

Heterodera betae: the nematode and methods for sustainable control

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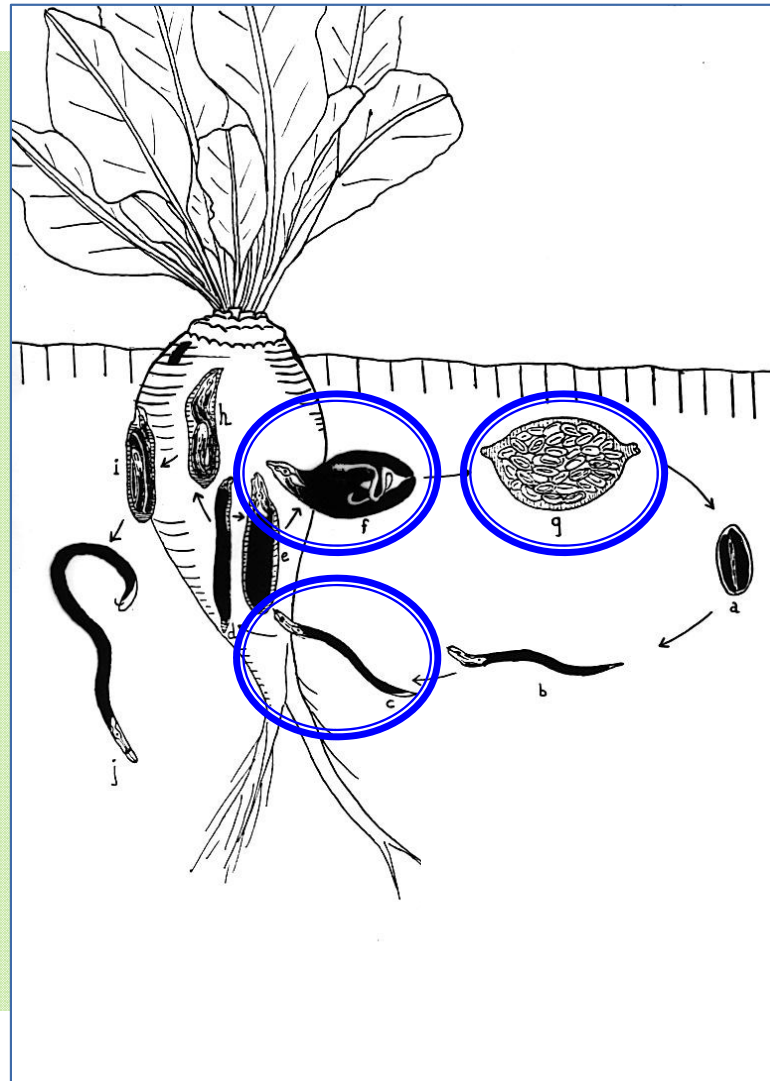


Outline

- ▶ ***Heterodera betae* (yellow beet cyst nematode)**
- ▶ **Development of IPM strategies**



