Cornell Cooperative Extension
Eastern NY Commercial Horticulture Program

2021 Leek Variety Trial

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The leek variety trial was hosted by Philia Farm in Johnstown, NY. The leeks were seeded into strip trays on March 16th and moved to open flats one month later. They were transplanted into the field June 11th after trimming. They were planted two rows to a bed, 18 inches between rows and 4 inch spacing in-row.

This was a replicated trial with 20 plants per replication and three replications for a total of 60 leeks per variety to eliminate field variation.

The leeks were harvested as they matured from September 1st to 21st. Varieties were evaluated on disease resistance, height, weight per 20 leeks, amount of bulbing, and uniformity.

Due to heavy disease pressure, primarily purple blotch and stemphyllium, and Allium Leaf Miner, we harvested all varieties either around the expected harvest date or earlier than their expected harvest date.

Summer Leeks

- Alto
- King Richard
- Lancia

Fall Leeks

- Chinook
- Comanche
- Curling
- Defender
- Jumper
- Lancelot
- Rally
- Runner
- Tadorna
- Takrima

What's in a leek?

All leeks are pretty much the same, right? In fact, we found a lot more leek varieties available than we expected; both open pollinated/heirlooms and hybrids that varied in days to maturity, size, shape, color and height.

Growers may consider adding a couple new varieties into their cropping system to see how they perform. There may be a more vigorous, higher yielding or more appealing leek available for your environment and/or market.

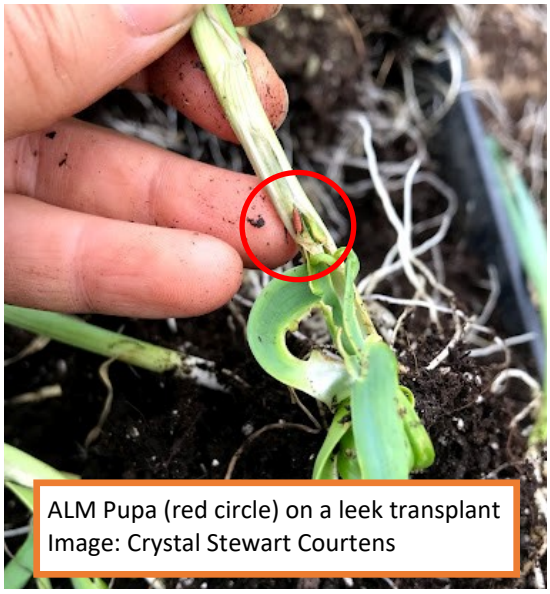
Results and Discussion: Year two of the leek variety trial brought completely different weather and challenges, and brought forth some different high performing varieties. However, 'Chinook', 'Lancia' and 'Defender' proved to be top performers in both years, demonstrating disease resistance, vigor, and high uniformity. This year we replicated the varieties, allowing for statistical analysis, but the tremendously different growing seasons lead us to recommend looking at results from both years as worth considering. The notable challenges from this season were very regular rains during July and parts of August, and subsequent very high disease pressure. The previous season was much drier and disease pressure was negligible.

Purple Blotch lesion forming in September

Introduction to growing leeks:

Leeks are generally grown on-farm as a transplant, though some farmers buy in transplants. For the trial we took the extra step of starting our seed in strip trays which were germinated in a germination chamber at 75°F. The strip trays allowed us to keep varieties separate while maximizing space, since many varieties did not fill a tray. This step is probably not economically prudent but did lead to excellent germination rates and a perfect stand within the open trays. Seedlings were transferred to open flats as soon as they could be handled at a density of about one seedling per inch, spacing that could definitely be tightened to around one seed per centimeter if direct seeding into trays.

When seedlings were 10 weeks old they were transplanted into raised beds at an in-row spacing of six inches and 18 inches between rows. Prior to transplanting we trimmed roots to an inch long and tops to eight inches long. We found in the second year that allowing plants to get larger than they were at 8 weeks (8-week seedlings are pictured above) resulted in significant transplant shock despite immediate overhead irrigation after planting, so recommend not allowing plants to become too large, particularly during a hot, dry spring like we experienced this year.

