**2013 REPORT**

 **NON-GMO CORN PRESERVATION PROJECT**

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***INTRODUCTION***

In 2013, the Backyard Beans & Grains Project laid the groundwork for a new community effort called the Non-GMO Corn Preservation Project. The mission of this project is to create a network of seed stewards for Non-GMO, locally adapted grain corn varieties. A large percentage of US organic and heirloom corn varieties are now contaminated by GM genes, which is especially concerning since we in the Pacific Northwest are already very limited in which varieties will mature well here.

In 2013, we learned techniques for hand-pollination of corn, which enables anyone to be a seed steward, regardless of whether or not they have an isolated site (at least ½ mile from other corn). We taught other farmers how to hand-pollinate, and we tracked expenses and labor hours for the extra work involved. We also did further trials of early-maturing varieties.

The varieties we hand-pollinated included Painted Mountain flour corn, Lavender Mandan parching corn, Cascade Ruby-Gold Flint, Mandan Bride Dent, and Nothstine Dent. We also trialed several more varieties to screen for early-maturity and other traits. The varieties that did the best were Dakota Black popcorn and Open Oak Party Mix flinty dent.

***METHODS***

We direct-seeded double rows of corn with five-foot pathways to allow enough access for hand-pollination to take place without jostling pollen from plants in adjacent beds. Total square footage of the field for the five varieties we hand-pollinated was about 7,000 square feet.

For our trial varieties, we transplanted starts into our standard spacing of 18” between rows and between plants within the row. Those beds were three feet apart.

We fertilized plants with standard rates of feather meal and corn gluten (used for weed suppression and extra nitrogen).

Weeding was done by hand and with hand tools (wheel hoe and regular hula hoe). Harvest, shucking, and drying was also done by hand. Earlier maturing cobs were further dried on wire tables in the barn and hung from wires. Later maturing cobs were hung from wires in the house with the wood stove. Shelling was done in November with a hand-crank cast iron corn sheller.

***DATES***

We direct-seeded the five main varieties during the first week of May, during a rare hot spell. Plants germinated quickly and evenly due to the warm weather. Transplants of trial varieties were planted in mid-May.

Peak tasseling and hand-pollination occurred during the following dates:

 HAND-POLLINATED

Painted Mountain: Unknown. Likely similar to Parching Corn.

Lavender Mandan Parching Corn: July 10-21

Cascade Ruby-Gold Flint Corn: July 10-21

Nothstine Dent Corn: July 10-22

Mandan Bride Dent Corn: July 22-31

 TRIALS

Open Oak Party Mix: July 19-25

Dakota Black Popcorn: July 19-25

Harvest Dates:

 HAND-POLLINATED

Painted Mountain: Unknown. Likely similar to Parching Corn.

Lavender Mandan Parching Corn: Sept 15

Cascade Ruby-Gold Flint Corn: Sept 15

Nothstine Dent Corn: Sept 20

Mandan Bride Dent Corn: Sept 26-Oct 11

 TRIALS

Open Oak Party Mix: Sept 26-Oct 13

Dakota Black Popcorn: Sept 15-26

***YIELDS***

After seed germinated and some culling took place to remove especially weak or off-type plants, we had between 210-300 plants of each of the five main varieties.

Those five varieties produced approximately 100 pounds of seed corn. The seed corn ears look to be pure and mostly well-pollinated. Additionally, there was approximately 170 pounds of non-hand pollinated corn from those five varieties (each plant gets one pollinated ear and the remaining ears or missed ears are still harvested as food), for a total of approximately 270 pounds of corn produced from about 1,200 plants.

Specific Yields

HAND-POLLINATED

Painted Mountain: Unknown.

Lavender Mandan Parching Corn: 15.7lbs seed; 15.4 lbs additional (31.1 lbs total)

Cascade Ruby-Gold Flint Corn: 24 lbs seed; 35.3 lbs additional (59.3 lbs total)

Nothstine Dent Corn: 26 lbs seed; 30.4 lbs additional (56.4 lbs total)

Mandan Bride Dent Corn: 15 lbs seed; 64 lbs additional (79 lbs total)

TRIALS

Open Oak Party Mix: 19.3 lbs total (60 plants)

Dakota Black Popcorn: 16 lbs total (60 plants)

***EXPENSES & LABOR***

We spent the following for the five main varieties on the project:

* Seed: $33
* Soil amendments: $120
* Pollination supplies: $279 (about 20% left over)
* Approximate total labor: 114 hours

Labor Hours Break-Down

*For the main 5 varieties only:*

Soil prep (amending, disc & till): 5 hours (4%)

Planting: 12 hours (11%)

Weeding: 32 hours (28%)

Hand pollination: 37 hours (32%)

Harvest and Hanging: 16 hours (14%)

Shelling: 12 hours (11%)

Considering that hand-pollination labor and pollination supplies went specifically into the seed corn portion, approximately 75.5 hours of labor plus $355 in expenses was required to produce 100 pounds of seed corn and 38.5 hours of labor plus $76 in expenses was required to produce 170 pounds of non seed corn. Therefore, hand-pollinated seed corn requires twice the amount of labor in addition to the cost of pollination supplies.

***CONCLUSIONS & HOW TO GET SEED OR GET INVOLVED***

These varieties yielded well, matured early enough for an easy harvest, and have been selling well at the Farmers Market. They provide a variety of uses (polenta, posole, masa, tortillas, tamales, cornmeal, parching corn, and popcorn), are all highly productive as a grain crop, and have all tested negative for GMO contamination through an accredited lab. Backyard Beans & Grains intends to continue on with this project for at least the next several years and encourages other farmers and backyard seed stewards to get involved.

We have seed available at [www.backyardbeansandgrains.com](http://www.backyardbeansandgrains.com) for those who want to grow the varieties as a food crop and/or for those who are interested in helping steward the seeds into the future. Please contact me if you want to learn more about becoming a steward. I am also available to teach hand-pollination while plants are tasseling from mid July to early August.