Heterodera betae



Symptoms



Symptoms



Symptoms



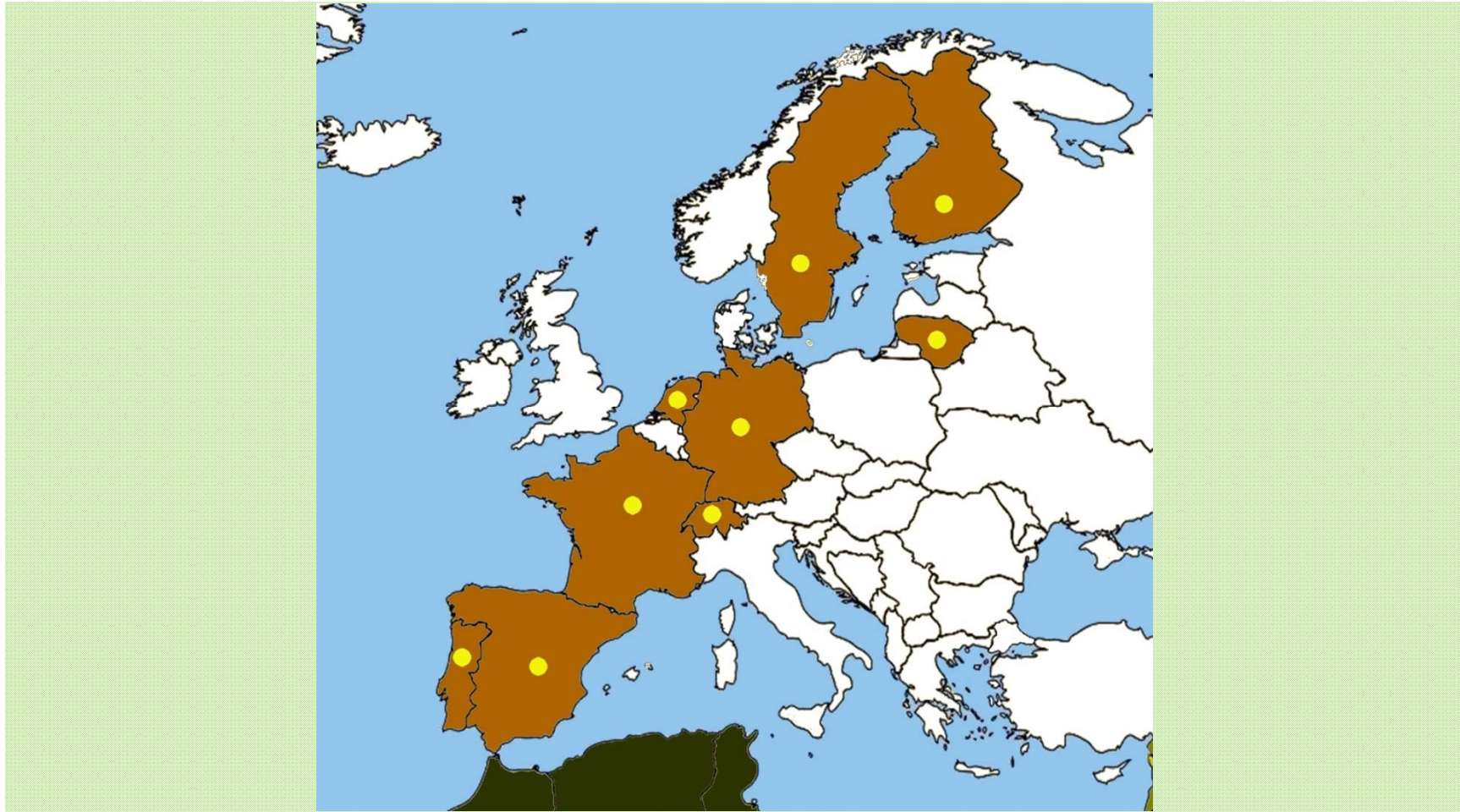
Heterodera betae in the Netherlands



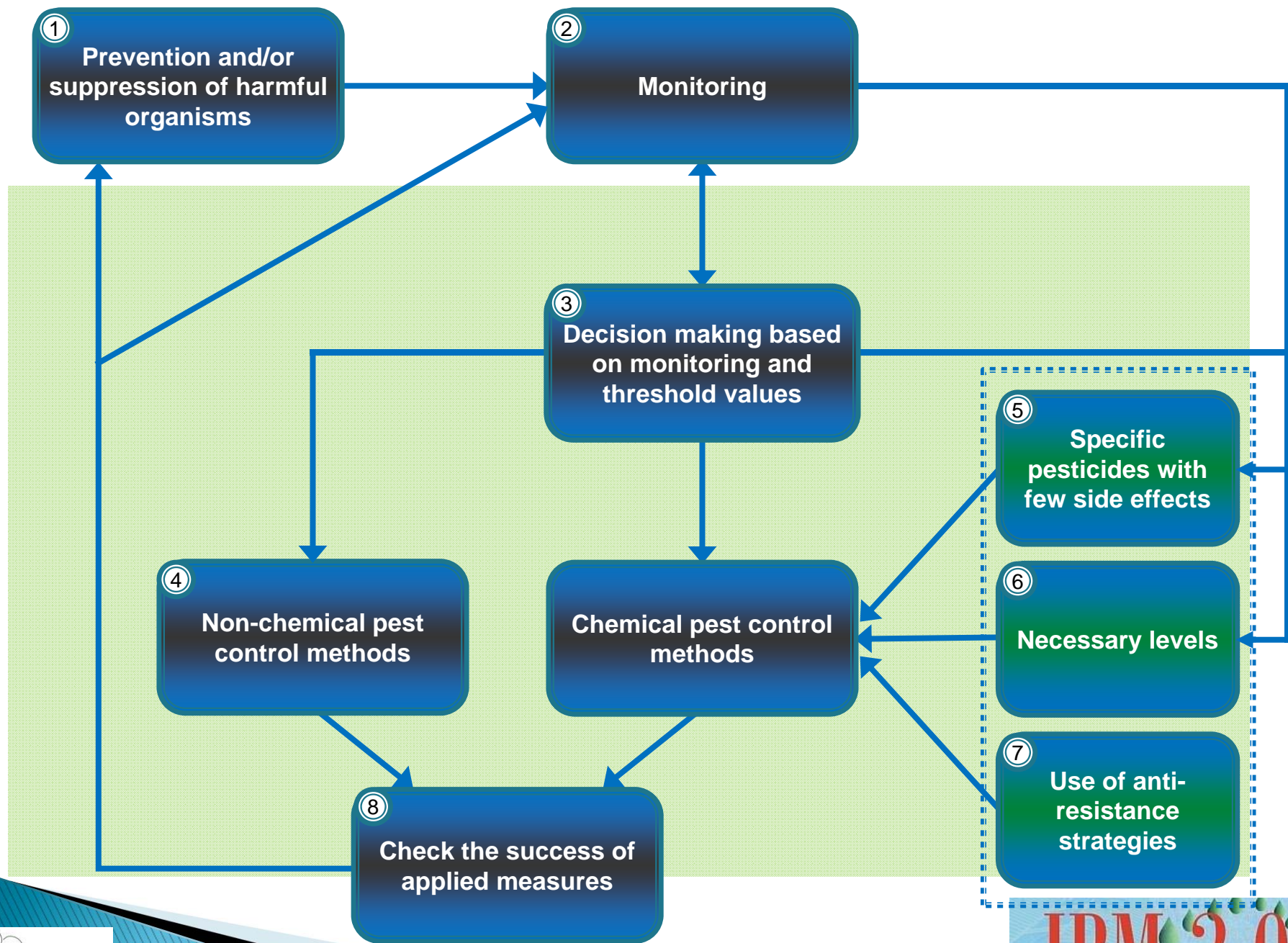
Source: Soil and diagnostic samples IRS
from sugar beet fields (2005-2011)



Countries with *Heterodera betae*



Source: Gracianne & Fournet, pers. comm.; Daub, pers. comm; Andersson, 1984; Ambrogioni *et al.*, 1999; Stanelis, 2004; Vallotton, 1985; Eronen, 2008.



1) Prevention - Green manure crops



Oilseed radish

(Raphanus sativus subsp. oleiferus)



