Sustainable Ag Practices and Outreach with Native Populations

Western SARE Project:
Exploration and Implementation of Sustainable Ag Practices and Outreach on the Fort Hall Indian Reservation for the Protection of Groundwater

Number: SW00-042 **Type:** Research and Education

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Shoshone-Bannock Tribal Business Council, Shoshone-Bannock Tribal Land Use Commission, USDA-NRCS, Western Ag Research, University of Idaho Extension-Fort Hall

Background

The Fort Hall Indian Reservation is home to the **Shoshone and Bannock Tribes**, located in southeastern Idaho.

The reservation and surrounding counties comprise the **largest potato-growing area** in the country. While some Tribal members are active in ranching, the Tribes lease ground to neighboring non-tribal members for the production of irrigated row crops.

Following an incident of **pesticide drift onto Tribal members during a sacred ceremony** in 1998 and the detection of nitrate- and pesticide-**contaminated well water**, the Tribes launched an effort to increase sustainable farming practices that reduce fertilizer and pesticide use.

A tribal member designed the project logo to represent the dawning of a bright, new agricultural future on the Reservation.

Objectives

- Establish a sustainable agriculture demonstration field on the Reservation.
- Assess the economic impact of lengthening the rotation.
- Determine the applicability of an eco-label program for potatoes produced on the Reservation.
- Outreach to leaseholders and Tribal members to expand the implementation of sustainable farming practices on the Reservation and surrounding communities.

Rotation	Standard	Alternative
Year 1	wheat	wheat – **green manure**
Year 2	potato	potato

Alternative Rotation:
In 2002, the Tribes' Land Use Commission started working with a cooperating potato grower on the Reservation to demonstrate green manure cropping as an alternative to soil fumigant use. The project team explored extending the wheat potato rotation by a year, but consultations with growers determined it was not an economically feasible option at the time. Instead, a fall-planted green manure was grown after summer wheat harvest and prior to spring potato crop planting.

The Shoshone Bannock Tribes' Water Resource Commissioners (pictured with project coordinator) helped direct the demonstration project and outreach to leaseholders and fellow Tribal members.

Mustard Green Manure Planting:
Green manure crops are often planted after wheat. To gain the most biomass production, growers plant as early as possible. Planting is done by drilling, broadcasting with dry fertilizer, or aerial seeding into standing wheat.

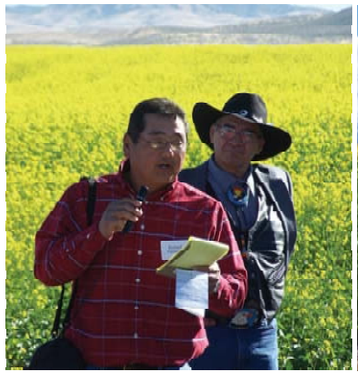
Chopping and Incorporation:
For fall incorporation, the crop is disked under before the first hard frost. In Brassica crops, chopping is used to break open plant cells, combining cell contents to produce biologically active glucosinolates. The plant material is then quickly incorporated into the soil.

Eco-label Exploration:
The project team also explored the possibility of growing and marketing potatoes under an eco-label, similar to the Wisconsin Potato & Vegetable Growers Association and World Wildlife Fund's Healthy Grown Potato label.

While interest was not generated among growers on the Reservation, the grower organization, Potato Growers of Idaho, along with University of Idaho researchers, developed a best management practices guide based upon the Wisconsin Healthy Grown Potato IPM program.

More recently, Idaho potato growers have begun exploring opportunities for expanding the production of organically grown potatoes. Organic potato acres doubled in 2007.

Mustard Green Manure Costs (per acre in 2005)	
seed	$ 35
planting	$ 8
fertilizer	$ 48
herbicide	$ 12
irrigation	$ 19
chopping	$ 30
Total	$ 142



Outcomes

- ✓ The field demonstration showed that the alternative practice of planting a mustard green manure produced a healthy potato crop. Yields and net returns were equal and in some fields greater than the conventional practice of treating with a soil fumigant.
- ✓ Additional funding was secured to provide a free seed incentive program for 6 potato farmers to try the practice and further demonstrate the benefits to neighboring growers.
- ✓ Potato farmers implemented the practice on 3,575 acres on the Reservation in 2006.
- ✓ Idaho NRCS offers an EQIP cost share ($50/acre for 160 acres/year for 3 years) for the practice, resulting in 3,900 acres in 25 contracts planted across southern Idaho in 2006.
- ✓ Growers across southern Idaho planted 30,000 to 40,000 acres of green manures in 2006, according to seed salesmen.