ASPARAGUS VARIETY TRIALS

Final Report

Partner Organization: Alaska Plant Materials Center, State of Alaska, Department of Natural Resources, Division of Agriculture

PROJECT SUMMARY

Specialty crop producers are continuing to expand production to meet the requests and demands of the food service industry. One product that is continually requested from both farmer market shoppers and chefs is asparagus. Research and field trials on asparagus have not been done in Alaska. This project will help identify emergence dates, pest prevalence, winter survivability and novel characteristics of 14 asparagus varieties.

Alaska has unique growing conditions that do not allow for direct fit of yield and performance criteria from other areas of the United States. Trialing asparagus variety performance in Alaska will help demonstrate the qualities or lack of desired traits when observed in Alaska's climates. This planting will help identify those selections worthy of further evaluation.

This project is timely and important in addressing the needs of the specialty crop industry in Alaska due to the lack of any other asparagus variety trial research being conducted.

PROJECT APPROACH

- Alaska is a large state with different climates located throughout. Three locations with three different climates were found to conduct these trials. A site was selected in the Interior of Alaska, located in North Pole, Alaska, where the temperatures can range from above 90° F during the summer and minus 60° F during the winter. A second site was selected on the Kenai Peninsula, located in Nikiski, Alaska, where the temperatures are not as extreme as in the Interior. Summer temperatures rarely rise above 75° F and the winter temperature drops just below 0° F. The third location was located at the Alaska Plant Materials Center (PMC) in Palmer, Alaska. This location is within the area known as the Mat-Su Valley in Southcentral Alaska. The temperatures here are in between the two other locations, rarely above 80° F in the summer and can drop as low as minus 35° F during the winter.
- Growers in each of the chosen locations were found to participate in this trial; Moose Creek Farm in North Pole, Alaska, with an established, cultivated area and O'Brien Garden & Trees in Nikiski, Alaska with an unestablished, newly cultivated area. The area selected at the PMC, was an established area but had not been cultivated for several years.
- Soil samples were collected at each location and tested. Amendments were applied to each site according to the soil test results. The target amounts of nutrients were 100 lb/A

Nitrogen, 250 lb/A P_2O_5, and 250 lb/A K_2O for the first year. Ag Lime was also added to reach an optimum pH of 6.8. Soil tests were conducted again during the second year. Ag Lime was added again if needed for the pH adjustment. Nutrients were also added to each location to obtain 60 lb/A Nitrogen, 100 lb/A P_2O_5, and 100 lb/A K_2O.

- Asparagus varieties that were easily obtainable were selected to trial for three growing seasons. The thirteen initial varieties selected were hybrids. During the second season an additional open-pollenated variety was added into the trial.
- In 2014 one-year crowns were acquired for 12 different hybrid varieties and seed for one hybrid variety. The crown material was stored in a cooler at the PMC until planting time. The seeds were germinated and grown in the greenhouses at the PMC until transplanting. In 2015 seed for an open-pollinated variety was acquired and grown at the PMC until transplanting.
- Every season the plots were evaluated for emergence dates, winter survivability, number of spears produced, average height of spears (from the base up to leafing), fern die back, and pest prevalence.
- Data loggers were installed at each location to measure the air temperature, soil temperatures at 6 inch and 12 inch depths, and soil moisture content at 12 inches deep.
- A site visit was conducted every Spring and Fall by PMC staff. Data was also collected by the participating growers throughout the growing seasons.
- The plots were maintained by the participating growers by use of cultivation and chemical weed control.
- Harvesting asparagus in Alaska has no set guidelines since it is rarely grown in Alaska. The seasons are much shorter than other parts of the U.S. so it will be researched further as the plots mature.

GOALS & OUTCOMES ACHIEVED

- Determine if asparagus is a viable crop for producers or market growers. Winter-hardy varieties were found at two of the locations. They were identified by their winter survivability and growth vigor. Yield data was not obtainable and needs to be researched further. Asparagus does not mature for three years and Alaska's growing season is short so the plots were not ready to begin harvesting yet.
- Weather data was gathered at each location for the duration of the project. This includes soil temperatures for two years which is valuable data.
- A presentation was given at the 2016 Alaska Sustainable Agriculture Research and Education Conference in Anchorage, Alaska. The conference was attended by professionals and growers from around the state.
- A publication will be made available on the PMC website when finished.