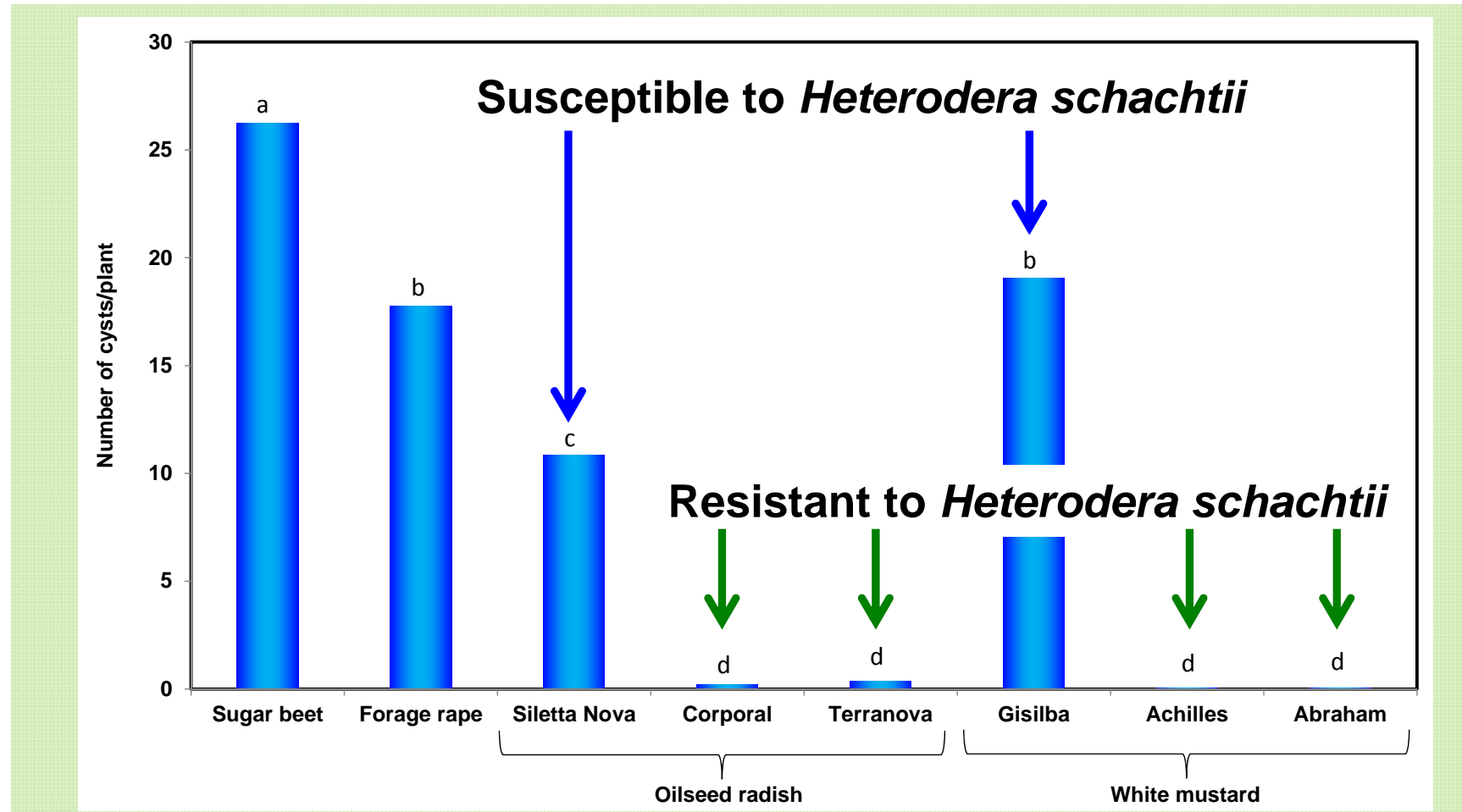
White mustard

(Sinapis alba)

