# Effects of Pollen Quality on Honey Bee Nutritional Status

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## PROJECT SUMMARY

### Objectives for Current Phase:

For this follow-on phase of the pollen-related bee nutrition project:

- Evaluate and compare the physiological effects on honey bees of their consuming single-source pollen versus multisource pollen as measured in terms of their hypopharyngeal gland protein content, bee body mass, lipid content, and immunocompetence, plus colony growth.
- Prepare a field-test design for assessing the nutritional status of honey bee colonies in the field.

### Background:

Understanding and improving honey bee nutrition has become of increasingly important as pollinator-dependent growers and beekeepers contend with colony collapse disorder and other bee-related health threats.

The purpose of this ongoing research project is to study the effects of pollen quality on bee well-being. Pollen is the sole source of protein for honey bees and is essential to their development and survival. Also, nurse bees use stored pollen to produce the proteinaceous hypopharyngeal gland secretions that serve as food for developing bee larvae.

The project is designed to serve chiefly as a comparative study of the effects of feeding bees with single-source pollen versus multisource pollen.

Results suggest single-source pollen consumption for an extended period of time negatively impacts hypopharyngeal gland protein content of nurse bees. This in turn might result in poor hive nutrition and growth. Also, it appears single-source pollen consumption results in lower immunocompetence that might lead to increased susceptibility of bees to pests and diseases.

Findings of this study will be helpful in suggesting appropriate supplemental feeding to maintain optimal nutrition for strong and healthy colonies.

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**Project Cooperators:** Carolyn Breece, Oregon State University

**For More Details, Visit**

- 2009-10 Annual Report CD (09-POLL2-Sagili); or on the web (after January 2011) at AlmondBoard.com/ResearchReports