PRACTICE ABSTRACT N°4

Eliminate lentil bruchids as soon as possible after early harvest to reduce yield losses

Problem

In organic and conventional pulse crops, bruchid larvae penetrate green seeds and develop by feeding on them (Figure 1). This leads to a reduction in harvest quality and an average yield loss of 20%, varying from year to year and region to region.

Solution

The solution proposed to limit the development of bruchids, tested on lentils, consists of early harvesting of the grains, immediate cleaning and sorting of the grains followed by elimination of the bruchids by heat, freezing or asphyxiation.

Benefits

This improves the grower's gross margin by limiting yield losses due to grains eaten by bruchids after harvest and also improves the quality of batches intended for human consumption (Figure 2).

Applicability box

Theme

Legumes; Disease and pest control; Postharvest management; Storage; Farm technology and equipment.

Keywords

Legumes; Pest control; Postharvest equipment; Storage; Farm equipment.

Context

All areas where bruchids are present.

Application time

Harvest time for lentils.

Required time

Few hours to treat the batches and several days to eliminate the bruchids.

Period of impact

Immediately after the grain harvest.

Equipment

Grain separator (Figure 3) and depending on the option used to eliminate bruchids: freezer, dryer or hermetic bags (Figure 4).

Best in

All systems producing lentils with bruchids problems.

Practical recommendations

- Harvest the lentils as soon as possible and dry the batches if necessary.
- Immediately clean and sort the grains to remove all impurities, including grains containing bruchids (Figure 3).
- Kill the bruchids with one of three options: (i) freezing, (ii) heating or (iii) asphyxiating using special hermetically sealed bags saturated with CO_2 (Figure 4).

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Figure 1: *Bruchus signaticornis* emerging from a lentil seed. Photo : Samuel Loiseau, Laboratoire d'éco-entomologie d'Orléans.

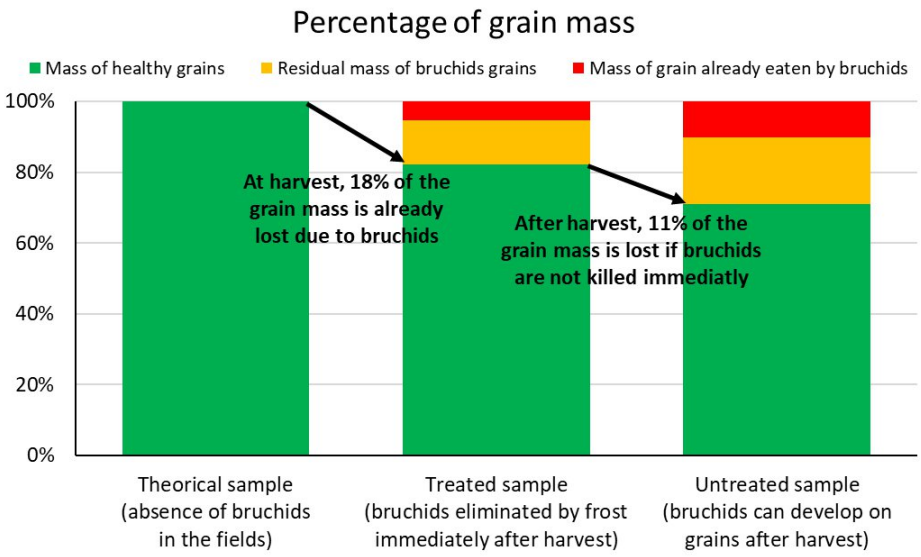

Figure 2: Effect of eliminating bruchids immediately after harvest (here by freezing) on the percentage of healthy grains, residual mass of bruchids grains and mass of grains already eaten by bruchids.

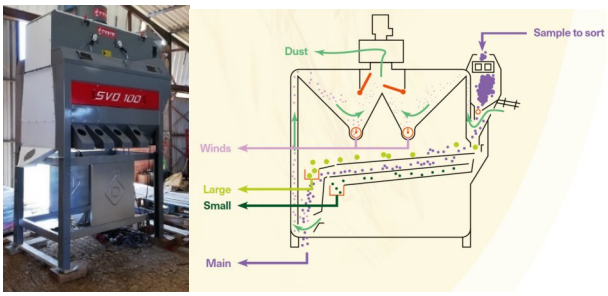

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Figure 3: SVD 100 vibrating separator from Denis, tested during the H2020 ReMIX project, which is a flat sorting machine equipped with two blowers (one at the inlet and one at the outlet) and comprising two superimposed floors of two grids, i.e. a total of four grids that can be chosen independently https://www.denis.fr/materiels/nettoyage/nettoyeur-separateur/292-separateur-vibrant-denis-svd100.html

Figure 4: Hermetically sealed bags saturated with CO_2 used to asphyxiate bruchids https://noxstorage.com

Further information

Weblinks

- Bruche des lentilles (2018). GECO Ecophytopic, https://geco.ecophytopic.fr/geco/Concept/Bruche_Des_Lentilles

Technical report

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About this practice abstract

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IntercropVALUES aims to exploit the benefits of intercropping to design and manage productive, diversified, resilient, profitable, environmentally friendly cropping systems acceptable to farmers and actors in the agri-food chain. As a multi-disciplinary and multi-actor project, it brings together scientists and local actors representing the food value chain. It includes 27 participants from 15 countries (3 continents) from a wide diversity of organizations and stakeholders. The project will run for four years and started in November 2022.

Project website: https://intercropvalues.eu/

Permalink: Organic-farmknowledge.org/tool/53689

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