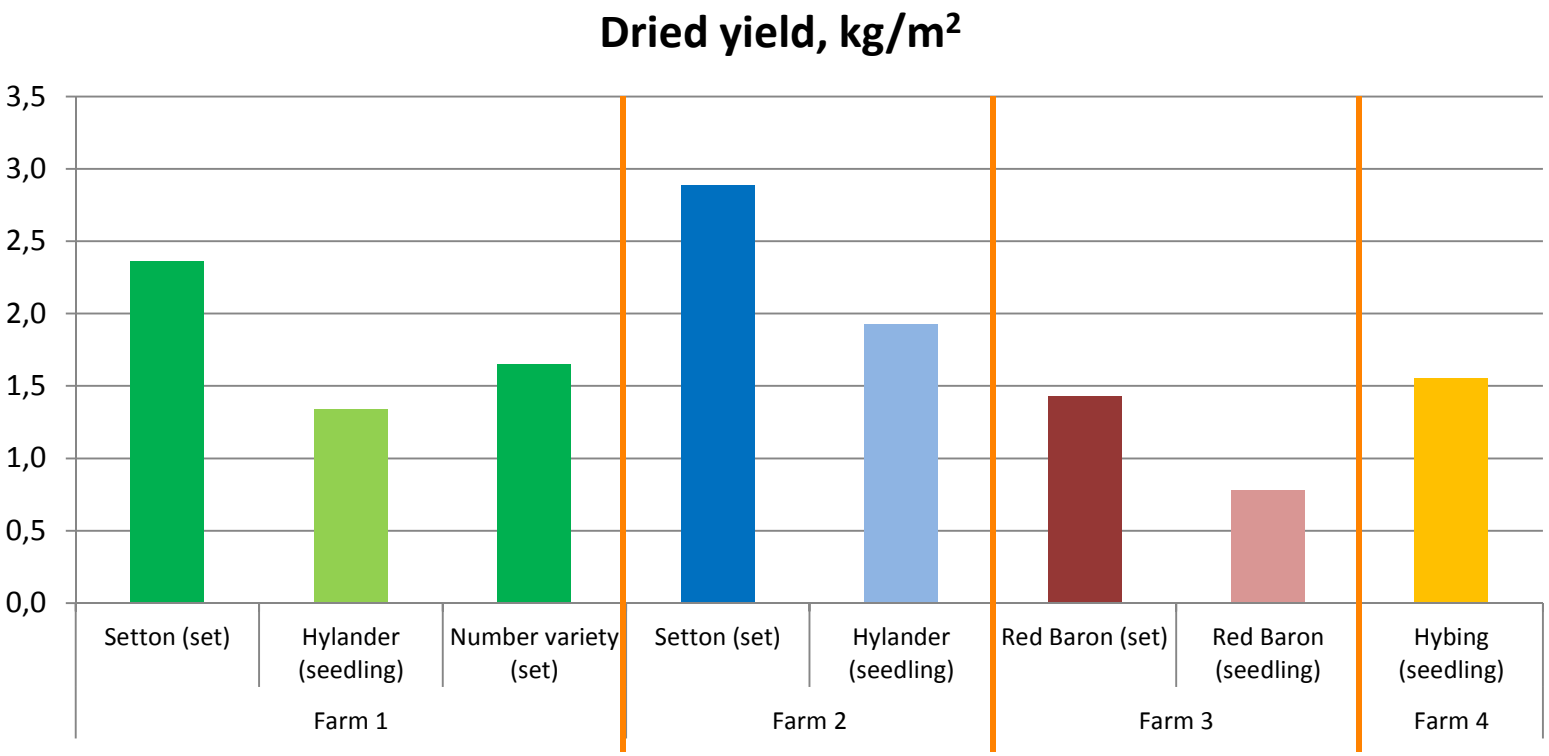
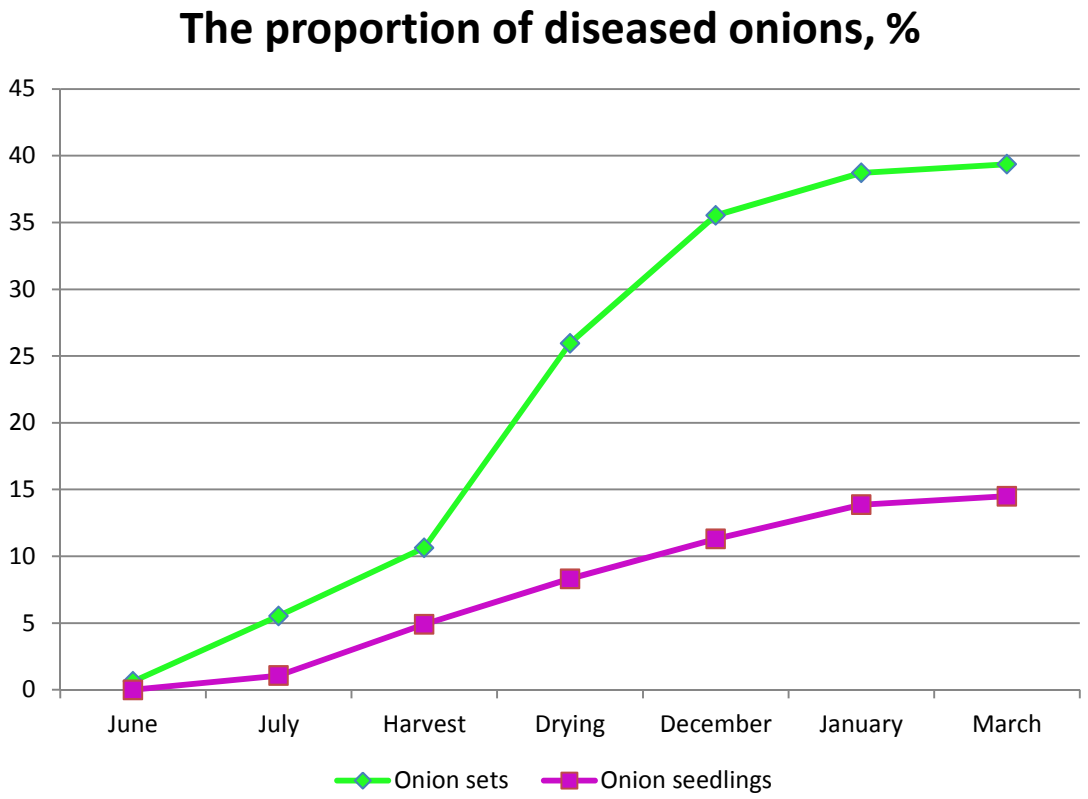
Key results of on-farm trials 2016



The yield produced from seedlings was very low (short growing time, weeds, wrong planting depth)

Key results of on-farm trials 2016



The most common pathogen was *F. oxysporum*

Implications

- The varieties Hytech, Hylander and Hybing gave the highest yields
- The onions produced from seedlings were small, but healthier than those produced from sets
- The results indicate that yield losses caused by *Fusarium* species can be reduced by producing onions from seedling
- Further research is needed to develop appropriate and economical cultivation techniques for producing onions from seedlings


Thank you for your attention