

Project Title: Replacing Metam Sodium Use with Green Manure Cropping in Potato Production

Period covered: September 2006 – February 2007

Sub-grantee: Three Rivers Resource Conservation and Development Council

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The overall goal of this project is to replace the use of metam sodium in potato production with an alternative cropping practice on the Fort Hall Indian Reservation and nearby Soil Conservation Districts. During the past six months, information was collected and shared on how best to grow green manure crops, 325 farmers and agricultural professionals learned about green manure production methods and benefits to their potato crop, and farmers were invited to try the new practice and receive free seed. An unexpected outcome was the widespread coverage of the project and green manure field day in 62 newspapers in the U.S. and other countries.

Milestone 1. Meet with University of Idaho researchers and project coordinators to discuss questions of green manure management.

Progress was shared in first interim report.

Milestone 2. Attend field day of research plots on Fort Hall Indian Reservation and learn about green manure management options.

In August, replicated fields of white mustard, arugula, a white mustard/Oriental mustard blend, and a white mustard and 2 Oriental mustards 3-way blend were planted on August 11-12, 2006. The field plots also included a conventionally managed area with and without metam sodium. The green manures were chopped and incorporated into the soil on November 1, 2006.

An October tour of the field day was well received and covered by a variety of media. Nearly 45 people attended, including potato growers, Tribal leaders, university researchers, newspaper reporters, and agricultural agency personnel. The alternative farming practice was covered in a radio spot by a regional agriculture outlet and in several newspaper articles across the nation. An article in a southeastern Idaho paper was picked up by the Associated Press wire service, and it ran in print or on-line versions of 62 papers, including *USA Today*. The agricultural resource manager on the Fort Hall Indian Reservation was contacted by several people, including readers from Australia and the United Kingdom, as a result of the press coverage.

Based upon the experience gained from the test plots, several recommendations for growing the green manures were shared with field day attendees. They include:

- The cooperating grower chopped the wheat stubble prior to planting to ensure better seed-to-soil contact with his seed drill. This resulted in the unintended spreading of wheat seed, which created a greater volunteer wheat problem. Growers should avoid spreading the wheat seed.

- The recommended window for planting is immediately after wheat harvest and no later than August 15th. The test plots were planted August 11 – 12. Planting at least a week earlier could have enabled more biomass by incorporation time.
- Due to the very sandy nature of the soil in the test plot, it would have been better to apply nitrogen incrementally through the irrigation system during the fall growing season.

Milestone 3. Attend University of Idaho Potato Conference workshop on green manure management.

The University of Idaho offered two sessions on green manures during their January 2007 Potato Conference. Around 180 potato growers and agricultural professionals attended these sessions. There was a noticeable difference in the workshop this year, as compared to previous years. Many more growers asked questions and shared their own experiences growing green manure crops. As the growers have gained more personal experience, they are more engaged and are now requesting more information on the best management practices. Discussions focused on the types of green manure crops that should be grown, planting methods, fertilizer inputs and nutrient returns, volunteer wheat control, glucosinolate release, and ways of incorporating the crop for pest versus wind erosion control.

Workshop attendees received a handout on how to calculate the costs of adding a green manure crop to their potato production practice. The test plots showed that the green manure fall production costs were within a dollar of the costs of conventional fall field operations, which includes metam sodium treatment.

Milestone 4. Attend session on green manure management at Shoshone-Bannock Tribes' annual leaseholder meeting.

Nearly 90 growers and agricultural professionals attended the session on green manure management at the Shoshone-Bannock Tribes' annual leaseholder meeting on March 1, 2007. Growers learned about the green manure test plots planted on the Reservation in the fall of 2006, including the importance of planting early, selecting a planting method to reduce spread of wheat seed, and careful irrigation timing in sandy soils. Attendees also had the chance to learn about the free green manure seed program and sign up.

Milestone 5. Attend presentation on green manure management at South Bingham and Power County Soil Conservation District Meetings.

Growers in the South Bingham and Power County Soil Conservation Districts have learned about the project and opportunity to receive free green manure seed. Ten growers attended the two meetings offered thus far, which is half of the customers anticipated in the project proposal.

Milestone 6. Attend session on green manure management during regional Soil Conservation District meeting.

The project team members determined that it would be best to wait until the 2008 regional Soil Conservation District meeting to present recommendations on green manure management. By next year, the green manure management recommendations will be

further refined and benefits to the potato crop can be included. (The potato crop will be grown in the green manure-amended fields in 2007.) The 2008 meeting will be in Boise, Idaho. Generally, 200 growers from across the state attend this conference.

Milestone 7. Call to receive sign-up form for incentive program.

The free green manure incentive seed program has been announced to farmers on the Fort Hall Indian Reservation and nearby soil conservation districts. Initial plans were to include the South Bingham County and Power County Soil Conservation Districts, but the free seed offering was expanded to two other conservation districts. District staff and board members talked with potato growers. Grower interest in the free seed program has not been as great as anticipated. The original plan described in the grant proposal was based upon the level of grower interest to a similar free seed program offered in 2005.

Here's why: Over the past two years, the situation has changed greatly as more and more growers are adopting the practice. Years of promoting the alternative cropping method have resulted in greater adoption rates and a cost share through the Idaho NRCS EQIP farm bill program. The Idaho NRCS EQIP cost share supported the planting of green manures in the fall of 2006. NRCS signed 25 contracts with growers and 3,900 acres of green manure were planted across Idaho. In our project area, 9 contracts were signed and 1,440 acres were planted in Bingham County and 8 contracts were signed for 1,440 acres in Power County. The cost share through the NRCS EQIP program provides a better financial incentive than does the small free seed program offered in this project. Thus, there are fewer new growers expressing interest.

Consequently, the project team has decided to slightly modify the free seed incentive program. Instead, more of a focus will be placed on how to grow the green manure crop, rather than just giving new growers an opportunity to try the practice. The Soil Conservation Districts will offer the same acres worth of free seed, but likely to a single grower (rather than three). The grower will divide his field in half and try two different water or nitrogen levels.

Initial response from growers on the Fort Hall Indian Reservation has also been less than anticipated. In 2005, the number of acres planted to green manure crops increased to 3,575. Many growers who have tried the practice continue to plant green manures and don't need the incentive. The free green manure seed opportunity is still being advertised.

All growers participating in the free seed program are required to host a field day and share information about their growing practices. This information will be shared with other potato growers. There is a possibility that some growers are not interested in the free seed program because they are required to host a field day.