

Progress Report SLU EkoForsk 2013-02-15

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Development of odor-based strategies to control seed-eating weevils in clover seed production

Progress of the project is as planned. The applicants and other personnel met seven times for planning and reporting of results. A new postdoc (financed by SLF) has worked full time since early spring. Three students/assistants contributed during the field season.

We have focused on 1) field-collection of weevils, 2) scent collection and chemical identification of clover volatiles, 3) electrophysiology and 4) behavioral studies in the lab. 1) We performed a second field season exploring arrival of weevils to the field using passive traps in three red clover fields and three white clover fields in south Skåne (one each at an organic farm). Preliminary results shows that weevils arrive early to the field, but also that they increase in response to budding in the plants. We also tested traps with baits (based on our clover scent collections and electrophysiological measurements of insect antennae). 2) We analysed field-collected clover scents from 2011, where red clover collections were of highest quality. Common compounds included monoterpenes, C₁₁-terpene hydrocarbons and sesquiterpenes. Moreover, β -ocimene (E and Z) increased over the season. 3) Our electrophysiological screening of potential weevil attractants in *Apion fulvipes*, white clover weevil, has recently been published (Andersson et al., 2012, Journal of Insect Physiology, 1325-1333). Screening is continued in *A. trifolii*, red clover weevil, in order to compare weevil attractants between species. 4) In our bioassays in the lab, we have showed that females (but not males) prefer to feed on clover leaves of their host species. However, when we experimentally removed antennae this preference appeared partially present, presumably indicating that not only odors but also other sensory systems are involved in food choice.

To inform about the project, we updated our homepage (<http://www.lu.se/pheromonegroup/research/control-of-pest-insects-in-clover-seed-production>), published two articles in "Ekologiskt Lantbruk" (issue 7, 2011) and "Svensk Frötidning" (issue 2, 2012) and participated in four meetings involving e.g. farmers and plant breeders.