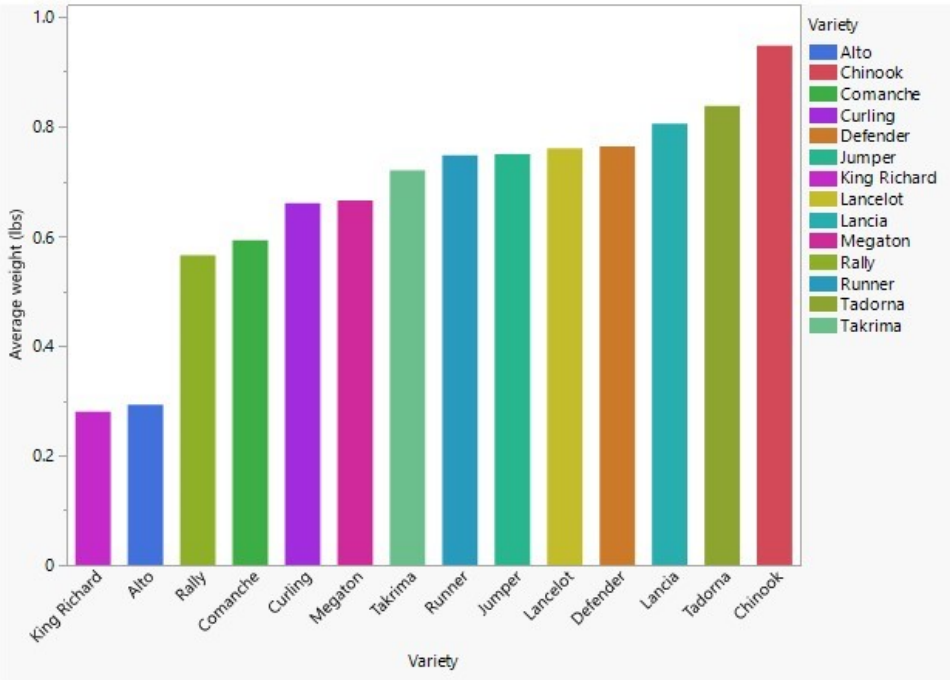


ALM Pupa (red circle) on a leek transplant
Image: Crystal Stewart Courtens

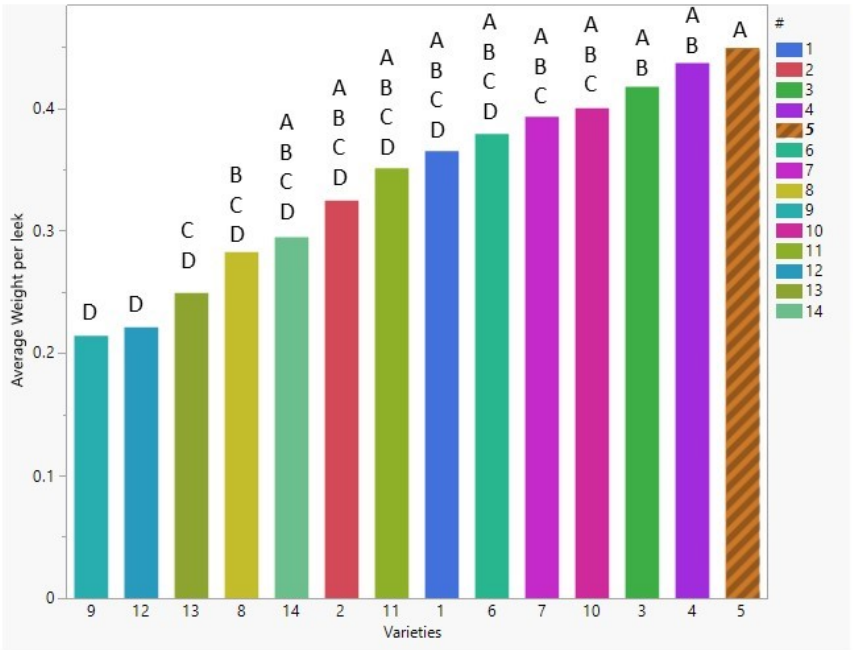
Plants were planted with about 2 inches of the shank (stem) buried, and were cultivated and hilled twice. No fungicide applications were made in either season in order to assess varietal disease tolerance. When growing leeks for commercial production, we recommend use of fungicides for Purple Blotch and Stemphyllium Leaf Blight at first signs of disease. Additionally, we recommend that growers who farm in areas where Allium Leaf Miner is present protect leeks through the use of either row covers/insect nets or with insecticides, since larval feeding can dramatically reduce marketability of leeks. We were surprised to discover that first flight ALM found our leek transplants in the greenhouse, which we will be investigating further as an issue in the coming years.

