Integrated Approach to Spuds

Western SARE

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Summary

The yield and quality of a potato crop are the result of complex interactions amongst crop nutrition, cultural practices and pest damage.

The Ospud project piloted a participatory approach to learning and adaptation of novel farming systems strategies.

Researchers and farmers collaboratively evaluated insect pest management, plant disease management, and nitrogen management challenges in organic potato production.

Research & Education Grant

Title: Integrated Soil and Crop Management for Organic Potato Production (*This handout highlights the technical outputs of the OSpud project*.)

Project Number: SW05-091

Principal Investigators:
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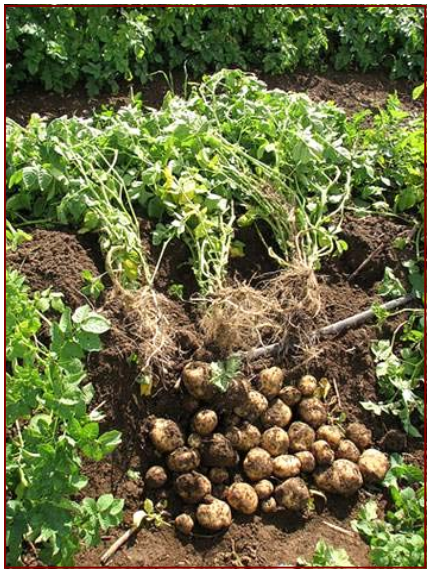
Farm Collaborators:
Gathering Together Farm
Foundhorn Gardens
Persephone Farm
Sauvie Island Organics
Fields Farm
Ralph's Greenhouse
Fry Family Farm
Wintergreen Farm
Blue Fox Farm
47th Avenue Farm
Springhill Farm

Amount Funded: $196,067

Methods

Ospud project participants include researchers, farmers and Extension personnel. Grower meetings were held to collectively establish research protocols and budgeting details.

In this handout, we highlight the technical outputs of Ospud. A companion handout highlights the grower participation process and the impacts of grower participation



Results and Outcomes

Nutrient management

- Found that mineralization of N from soil organic matter supplied most of the N needed by organic potato crops. So, at most farms, expensive current season N inputs can be reduced.
- Adapted monitoring protocols (soil, petiole and irrigation water testing) to fit our organic potato production systems
- Developed planning values for crop N budgets in organic production systems.
- Provided site-specific guidance for farmers to

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improve nitrogen use efficiency.

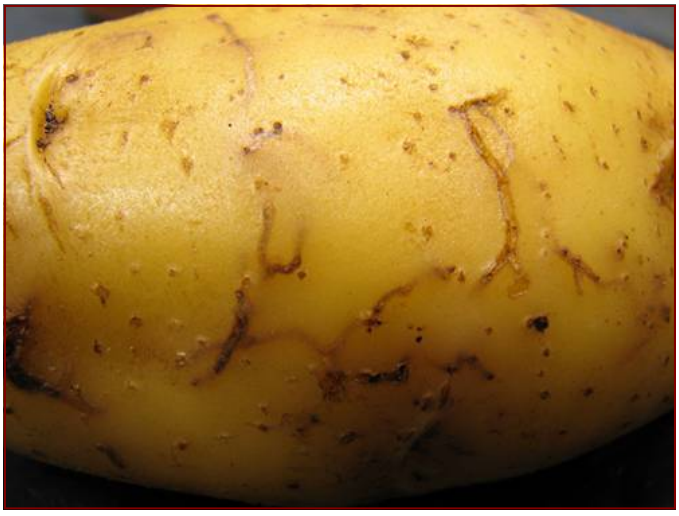
Late blight management

- Taught farmers to diagnose late blight in the field.
- Identified at least 3 commercially available potato cultivars with late blight resistance and good market quality for organic fresh market production, and these cultivars have been adopted by project farmers.
- Demonstrated that copper fungicides effectively controlled late blight; one large scale farmer in a potato production region is now using copper fungicides to manage late blight. A 5 ton/acre increase in marketable tubers resulting from late blight control is worth approximately $800 to $8000 per acre to farmers.

Farmers learned how to identify symptoms of late blight in the field.

Insect pest management

- The tuber flea beetle was identified and confirmed as the most important insect pest in Western OR and WA.
- Flea beetle monitoring and tuber damage assessment methods were developed and methods that farmers can use are described in an extension publication.
- Wireworms: a tuber damage rating system was developed for consistent diagnosis. We demonstrated farmer-friendly methods for evaluation of wireworms (pheremone traps and larval bait traps).



Outreach

Several publications have resulted from the project:

McQueen, J.P.G. 2007. Estimating the dry matter production, nitrogen requirements, and yield of organic farm-grown potatoes. M.S. Thesis. Oregon State University. Corvallis, OR. Available at: http://ir.library.oregonstate.edu/dspace/bitstream/1957/6245/1/mcqueenj_MSthesis.pdf

Western SARE, a USDA organization, funds grants for research and education that develop or promote some aspect of agricultural sustainability, which embraces

- *profitable farms and ranches*
- *a healthy environment*
- *strong families and communities.*

The Western Region, one of four SARE regions nationwide, is administered through Utah State University.

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