BENEFICIARIES

- All farmers and market growers throughout the state could benefit from this evaluation trial. Asparagus could be grown in a large or small scale for many years. Some hybrid varieties are known to be highly productive for 10-15 years.
- Restaurants and chefs would be able to offer Alaska Grown® asparagus on their menus. Tourism during the summer months creates a high demand on local restaurants offering locally grown food.
- Extension agents and master gardeners could benefit from this information for future recommendations and publications.

LESSONS LEARNED

- Sources for asparagus crowns to be shipped to Alaska are hard to find. Many of the sources available only offer a select few varieties. Most of the varieties used are easier to find as seed. Alaska's growing season begins much later than the rest of the U.S. and material sometimes is ready to be shipped before we are ready to plant. It is beneficial for a grower to produce their own seedlings if space is available. The only downfall to that is the delay in maturity versus starting with one-year crowns. A grower can also be guaranteed healthy plants by growing from seeds. The one-year crowns vary in size and condition with all of the sources available.
- Asparagus is a crop that is long-term so the planting site needs to be prepared for several years, i.e. cultivation, amendments and weed suppression, before planting. There was a substantial difference in production between the surviving plots, established versus unestablished planting sites.
- Alaskan climates vary greatly throughout the state. Winters can be very harsh in some locations. Due to the severe cold and lack of winter precipitation in Southcentral Alaska, it is very difficult for asparagus to survive. As long as there is adequate snow cover for ground insulation, asparagus will survive even when the air temperature is below minus 40° F. The plot located at the PMC was removed due to extreme winter-kill.
- Harvesting and yield data still needs to be studied in order to determine if asparagus can be a successful and beneficial crop to Alaskan growers.

ADDITIONAL INFORMATION

- Varieties Trialed and Sources for Plant Material o
  - One-year Crowns – planted in June 2014
    - UC 157 – Peaceful Valley Farm Supply
    - Del Monte 361 – Scenic Hill Farm Nursery
    - Purple Passion – Stark Bro's Nurseries & Orchard

Pacific Purple – Nourse Farms
Jersey Supreme – Nourse Farms
Jersey Knight – Nourse Farms
Guelph Millennium – Nourse Farms
Jersey Giant – Daisy Farms
Mondeo – Daisy Farms
Porthos (NJ 1025) – Daisy Farms
Sequoia (NJ 1113) – Daisy Farms
NJ 1122 – Daisy Farms o

Seed

Jersey Gem – Walker Brothers

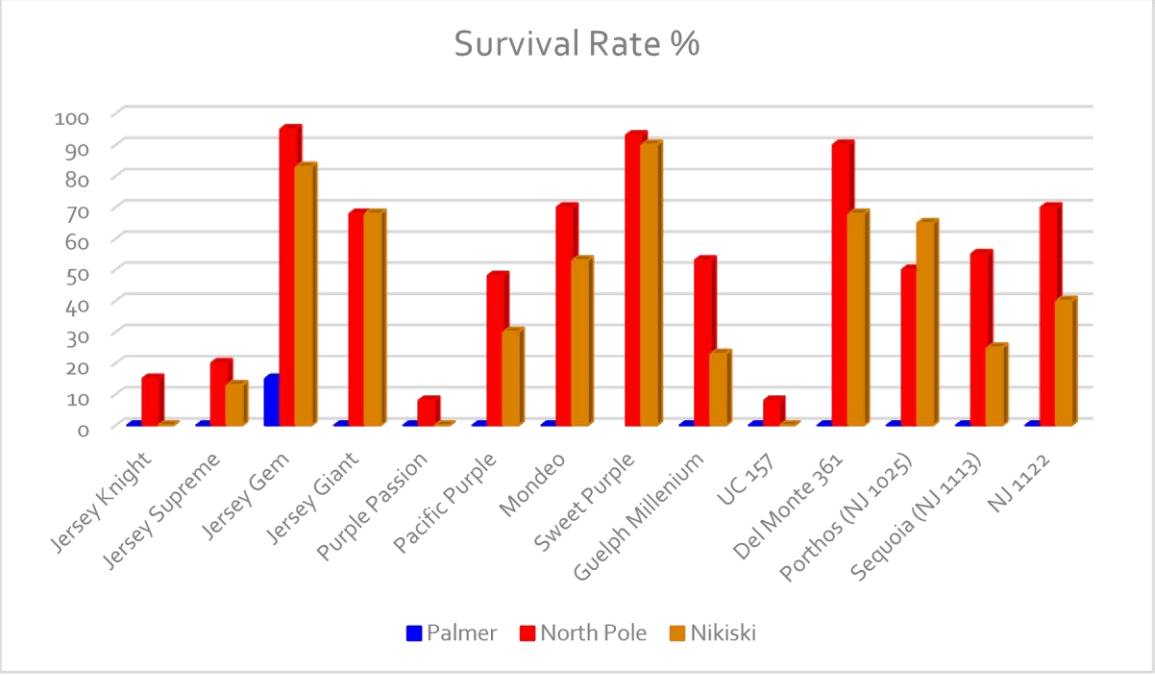
- Germinated in greenhouse in February 2014, transplanted in June 2014