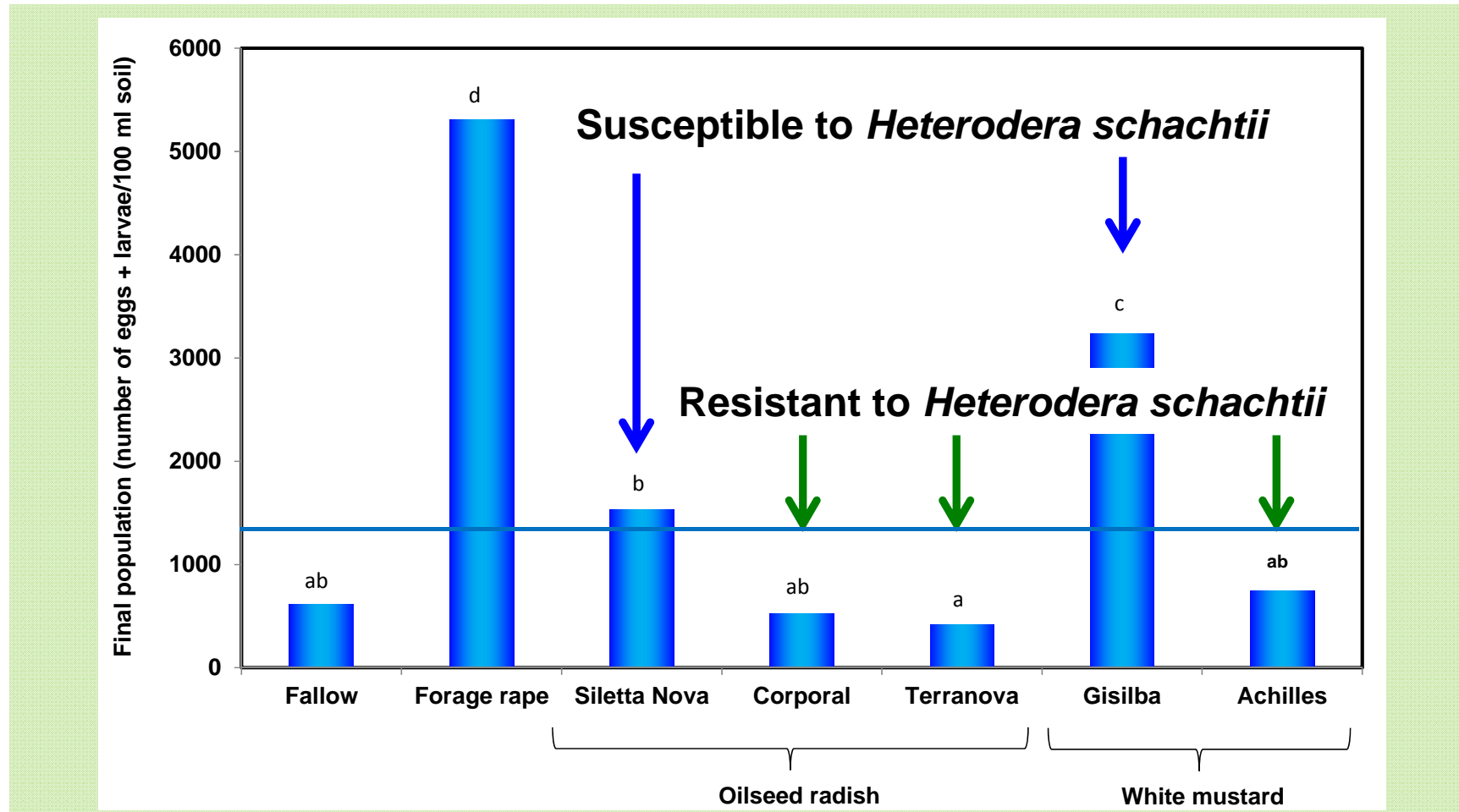
Crops investigated

- ▶ Forage rape (*Brassica napus*)
- ▶ Oilseed radish (*Raphanus sativus* subsp. *oleiferus*)
 - Siletta Nova
 - Corporal
 - Terranova
- ▶ White mustard (*Sinapis alba*)
 - Gisilba
 - Achilles
 - Abraham

Climate room trial *Heterodera betae*