Overall yields in 2021 were significantly lower than in 2020 due to transplant shock and high disease pressure. Below is a comparison of many of the overlapping varieties from the two years. 2020 included many more varieties (see 2020 report for complete information) but no replications. The narrower field of 2021 varieties were selected based on performance in 2020 and feedback from seed companies.

Varieties by weight, 2020



Varieties by weight, 2021



1	Alto
2	King Richard
3	Lancia
4	Chinook
5	Comanche
6	Curling
7	Defender
8	Jumper
9	Lancelot
10	Oslo
11	Rally
12	Runner
13	Tadorna
14	Takrima

Means are separated by Tukey's HSD. Columns including the same letter(s) are not significantly different from each other.

We did not conduct a formal disease assessment on the varieties for this trial, but did multiple informal assessments through the season and saw clear separations in varietal susceptibility. Three of the varieties with the highest disease severity were 'Jumper', 'Lancelot', and 'Alto.' Notably, 'Comanche' had fairly high disease severity despite also having the highest marketable yield in 2021. Our other top two yielding varieties, 'Chinook' and 'Lancia,' both had low disease ratings.

A few varieties had lower yields but also had lower disease ratings, such as 'Tadorna,' a favorite from 2020. 'Rally' and 'King Richard' also had lower disease ratings and lower yield in 2021.

Conclusions:

There are numerous promising varieties available for growers looking to grow a high quality Northeast Leek. As with all trials, we recommend testing a few of the recommended varieties on your farm to determine their performance in your unique environment. Our current recommendations for an alternative summer leek to 'King Richard' is 'Lancia,' which more closely resembles a fall leek in growth and has excellent vigor. However, if you like the lighter stature of 'King Richard' for the earlier markets, this variety fared well from a disease standpoint.

Our recommendations for fall leeks are 'Chinook', 'Comanche', and 'Tadorna'. 'Chinook' performs best of the three from a combination of disease resistance and stress resistance. 'Comanche' and 'Tadorna' were both more variable performers, though 'Comanche' did show disease susceptibility in both seasons and 'Tadorna' was disease tolerant in both.

Full descriptions of the varieties follows this report. For more information, please contact Crystal at cls263@cornell.edu. Many thanks to Bejo Seeds, High Mowing Organic Seeds, Johnny's Select Seeds, and Harris Seeds for their support of our trial work.

Summer Leeks

Alto

- From High Mowing Seeds
- Fast growing, early summer leek with nice cylindrical shape and thick, white shaft
- Listed DTM—85 days from transplant
- Actual DTM—82 days from transplant or less
- 18 inches tall
- Light green color
- Light purple blotch pressure
- Had the most culls in the summer leeks
- No bulbing, but stretched a lot
- Yield per 20 leeks:
  - 2020—5.85 lbs
  - 2021—8.7 lbs

