Broccoli

Breeding Objective:
Open-pollinated type able to withstand summer heat

Key Traits for Variety Selection:
Earliness, medium head size (~5" diameter), high side-shoot production, good growth in cool spring soils with low N availability, convex dome, small bead size, blue-green heads, medium plant height (~3’), strong stems, moderate head to leaf ratio, and even maturity

Broccoli: Origin

- Parents: Arcadia, Decathlon, Excelsior, Shogun, San Miguel, Barbados & 17 OSU inbred lines
- Random mated without selection 1997-2000
  - Conventional production system
  - One environment (OSU-Corvallis)
Broccoli: Improvement

• Random mated with selection (head size, vigor, freedom from downy mildew, heat tolerance) 2001-present

• Farmer participatory component added 2001
  – (Farmer Cooperative Genome Project, Organic Seed Partnership)

• All farmer production under organic conditions

• OSU work moved to transitional ground in 2004, certified organic in 2010

Broccoli: Improvement

• 500 - 1000 seeds sent to each grower (plot size 250 – 500 plants)
  • Plant, select best 25%, allow random mating, harvest seed
  • Keep plants regularly spaced
  • Avoid selecting border plants
  • Select from all portions of the plot
  • Keep at least 50 plants to minimize inbreeding
  • Isolate from other Brassica oleracea crops (Brussels sprouts, cabbage, kohlrabi, kale, collards, cauliflower)

Broccoli: Improvement (2001-2007)

Farmer Selections (1-6)
Seed Mixed
OSU Selections
**Broccoli: OSU Development (2008-2013)**

- 2008 – Plant OP Population, select single plants (SPS)
- 2009 - Plant SPS to rows, select for uniformity
- 2010 – Repeat process
- 2011 – Select among and within “best” families
- 2012-2013 – Begin replicated trials, develop varietal description

**Broccoli: Farmer Varieties**

- Julie Puhich – Common Ground Farm
  - Single Plant Selection Scheme
  - Working variety for farm and local area
- Jonathan Spero – Lupine Knoll Farm
  - Mass Selection Scheme
  - Released Solstice Broccoli (Oregon Long Neck)
  - 5th Generation Seed Selection

**Check Varieties**

- Green Goliath 2011
- Gypsy 2011
- Astoria 2011