

## Seed Orchard Pest Management Subprogram

(submitted 22 May 2008 – R.G. Bennett – corrected 7/ix/08 RGB)

2007/08 fiscal year

The Seed Orchard Pest Management Subprogram supports research, extension activities, and pest management operations to increase orchard yields of high quality seed. Ministry of Forests and Range (MoFR) Research Branch scientist Dr. Ward Strong leads the research component. MoFR Tree Improvement Branch personnel (Jim Corrigan and Dr. Robb Bennett) deliver extension services. Seed orchard personnel handle operational activities. The Pest Management Technical Advisory Committee (PM-TAC) guides investments and activities. The PM-TAC is comprised of members from MoFR Research and Tree Improvement Branches, the Canadian Forest Service, private seed orchards, universities, and the Forest Genetics Council.

Research plans and budgets are established through an annual process of proposal development and discussions by the PM-TAC. In the 2007-08 fiscal year, the PM-TAC administered projects on conifer seed bug, fir cone worm, *Fusarium* fungi, conifer adelgids, systemic pesticides, and a cone and seed insect field guide. Additional projects (pine pitch moth and Douglas-fir cone gall midge) were administered directly by Research Branch. Projects are summarized below.

| Project   | Species primarily impacted | Progress   | Planned budget       | Actual spending   |
|---|----------------------------|--|----------------------|-------------------|
| Conifer seed bug ( <i>Leptoglossus occidentalis</i> ): Host-finding mechanisms                | All Pinaceae               | Based on our collaborators' discovery that seed bugs use infrared wavelengths to find hosts, a new trap for monitoring and management was successfully tested. Other host-finding mechanisms are being explored. | \$31,920             | 31,920            |
| Conifer seed bug ( <i>Leptoglossus occidentalis</i> ): Infra-red detection                    | All Pinaceae               | purchase of infra-red detection equipment to support "host-finding" project above  | 35,000               | 35,000            |
| Fir coneworm ( <i>Dioryctria abietivorella</i> ): Life history and reproductive behaviour     | Fd, Sx, Lw, Pw             | Flight phenology, larval stages, and in-field sex ratio were determined; a laboratory colony was established. First summer of a three-year M.Sc. project.  | 33,590               | 33,590            |
| Fir coneworm – ChemTica production of <i>Dioryctria</i> pheromone                             | Fd, Sx, Lw, Pw             | Pheromone produced for usage in life history / repro. biology project and in-house annual flight data collection   | 7,880                | 1,100.17          |
| <i>Fusarium</i> fungi: Reducing infections in orchard seed & determining infection mechanisms | All species                | Research completed. Summary report encapsulating results of several related projects is under revision prior to publication.   | Not in budget table? | no \$\$ allocated |
| Conifer adelgids  | Sx, Lw, Fd,                | Species composition and  | 44,120               | 44,120            |

|  |             |  |                         |                                      |
|--|-------------|--|-------------------------|--------------------------------------|
| ( <i>Adelges</i> & <i>Pineus</i> spp.):<br>Species composition, gall formation, and life history | Pw          | population parameters analysis completed. Determined seasonal flight patterns of different species and life stages required for gall initiation. Second year of a three-year M.Sc. project.  |                         |                                      |
| Pine pitch moth ( <i>Synanthedon sequoiae</i> ):<br>Damage and control                           | Pli, Sx     | Permanent sample plots established to measure multi-year effect of pitch moths on tree health. Control through carbaryl stem sprays demonstrated to be ineffective.  | Not in budget table?    | no \$\$ allocated – in-house project |
| Douglas-fir cone gall midge ( <i>Contarinia oregonensis</i> ):<br>Population studies             | Fdi         | Cone gall midges have recently become an issue for Fdi crops. Gall midge distribution and phenology are being studied in preparation for minimizing potential economic losses to Fdi crops.  | Not in budget table?    | no \$\$ allocated – in-house project |
| Cone & seed insect control:<br>Systemic insecticide injection trials:                            | All species | The first year of pesticide trials using new formulations and novel injection hardware produced inconclusive results: Insect populations were generally too low to demonstrate significant effects and trials were hampered by logistical problems. Treatments had no effect on seed germination. New trials using modified equipment and simpler protocols will occur in 2008/09. | 17,850                  | 5,455.16                             |
| Cone and seed insect field guide   | All species | New images of a variety of cone and seed insects have been made. Fact sheets on 7 high priority insects have been drafted and are under review.  | 30,000                  | 27,998.43                            |
| Technical support for scientist  |             |  | 28,640                  | 27,916.96                            |
| Laboratory costs   |             |  | 20,000                  | 20,357.06                            |
| Salary support for scientist and PM specialist   |             |  | 154,000                 | 154,000                              |
| Total  |             |  | 401,000<br># from Cheri | 389,000<br># from Cheri              |