Field trial *Heterodera betae*



Advice green manure crops

In case of *Heterodera betae*:

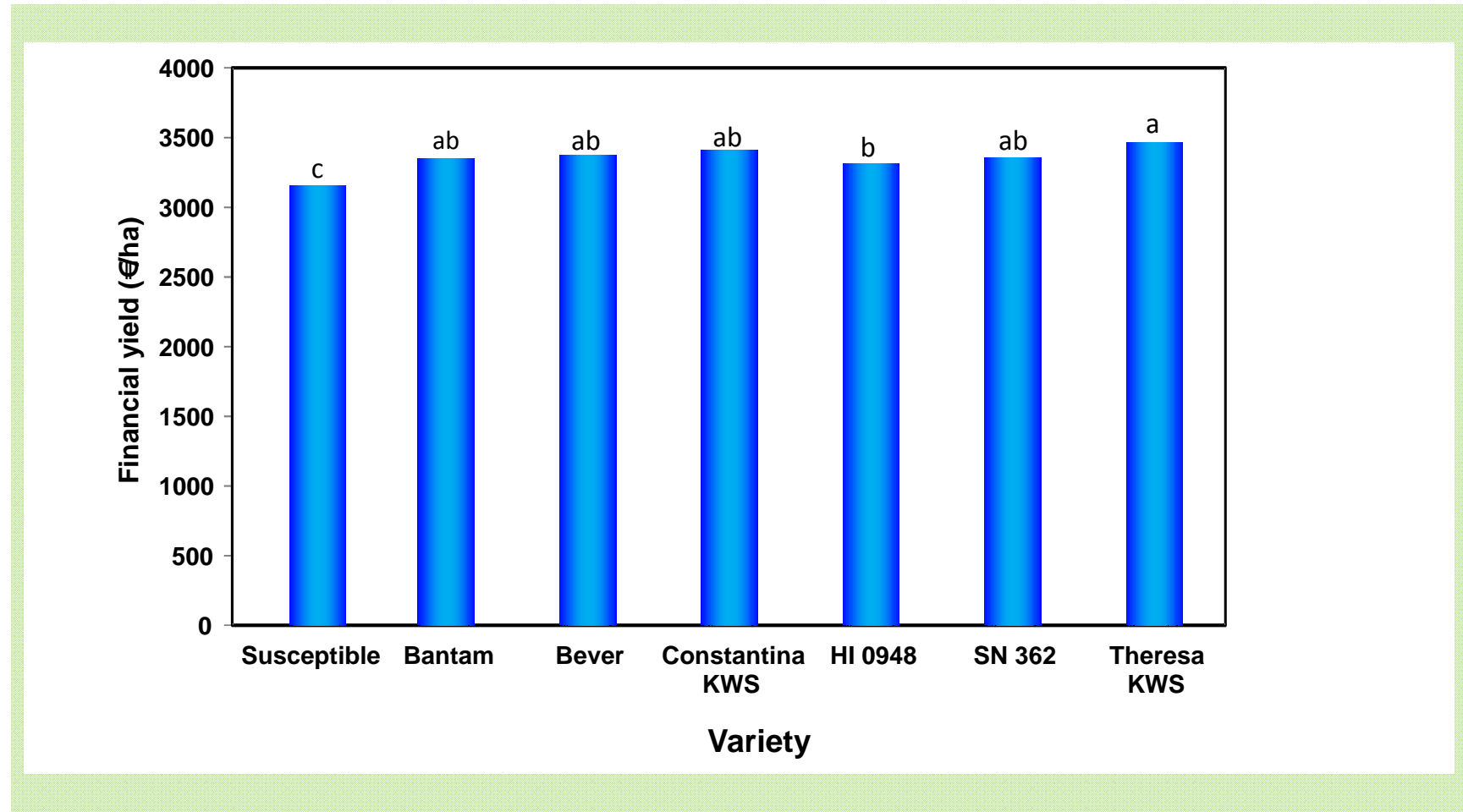
- ▶ growers should use:
 - resistant oilseed radish and white mustard
- ▶ growers should not use:
 - forage rape, susceptible oilseed radish and white mustard