King Richard

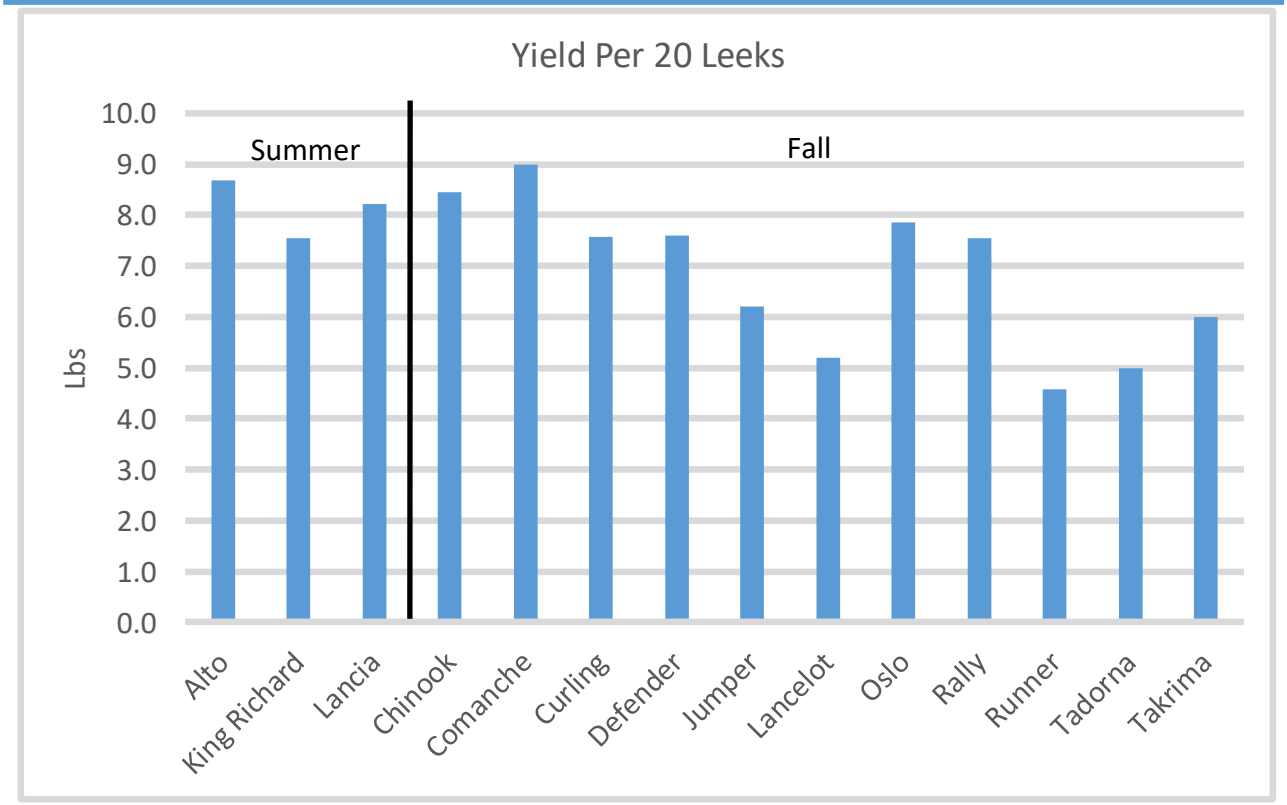
- From Johnny's Selected Seeds
- Remarkable earliness and size, medium green leaves with full habit
- Listed DTM—85 days from transplant
- Actual DTM—82 days from transplant
- 12 inches tall
- Light green color
- Light purple blotch pressure
- No bulbing
- Yield per 20 leeks:
  - 2020—5.6 lbs
  - 2021—7.6 lbs

Summer Leeks

Lancia

- From Bejo Seeds
- Long, medium girth shaft, spring sow for summer harvest. High yields with minimal bulbing
- Listed DTM—98 days from transplant
- Actual DTM—82 days from trans-plant
- 16 inches tall
- Medium green color
- Light purple blotch and botrytis pres-sure
- No bulbing
- Yield per 20 leeks:
  - 2020—16.1 lbs
  - 2021—8.2 lbs

Quick Comparison: Weight (lbs) of 20 leeks per variety



Fall Leeks

Chinook

- From High Mowing Seeds, breeder is Vitalis Seeds
- Long, straight shafts have bright green outer wrapping and deep blue-green flags. Adaptable variety grows quickly, is easy to field clean, and has high yield potential for commercial growers. Slightly longer and narrower than Megaton F1
- Listed DTM—100 days from transplant
- Actual DTM—90 days from transplant
- 16 inches tall
- Medium green color
- Light purple blotch and botrytis pressure
- No bulbing
- Yield per 20 leeks:
  - 2020—18.95 lbs
  - 2021—8.4 lbs

Comanche

- From Johnny's Selected Seeds
- Comanche is a midseason leek with medium blue-green foliage
- Listed DTM—115 days from transplant
- Actual DTM—90 days from transplant
- 18 inches tall
- Medium green color
- Little to no disease pressure
- Slight bulbing
- Yield per 20 leeks:
  - 2020—11.85 lbs
  - 2021—9.0 lbs

Fall Leeks

Curling

- From Bejo Seeds
- Hybrid leek for late fall and winter production. Nice blue green color.
- Listed DTM—115 days from transplant
- Actual DTM—102 days from transplant
- 16 inches tall
- Light purple blotch and botrytis pressure
- Dark green color
- Yield per 20 leeks:
  - 2020—13.2 lbs
  - 2021—7.6 lbs

