Western Regional Plant Introduction Station (WRPIS)
Horticulture Crops Program
Pullman, WA, WSU campus

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Summer

Company Overview
- Is part of the United States Department of Agriculture-Agricultural Research Service.
- They are partnered with Washington State University and are part of the US National Plant Germplasm System (NPGS).
- The WRPIS goals are acquiring, increasing, evaluating, documenting, and distributing plant germplasm of specific genera.
- The WRPIS is responsible for maintaining plant germplasm for 5,662 taxa from 1,126 genera.
  - The major collections being food legumes, temperate grasses, beans, forage legumes, beets, lettuce, safflower, garlic, leek, onion relatives and miscellaneous other species.
  - The seeds are logged into the NPGS computer database, called GRIN or Germplasm Resources Information Network.
  - Then the seeds are kept in cold storage on the WSU campus at Pullman until they can be grown out for seed increase.
  - Each increase is carried out so that the genetic variability of the original sample is preserved while preventing gene flow from one accession to another.
- Germplasm users are anyone who has ever planted a crop or home garden.
- The job of the station is to maintain a gene bank for present and future plant breeders to use in developing the varieties. This includes maintaining the quantity and quality of seed for this research.

Field work
- Some of the beets that were put into the field are only for evaluation purposes.
- The data collected from these plants are plant diameter, primary stem diameter, number of main branches protruding from the primary stem; type of branching (secondary, tertiary, and quaternary), first flower date and the date of the first ripe seed, any morphologic characteristics that seem different or unusual.
- This helps to identify the accession in the future.
- To harvest garlic we had to shovel out the garlic bulbs, without slicing into the bulb, from really hard ground.
- Some crops are grown in the greenhouse and out in the field inside screen tents- lettuce, leeks, garlic, and Taraxacums.
- The tent’s main purpose is for accession isolation to maintain genetic integrity of each accession.
- They also help keep pests, such as deer, away from the crops as well as preventing the wind from blowing away all the seeds.
- The tent also keeps the pollinators, flies in this case, inside the tents.

Lab work
- I helped get them started from seed by using a sterile germination protocol and decoctivating them.
- Every beet plant grown was sampled for DNA extraction and ploidy analysis, by plucking a young leaf off the plant and storing the tissue in a freezer for later testing.
- Obtaining the weight of seeds, full bag weight and 100 seed weight is a tool used to obtain seeds quickly, from the seed bank at a later date.
- I was able to help collect tissue samples from the leaves of the lettuce by using a hole punch, very interesting technique but very effective and efficient. The tissue samples were then tested using the ELISA protocol to check for viruses, specifically lettuce mosaic virus.

Pollinators “Fly Bags”
- This required measuring out chilled fly larvae usually 150-200 larvae per bag.
- They were premeasured to give the same approximate amount of flies every time, 150 pupae is equal to 8.3 grams and 200 pupae is equal to 11 grams.
- After the flies are measured out and put into paper bags and stapled shut they are left out at room temperature to hatch.
- Once buzzing in the bag is heard they are ready to be set loose inside the screen tent.
- Keep them in a cool place if traveling a long distance or being out in the heat for a long period of time as they will die.

Summary
I learned so much about several different aspects of the germplasm maintenance such as harvesting from various genera and species, collecting tissue samples for testing, collecting data, growing plants and maintaining plant health, and even using pollinators that I wouldn’t have expected. I was able to see a lot of various class principles and themes used in a real world setting and was able to get a hands on approach to those lessons that I wasn’t able to before. I feel that my internship really solidified a lot of the lessons I learned in class and added to my knowledge base. I plan to continue working for the USDA until I leave Pullman.