

## **Utilization of Compost made from Agricultural and Forestry Wastes for Improving the Economic and Ecological Sustainability of Agronomic Crop Production on Low Organic Matter Soils in the San Luis Valley of Colorado.**

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**Project Description:** The main objective of this study is to improve water conservation and sustainability of crop production on the low organic matter soils of the San Luis Valley, Colorado. This will be accomplished through on-farm demonstrations that will examine the impact field incorporated compost made from agricultural and forestry wastes has on: 1.) reducing the use of synthetic fertilizers and fungicides, by improving nutrient retention in the root zone and the health and diversity of the soil's biomass, 2.) improving water utilization, thereby reducing water and power use in center-pivot irrigation systems, 3.) crop yields and costs of production for potatoes, barley and alfalfa.

Two agricultural waste streams, sawdust and cull potatoes, being generated in the San Luis Valley have become problematic for their local industries. Logs harvested from the National Forests surrounding the San Luis Valley are milled locally, generating sawdust for which there are very few feasible uses. In a 1997 Colorado State University (CSU) survey of western Colorado mill operators, the second most mentioned problem was that of mill residues (sawdust). Most of this sawdust has been stockpiled at locations near the mills.

Potatoes are the area's most economically important crop, and the foundation of the local economy. On average, about 9.6% of each year's potato crop is not marketable, due to size, appearance or presence of disease. This study looks at using cull potatoes in combination with sawdust to create a dry compost that can be used on agronomic crops in the San Luis Valley, Colorado.

This is a three-year study that looks at applying compost to potato, alfalfa, and barley crops. Rates of 0, 4, 8, and 12 tons of compost/acre were applied to six different sites around the San Luis Valley in the fall of 2000. Four of the sites are located on two fields, one in the Sargent area and the other one in the Blanca area, and they will grow potatoes rotated with barley. The two remaining sites have been planted in alfalfa and are located in the Center and Monte Vista vicinities. Crop disease, crop yield, and soil readings were taken at each of the six sites this summer (see following tables) to determine the effect compost had on the soil and crops. Compost was applied in the fall of 2001 for the 2002 growing season. This is the first year of a three-year project. Therefore, no conclusions or predictions can be made in such a study until data from all three years has been gathered and analyzed.