Assess Carbon Sequestration Potential of Applying Chipped Almond Prunings to the Orchard Floor

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PROJECT SUMMARY

Objectives:

- Ascertain the carbon sequestration opportunities and losses associated with applying chipped almond prunings to the orchard floor instead of burning them as has long been customary.
- Identify these opportunities and losses on a regional basis, covering the full range of almond orchard conditions in California.
- Implement remote sensing application to assess relationship between carbon removed and tree density and/or percent cover.
- Determine whether chip application results in a valuable accumulation of soil carbon in otherwise low organic-matter soil systems.
- Develop a validated version of the DeNitrification–DeComposition (DNDC) greenhouse gas soil biogeochemical model, in collaboration with Bill Salas and David Smart, to serve as a specialized management tool for California almond producers.

Background:

With California facing cap & trade regulations of greenhouse gas emissions, there is interest in carbon sequestration by agriculture as a possible off-set. This project explores the potential for almond producers to earn carbon credits as a result of applying their chipped prunings to the orchard floor.

The recent industry trend of shifting away from the traditional method of burning annual prunings in favor of chipping and leaving them to decompose on the orchard floor could mean increasing organic matter stored in orchard soils. Burning has become problematic owing chiefly to the implementation of more stringent air-quality regulations.

This project builds on the work that has been and is being conducted by some ABC-funded researchers, who have focused on the effects of applying chipped prunings and whole-tree residues in the San Joaquin Valley.

Employing a statewide approach as well as spatial remote sensing aspects, the project will take into account the significant regional and sub-regional differences among orchards in terms of soil types, irrigation methods, between-row vegetative covers, and orchard-management practices. These rank as the key factors that bear on the carbon dynamics of applied prunings—and the effective management of the process.

Given the statewide scale of annual prunings disposal (about 400,000 tons), this project is likely to not only enhance the state's production of almonds, but also have practical application for other kinds of annually pruned tree crops.

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Project Cooperator: William Salas, Applied Geosolutions, LLC; Dave Smart, UC Davis

For More Details, Visit

- Poster location 21, Exhibit Hall, Session 2; or on the web (after January 2012) at AlmondBoard.com/AICposters
- 2010 - 2011 Annual Report CD (10-STEWCROP4-Kimmelshue); or on the web (after January 2012) at AlmondBoard.com/ResearchReports
- Related Projects: 11-PREC3-Holtz; 11-AIR2-Smart