



Project Report-2007

Project Title: Bio-Control of Dearness Scale,  
*Rhizaspidotus dearnessi*  
(Cockerell) (Homoptera: Coccoidea:  
Diaspididae)

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For  
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## Objectives:

1. Search for predators of dearness scale
2. keep records of the number of scales obviously parasitized
3. attempt to rear parasitoids from scales that appear parasitized
4. if possible, record the proximity of alternate hosts such as blueberry; and
5. assess the fate of the scale through a crop year, including dormancy;
6. note scale phenology

## Description of Procedures:

### Methodology

#### **(A) Collaborator Farms and Site Selection:**

Cranberry growers with dearness scale concerns and those with known history of scale incidence were contacted and informed about dearness scale project. At least, one collaborating cranberry grower planning to perform dry or wet harvesting was contacted to carry out project activities. After careful examination, the experimental site was measured for 10 square feet area and marked with orange paint. Four orange flags were put at the corners to demark the area and make it prominently visible. (see photos below). These chosen bogs had maximum level of scale infested vine area. Two locations were considered for the wet harvest bogs under the same management but with different levels of pest incidence.



Wet harvest field



Dry harvest field

#### **(B) Sample collection, Monitoring and Microscopic Examination:**

A minimum of 10 samples were collected from each site every week to observe scale development as per the project objectives mentioned above. The scales were examined under the microscope for any kind of unusual body deformity caused by any external agent such predator feeding symptoms and parasitoid infestation. The number of parasitized or predator fed scales was recorded. The weekly collected scale samples were kept in the laboratory for further rearing to find out the parasites, if any. None of the reared damaged scale samples till the end of July were found to have no parasites



emerged from them. The collaborating growers were asked to provide details of the timings, concentrations and type of pesticides applied. Any possible impact of the insecticides applied on dearness scale control was assessed. Data collected was tabulated and statistically analyzed and tables prepared. Digital images of the scale and vine phenology, and possible injuries or symptoms likely to be caused by parasites and predators were taken and incorporated in the final report.



**April 18**



**April 26**



**May 9**



**May 24**



**June 9**



**June 13**



**June 20**



**July 5**

**Crop phenology stages**

**(C) Data Collection:**

Out of the minimum of 10 samples collected from each location every week, the number of healthy, damaged, suspected to be parasitized were noted from each sample and kept for further analysis. It was noticed that the samples collected from Dry harvest field had fewer number of scales damaged or suspected to be parasitized compared with the scale samples collected from the two different wet harvest fields. Each sample collected varied from 3 to 7 scales were sample and the total number of scales collectively put together varied from 46 to 79 scale specimens per weekly sample from each location. The dry and wet samples were kept separately for further rearing in the lab.



**May 30**



**August 9**

**RESULTS**

**(A) Dearness Scale Stages and Description:**

**The Adult Female Scale:**

Live adult female scale were small (less than 2mm in size), round, spongy yellow, delicate insects inside conical dull white hardened structures - the 'shells'. These shells were found attached to the vines in clusters or singly. Shells were tapered and sloped at one end and rounded, raised and broader at the other. The female could only be seen when the shell was split open. The wingless and legless females spend their lives within the shell producing eggs which hatch into fast moving tiny "crawlers". Adult females were recorded as; alive, dead inside the shell, or parasitized if there was evidence of parasitism such as a hole in the shell.



**Adult female scale**



**Shell removed**