Improvement of codling moth control by use of new reduced-risk methods

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A reduced-risk battle!

Most of the insecticides used against codling moth are toxic for several beneficial insect species. Each treatment restricts natural pest control. This project aims to develop a strategy for controlling codling moth by two methods involving reduced risk for beneficial insects, the environment, and human health:

- **Attract and kill technology** involves applying fine droplets of an attractant (sexual pheromone + insecticide + adhesive substance) to the bark of apple trees. This product attracts and kills male codling moth.
- **Biological control by means of Trichogramma wasps** (small wasps, harmless to humans). This involves inundative release of a large quantity of wasps periodically in the orchard to hunt and kill codling moth eggs.

**Principal objective**

Determine the effectiveness of joint use of attract and kill technology and biological control

**Material and method**

- **Duration of the project:** 2004-2005
- **Experimental sites:** 4 commercial orchards
- **Treatments:**
  1. Attract and kill technology (1 ha)
  2. Attract and kill technology + inundative release of Trichogramma wasps (1 ha)
  3. Positive control section: plot treated with an insecticide (organophosphate) against codling moth (1 ha)
  4. Control section not treated against codling moth (0.5 ha)

**Attract and kill technology**

- **Product tested:** LASTCALL™ CM (registered in the U.S.)
- **Application:** 3 applications, in 5 weeks, beginning before the codling moths emerge (end of May)
- **Rate:** 3,000 droplets/ha
- **Estimated cost/ha:** US$100
- **Time required/ha/application:** 3.5 to 6 h for one person

**Biological control by inundative release of Trichogramma wasps**

- **Application:** for 3 weeks beginning just before the codling moths' peak egg-laying period
- **Trichogramma wasps released:** 1.4 M/ha/week
- **Time required/ha/application:** 1.5 to 2 h for one person

**Development and funding partners**

- **Agro-Pomme**
  - Club de producteurs Sud-Ouest
  - Club de production Transpomme inc.
- **Fédération des Producteurs de Pommes du Québec**
- **CDACQ**
- **Promme**
- **Club de producteurs de pommes de la Rive-Sud**
- **IRDA**

**Conclusion**

- **Anticipated results are positive** because the proposed strategy targets two codling moth stages: adults and eggs.
- **Attract and kill technology**: successful in the Maritimes, western North America and Switzerland in orchards where sexual confusion does not work.
- **Biological control by inundative release of Trichogramma wasps**: strain indigenous to Quebec adapted to our orchards' weather and biological conditions.

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