Pea weevil (Bruchus pisorum L.) threatens field pea production in Ethiopia: Prospects of integrated pest management (IPM)

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Field pea is the second most important grain legume crop in Ethiopia, after faba bean.

Key role in cropping system.

Production trend of field pea over a ten year period from 2000 - 2013
• Insect pests main production constraint

• Pea weevil, *Bruchus pisorum* – key pest
Global distribution of pea weevil
(Source: Plantwise (2014), CABI)
Plant resistance in field pea genotypes
Mean percent seed damage at Ebinat, Liben and Sekota for 487 accessions in first field trial

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Percent seed damage in first field trial

9 accessions with <20 % percent seed damage

4 accessions with >80 % percent seed damage

Neoplasm formation in greenhouse

- 4 genotypes
- Less attacked by weevils
- Heritable trait
- Inhibited by UV light
- Intercropping/shading enhance neoplasm formation in the field
Oviposition of pea weevil
No-choice test

doi: 10.3389/fpls.2015.01186
Dual-choice test: Susceptible vs. moderately resistant genotypes and non-host plants

Total eggs- susceptible combined with: moderately resistant and non-host plants

- Adet + 32410-1
- Adet + 235899-1
- Adet + P. fulvum
- Adet + L. sativus

Mean no. of eggs/female

Scanning electron micrographs of pod surface of field pea and non-host plants

Smallholder farmers' knowledge and management of pea weevil in north and north-western Ethiopia

Mendesil et al. (2016). Crop Protection 81:30–37
Farmers’ knowledge of pea weevil in north and north-western Ethiopia.

- Most of the farmers surveyed were knowledgeable about pea weevil.
- Farmers were able to identify damaged seeds based on common symptoms on infested seeds.
- However, the majority of the farmers considered pea weevil as a storage pest.
- Farmers’ knowledge of PW was positively and significantly predicted by gender, farming experience and membership of cooperatives.
- Farmers reported that pea weevil cause loss of income, shortage of peas for home consumption and seeds for planting.
- Most of the farmers were not aware of means of spreading of pea weevil.

Mendesil et al. (2016). Crop Protection 81:30–37
Conclusions and future prospects

• Most of the field pea accessions evaluated were found to be susceptible

• A few accessions/genotypes demonstrated moderate levels of resistance

• Pea weevil females discriminate between host and non-host genotypes confirming the level of resistance found in the field.

• Pod morphological traits influence oviposition preference.

• Farmers aware of the pea weevil and able to identify damaged seeds

• However, as pea weevil is considered a storage pest most farmers do not apply measures to prevent spread and carryover of the weevil.

• These results can be used in developing IPM strategies based on trap cropping using attractive genotypes and intercropping with non-host plants.
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