Defender

- From Bejo Seeds
- Late (autumn) variety with a long shaft, dark foliage and good field holding. Strong against rust and easy to clean
- Listed DTM—150 days from transplant
- Actual DTM—102 days from transplant
- 18 inches tall
- Dark green color
- Moderate purple blotch pressure
- Slight bulbing
- Yield per 20 leeks:
  - 2020—15.3 lbs
  - 2021—7.6 lbs

Fall Leeks

Jumper

- From Bejo Seeds
- Refined shanks with minimal bulbing for easy stripping. Intermediate resistance to common rust, purple blotch, and white tip
- Listed DTM—105 days from transplant
- Actual DTM—95 days from transplant
- 16 inches tall
- Medium green color
- Moderate purple blotch pressure
- No bulbing
- Yield per 20 leeks:
  - 2020—15.0 lbs
  - 2021—6.2 lbs

Lancelot

- From Bejo Seeds
- Good summer OP leek. Darker color than Lancia with good resistance to Rust going into autumn. Very versatile and good winter hardiness.
- Listed DTM—100 days from transplant
- Actual DTM—158 days from transplant
- 18 inches tall
- Medium green color
- Moderate botrytis and purple blotch pressure
- Inconsistent size
- Had the most culls in the fall leeks
- Slight bulbing
- Yield per 20 leeks:
  - 2020—15.2 lbs
  - 2021—5.2 lbs

Fall Leeks

Oslo

- From Vitalis Seed
- Oslo is a late fall and early winter variety with upright, dark blue leaves and a stocky shank that is easy to peel.
- Listed DTM—110 days from transplant
- Actual DTM—102 days from transplant
- 12 inches tall
- Dark green color
- Light purple blotch pressure
- Slight bulbing
- Yield per 20 leeks:
  - 2020—N/A
  - 2021—7.9 lbs

Rally

- From Bejo Seeds
- Has a very erect plant habit, tight fan, long shank and excellent color for maturity range. Cleans very easily. Strong against thrips and rust.
- Listed DTM—90 days from transplant
- Actual DTM—95 days from transplant
- 18 inches tall
- Medium green color
- Light purple blotch pressure
- No bulbing
- Yield per 20 leeks:
  - 2020—11.3 lbs
  - 2021— 7.5 lbs

Fall Leeks

Runner

- From Bejo Seeds
- For late summer and fall production. Easy to clean with great field holding abililty.
- Listed DTM—96 days from transplant
- Actual DTM—102 days from transplant
- 18 inches tall
- Moderate purple blotch pressure
- Medium green color
- Slight bulbing
- Yield per 20 leeks:
  - 2020—15.0 lbs
  - 2021— 4.6 lbs

Tadorna

- From Johnny's Selected Seeds
- The most reliable OP fall leek. A vigorous grower producing a medium-length white shank and contrasting, very dark blue-green foliage. Holds in the field for fall into winter harvest, and overwinters in moderate climates
- Listed DTM—110 days from transplant
- Actual DTM—102 days from transplant
- 18 inches tall
- Dark green color
- Light purple blotch pressure
- Some bulbing
- Yield per 20 leeks:
  - 2020—16.8 lbs
  - 2021— 5.0 lbs

Fall Leeks

Takrima

- From High Mowing Seeds, breeder is Vitalis Seed
- Highly reliable, low maintenance, adaptable to many environments. Virtually no bulbing and is highly self-blanching even without hilling.
- Listed DTM—110 days from transplant
- Actual DTM—102 days from transplant
- 16 inches tall
- Moderate botrytis pressure
- Medium green color
- No bulbing
- Yield per 20 leeks:
  - 2020—14.4 lbs
  - 2021— 6.0 lbs

Thank you to Vitalis Seed, Bejo Seed, High Mowing Seeds, and Johnny's Selected Seeds for contributing seed to our trial.

Thank you to Philia Farm for hosting the trial.

You can find more information about our program and other work at https://enych.cce.cornell.edu/

The Eastern New York Commercial Horticulture Program is a Cornell Cooperative Extension Partnership between Cornell University and the CCE Associations in the 17 Eastern New York counties.