# Winter and Summer Hoophouse Production for Small-Scale Growers

*Brad Jaeckel (Idaho – Farmer/Rancher Grant)*

**Project Number:** FW06-036

**Title:** Winter and Summer Hoophouse Production for Small-Scale Growers

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**Cooperators**
Moscow Food Co-op
Rural Roots

The hoophouses at Orchard Farm on the north edge of Moscow.

The winter bed is prepared at Washington State University hoophouse, which hosted the winter crop trial.

**Western SARE Grant:** $6,235

**Situation:**

Moscow, Idaho, sits on the eastern edge of the Palouse prairie at 2,500 feet in USDA climate Zone 5. Shipping costs for this rural area are costly for any product. At the same time, demand is growing for locally grown produce year round.

A handful of small-scale Moscow-area growers have employed hoophouses to extend the growing season for summer crops. But none have attempted winter crops.

In similar northern climates on the East Coast, organic growers have succeeded with year-round hoophouse production, suggesting potential for success on the Palouse.

**Objectives:**

1. Identify a diversity of winter and summer vegetables that can be grown in unheated, unlighted field hoophouses
2. Develop an efficient organic method of production for those vegetables
3. Promote the results on a farm webpage

Early-emerging crops in the winter trials.

**Actions:**

Orchard Farm, on 1.3 acres at Moscow's north edge, is a family farm that raises three dairy goats, 15 layer hens and vegetable, herb and fruit crops on ½ cultivated acre and in two hoophouses. Orchard Farm markets through the Moscow Food Co-op, two local farmers markets and a small CSA.

This high density seeder allows more plants to be grown, increasing winter production.

Early-emerging crops in the summer hoophouse trials.

Winter Trials

To begin the trial, a 1-inch layer of compost was applied inside the hoophouse, the soil tilled and the area laid out in three 42-inch beds. Twenty-three crops were planted on Nov. 4 in two beds, each crop receiving 4 feet of bed length:

| | | | |
|---|---|---|---|
| green onions | arugula | cilantro | orach |
| carrots | parsnip | Asian greens | endive |
| beets | rutabaga | parsley | tatsoi |
| dill | turnip | sorrel | kale |
| fennel | radish | mizuna | bok choi |
| spinach | lettuce mix | chard | |

On Dec. 12, another 10 crops were seeded on the remaining bed: Asian green mix, watercress, minutina, radicchio, claytonia, broccoli raab, spinach, beet, lettuce mix and arugula.

Summer Trials

In February, six summer hoophouse crops (peppers, tomatoes, tomatillos, eggplants, cucumbers, and melons) were seeded in a lighted, heated greenhouse. Transplants were transferred to the hoophouse on four 42-inch beds prepped with compost, tilled and irrigated with two drip lines in each bed.

Brad Jaeckel assesses summer crops at his on-farm hoophouse.

The next generation.

**Results:**

Winter Trials

Of the 23 crops seeded Nov. 4, just 10 had germinated by Nov. 26: turnip, radish, green onion, arugula, salad mix, spinach, Asian green mix, mizuna, tatsoi and bok choi. These were the only crops from the first planting that grew to a harvestable size by late winter.

Of the 10 crops seeded Dec. 12, four had germinated by Jan. 26: watercress, claytonia, spinach and lettuce mix. Again, these were the only crops to continue to harvestable size. Greens continue as the best winter crop.

Summer Trial

Peppers, tomatoes, tomatillos, cucumbers and melons were all productive in the hoophouse though some varieties had higher marketability than others. The eggplant varieties tested in this study were not productive in this environment.

- Anaheim peppers: produced well, biggest seller at farmers markets
- Matchbox pepper: produced well, sales weak
- Celebrity tomato: best all-around variety, producing well season long
- Black Plum paste tomatoes: produced well, sold poorly
- Double Rich tomatoes: problems with splitting
- San Marzo paste tomatoes: high number of splits
- Purple tomatillos: challenge to keep pruned, produced heavily, sold well at farmers markets and food co-op
- Tasty Jade and Suhyo Long cucumbers: both heavy producers; Suhyo Long preferred variety at farmers markets
- Eight Charentaise melon plants – a true cantaloupe from Europe; thin, smooth skin, light green stripes, fine-textured, scented, sweet orange flesh: averaged seven fruits per plant, all devoured by the Orchard Farm family and crew before they made it to market
- Black Beauty and Purple Long eggplants: grew poorly

Tomatoes, cucumbers and peppers continue as the best summer crops.

**Potential Benefits:**

The project identified crops and varieties suitable for growers to market to the community as well as for personal consumption. It also demonstrated that hoophouses:

- Are easy to operate
- Require no additional heat or lighting to be productive
- Easily extend the growing season for many crops already grown in the area

The project coordinator learned several important lessons:

- To ensure good production of winter crops, seed early in the season
- If hoophouses are planned for spring and summer crops after the winter season, seed no later than November
- Trial the recommended crops at multiple seeding dates
- After seeding, lay fabric row cover over the bed to help retain soil moisture during seed germination

The full project report is posted at:

**http://css.wsu.edu/organicfarm/Research.htm**