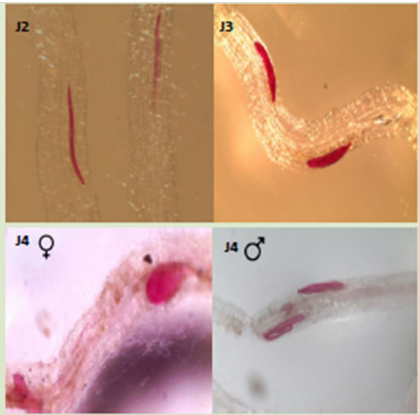


Breeding for Potato Cyst Nematode Resistant in the Russet Market Class



G. pallida in potato roots (L.M. Dandurand)

Pale cyst nematode (*G. pallida*)



G. rostochiensis cysts on potato roots (X. Wang)

Golden cyst nematode (*G. rostochiensis*)

Potato Cyst Nematodes

- Cysts can survive ~30 years in absence of host
- High yield reductions by PCN without soil fumigation
- Widely-grown varieties in the russet market class do not have resistance to either PCN species
- Lower resistance available for Pale Cyst
- A race of Golden Cyst (Ro2) requires new resistance genes for control
- Plant host resistance has been shown to be effective in the control of PCN

PCN-Resistant Russet Hybrids

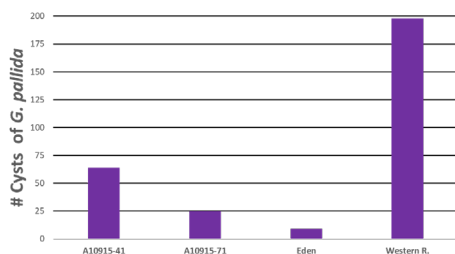
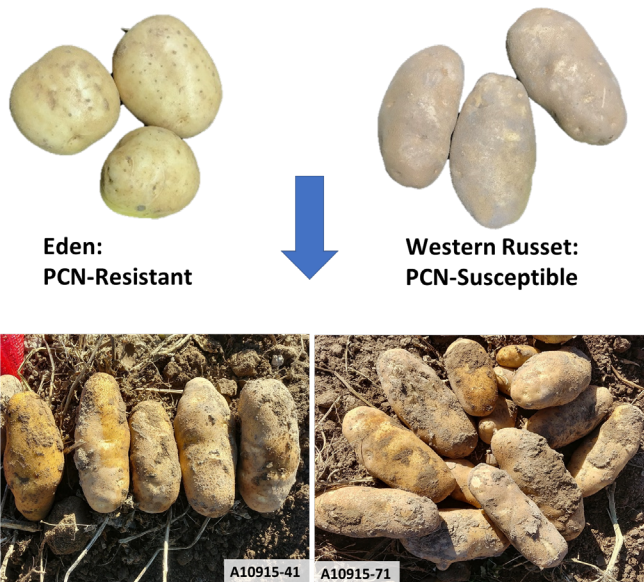


Figure 1. Intercrossing of *G. pallida* resistant 'Eden' with susceptible 'Western Russet' generated progenies (A10915-41 & -71) having the desired market characteristics of long tuber shape with russet skin and resistance to *G. pallida* and *G. rostochiensis*.

Looking to the Future: Potato Relatives

- High resistance to both pale and golden cyst nematodes was identified in three potato wild relatives: *Solanum brevicaule*, *S. vernei*, and *S. boliviense*.
- Hybridizations were made in the Spring of 2024 with Russet parents (Figure 2).
- Potato berry formation occurred with botanical hybrid seed to be extracted in the Summer of 2024.
- These three potato species represent new sources of PCN resistance for cultivated potato.



Figure 2: *S. boliviense* with hybridization tags