Chemical control of wireworms in potatoes

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Introduction

Wireworms are important pests in potato crops. In Switzerland, the predominant species attacking potato tubers are *Agriotes lineatus, A. obscurus* and *A. sputator.* Following the deregistration of the insecticide Fipronil in 2013, there are no highly effective products available for wireworm control. We tested a number of synthetic insecticides applied as coatings of oat seeds to evaluate their efficacy in wireworm control. Two application timings were compared: (1) In spring during potato planting and (2) in late summer/fall prior to potato planting.

Method

All tested products (Tab. 1) were applied as coatings of oat seeds. The seeds act as a bait during germination (CO_2 release). The seeds were applied **(1)** in the potato ridges during the plantings in spring or **(2)** as green manure sown in late summer (prior to potato planting). Following harvest 100 tubers per replicate were examined for wireworm damage. All trials were carried out in La Frêtaz (1200 m, Switzerland).

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Tab 1. Products tested in the control of wireworm in spring (S) or late summer/fall (F) as oats seed coating.
*** granulate, ** bait**

Product	Active Ingredient (AI)	g AI/ha	Timing
Audienz	Spinosad	96	S / F
Ephosin *	Chlorpyriphos	500	S
Oat	-	-	S / F

(1) Chemical control during potato planting

None of the tested products had a significant impact on the percentage of tubers damaged by wireworms with the exception of "Goldor Bait" used as a reference product (Fig.1). The pressure of wireworm was very high with 40-50% of damaged tubers in the control.

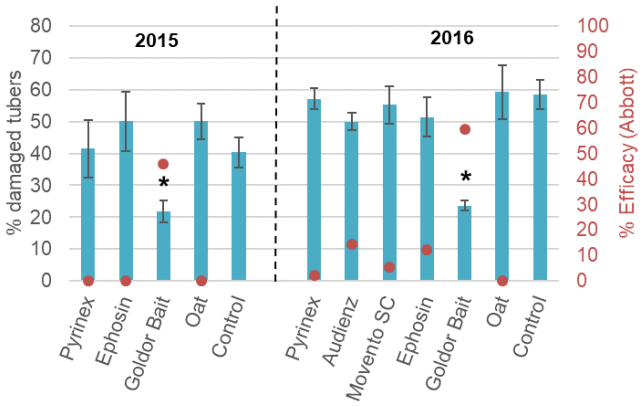

Fig 1. % damaged tubers by wireworm with chemical control during potato planting in La Frêtaz 2015 – 2016. Insecticides applied as coatings of oat seeds with the exception of Ephosin (applied as granulate) and Goldor Bait (granulate bait). *Dunnett test, Goldor Bait: p<0.001. Red dots represent the efficacy (Abbott)

(2) Chemical control in fall prior to potato planting

Control efficacies of the tested products were very low (Fig. 2) with the exception of "Goldor Bait" (used as reference product) which had an efficacy of >90%.

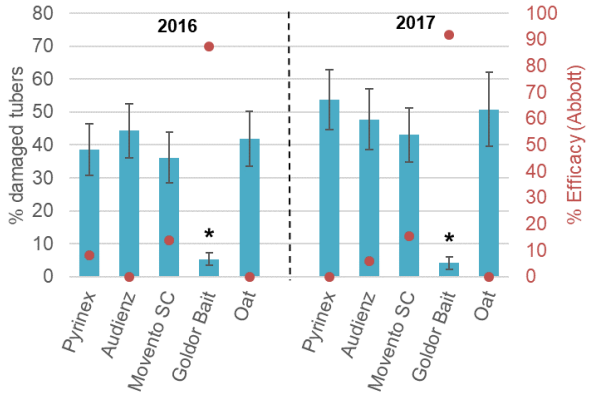

Fig 2. % damaged tubers by wireworm with chemical control in fall prior to potato planting with a coated green manure (oat) in La Frêtaz 2016 – 2017. *Dunnett test, Goldor Bait: p<0.001. Red dots represent the efficacy (Abbott)

Conclusions

- None of the products tested reduce damage to potatoes (except positive control: Goldor Bait)
- In fall, Goldor Bait was more efficient than in spring. The application time is important in order to achieve the best possible efficacy