  Sweet Purple OP – Park Seed

- Germinated in greenhouse in March 2015, transplanted in June 2015

Asparagus Seedlings

Asparagus Seedlings

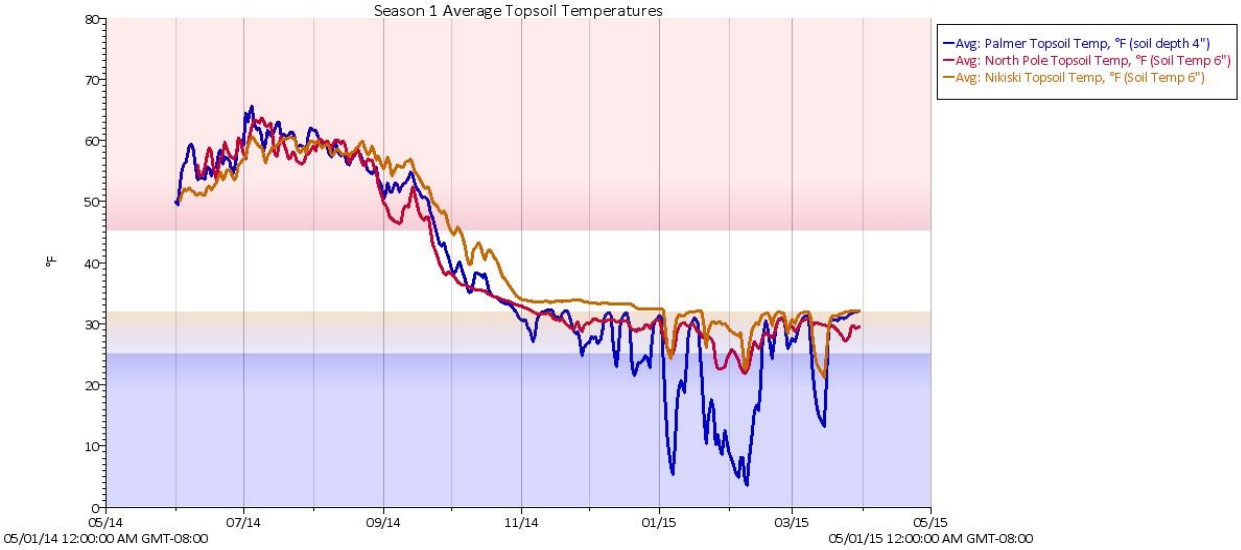


Jersey Giant

Jersey Gem

Del Monte 361

North Pole Plot


Season 1 Average Topsoil Temperatures
Avg: Palmer Topsoil Temp, °F (soil depth 4")
Avg: North Pole Topsoil Temp, °F (Soil Temp 6")
Avg: Nikiski Topsoil Temp, °F (Soil Temp 6")
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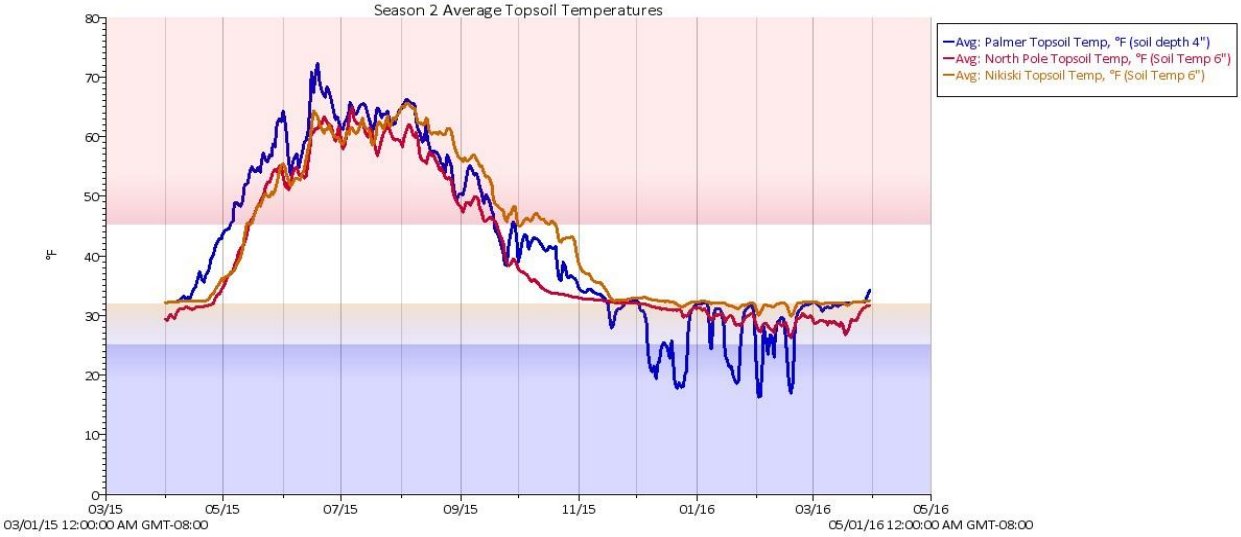