Does this also count for sugar beet varieties?

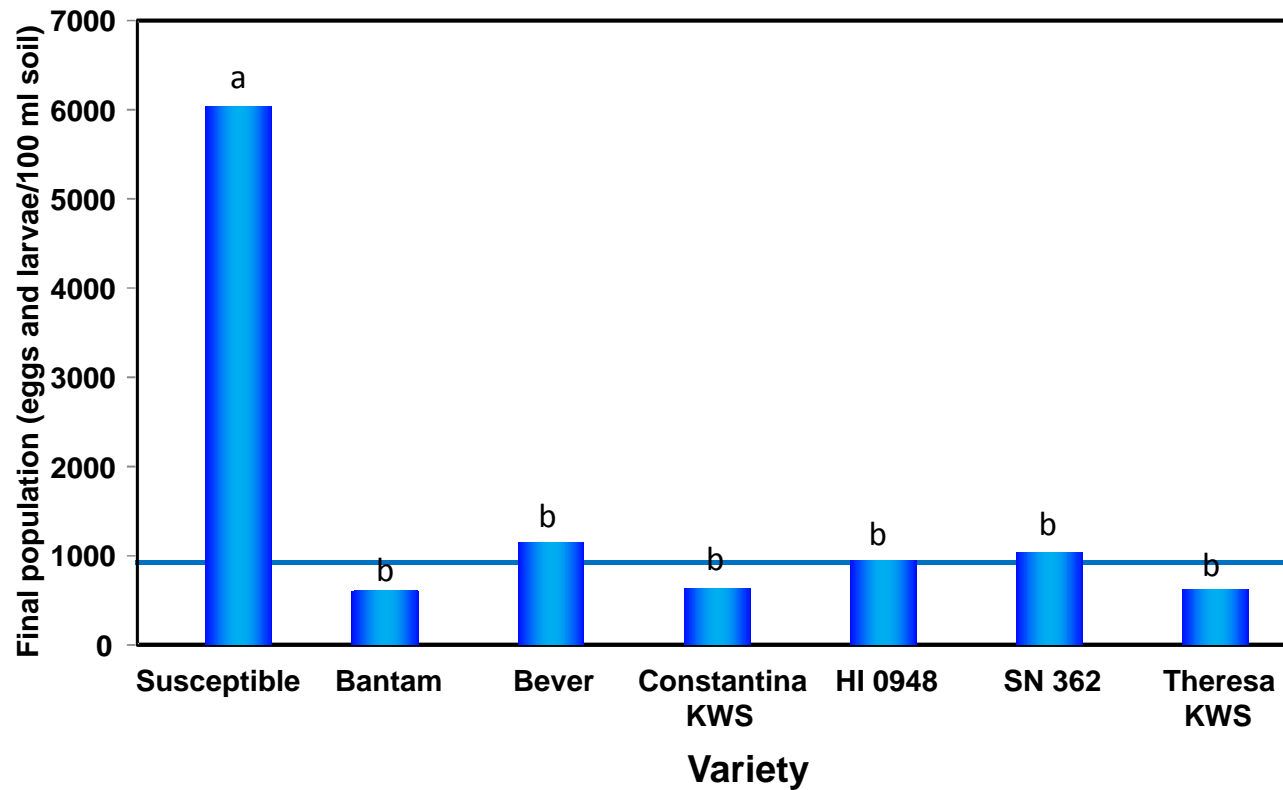
Financial yield (€/ha) *Heterodera betae*

Average of 3 field trials

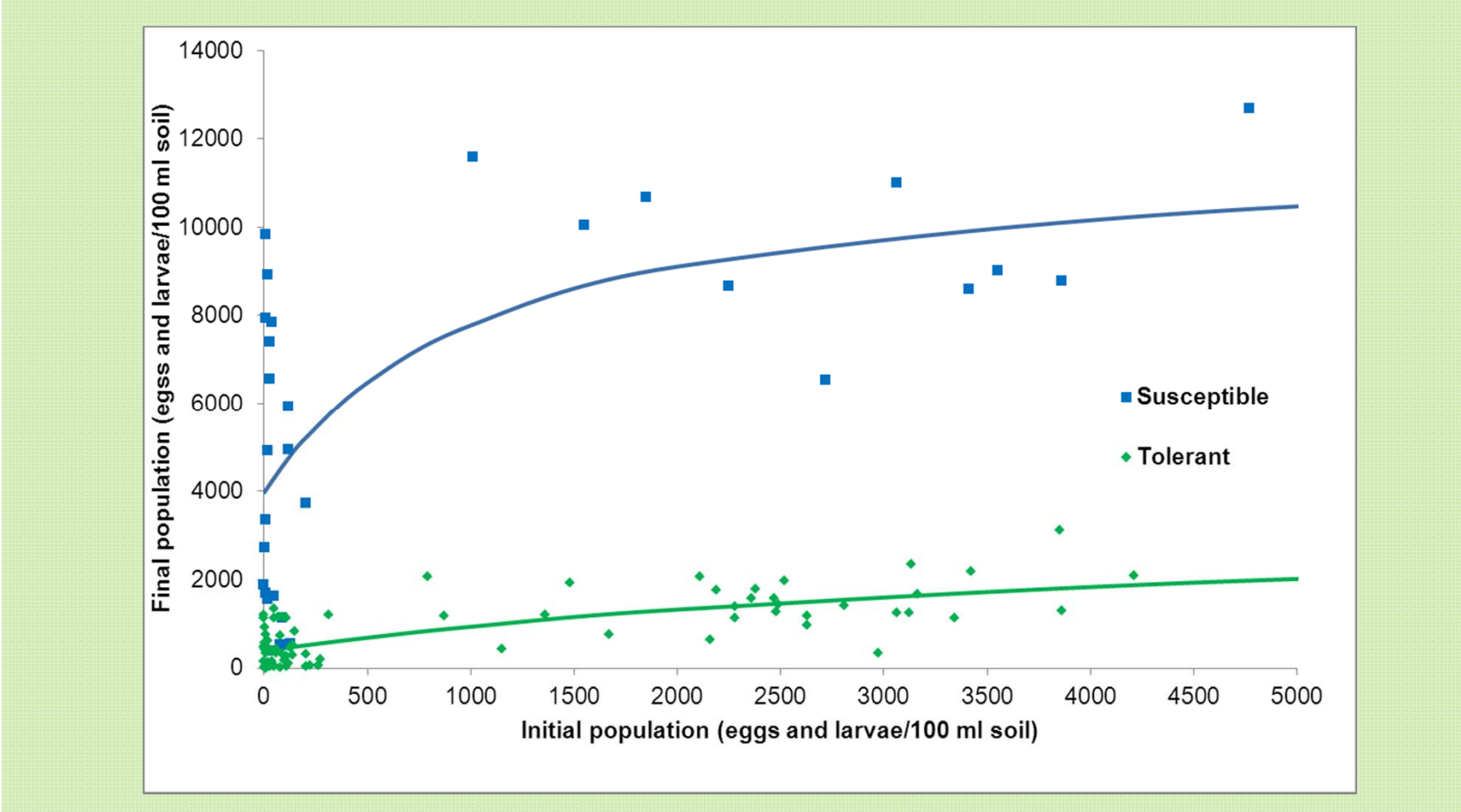


Final population *Heterodera betae*

Average of 3 field trials

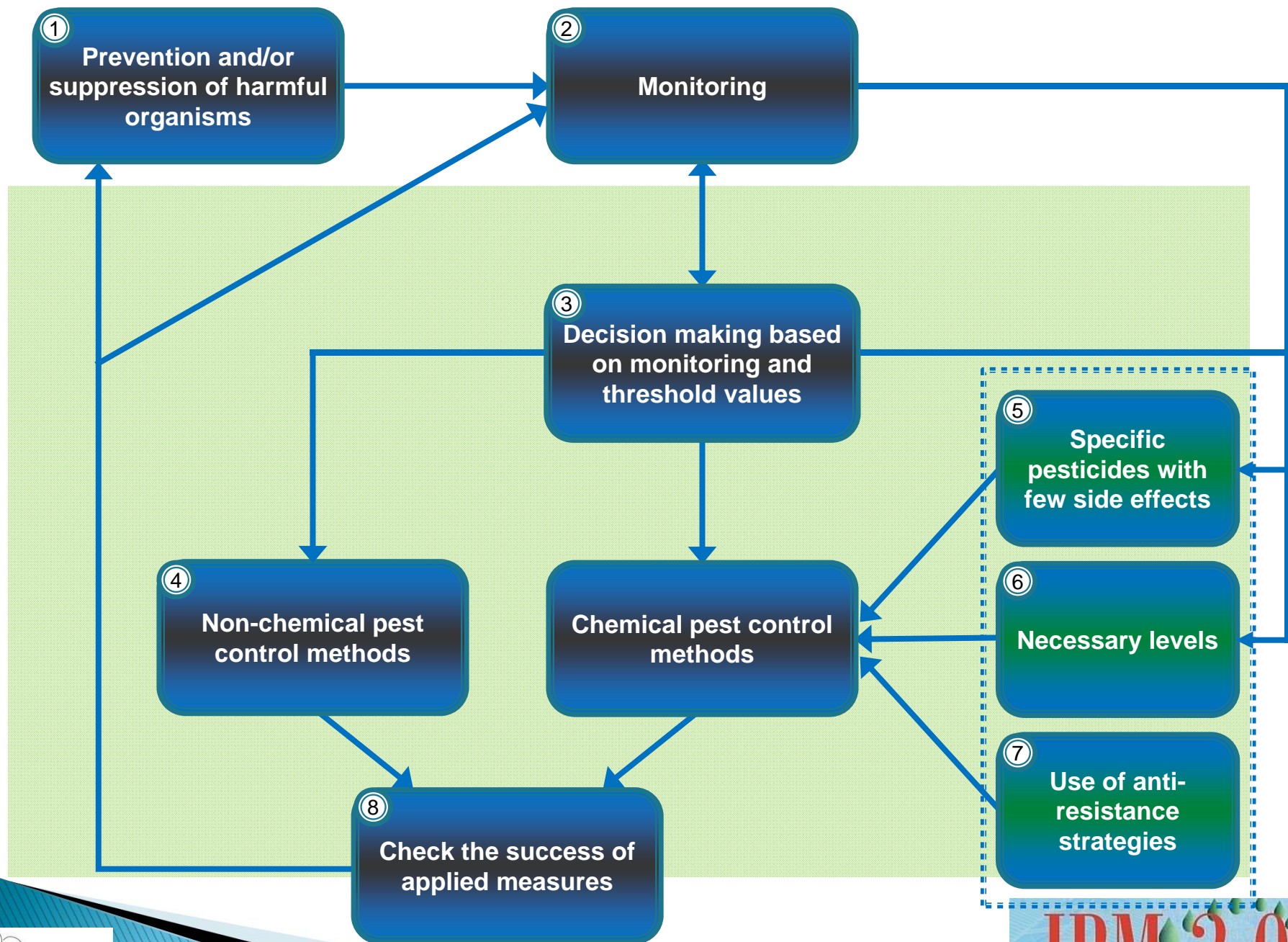


Multiplication *Heterodera betae*



Conclusions sugar beet varieties

- ▶ varieties tolerant to *Heterodera schachtii* are also tolerant to *Heterodera betae*
- ▶ those varieties give higher yields than susceptible varieties
- ▶ multiplication of *H. betae* is limited by tolerant varieties in comparison with susceptible varieties



IPM of *Heterodera betae*

- ▶ monitoring: sampling
- ▶ damage threshold: 75 e+/100 ml soil
- ▶ chemical pest control: not necessary anymore
- ▶ suppression of nematode by:
 - less intensive crop rotation
 - growing resistant oilseed radish and white mustard
 - growing tolerant sugar beet varieties