Season 2 Average Topsoil Temperatures
Avg: Palmer Topsoil Temp, °F (soil depth 4")
Avg: North Pole Topsoil Temp, °F (Soil Temp 6")
Avg: Nikiski Topsoil Temp, °F (Soil Temp 6")
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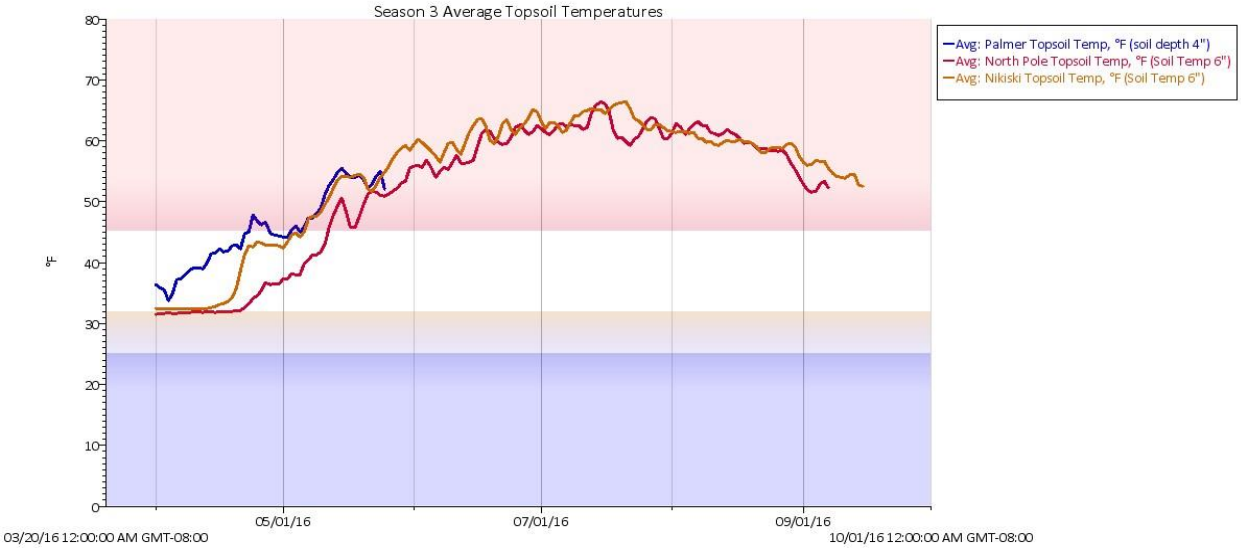
Season 3 Average Topsoil Temperatures
Avg: Palmer Topsoil Temp, °F (soil depth 4")
Avg: North Pole Topsoil Temp, °F (Soil Temp 6")
Avg: Nikiski Topsoil Temp, °F (Soil Temp 6")
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