



# Carrot Seed Production



Supporting the ethical development and stewardship of seed

# Carrot and Queen Anne's Lace



- Both are *Daucus carota* L.
- QAL is a feral carrot!
- Will cross readily
- QAL is increasing its range in PNW

# Carrots are Biennials

They complete their seed cycle in two years

- Example: Carrots, Beets, Cabbage, Celery, Onions, Parsnips, Swiss Chard, Turnips
- Often require vernalization in order to initiate flowering: roughly 8wks – 10 weeks @ < 50°F and >85% humidity.
- Plant for optimum over-wintering size and condition. Expect to lose some of crop over winter.
- Carrots are warm to hot season – dry seeded crop and require mild springs to hot summer transition for optimum growth and seed quality.

# Planting the Crop – 1<sup>st</sup> Year

- **Root to Seed Method**
- Sow mid-summer
- At vegetable density
- Loam soil with even moisture
- Pull the crop in fall and select before storage
- Store in earthen structure or cold room



# Planting the Crop – 2nd Year



- Select for good storability
- Plant at 8” to 18” apart
- Row centers at 3’ to 4’
- Stake as necessary
- Will mature early to late September



Supporting the ethical development and stewardship of seed



Supporting the ethical development and stewardship of seed







Supporting the ethical development and stewardship of seed



Supporting the ethical development and stewardship of seed



Supporting the ethical development and stewardship of seed

# Reproductive Cycle

- Cross-pollinated sp.
- Largely insect pollinated
- Perfect flowers
- Stigma and anthers do not mature at the same time
- Wasps are important pollinators!



# Minimum Isolation Distances

- Depends on the terrain – are there natural barriers in the landscape?
- Depends on the size of adjacent crops
- Where is the nearest QAL population?
- Can you tell QAL from other wild *Apiaceae* spp.?

# How much isolation for Carrots?

- 1 mile isolation for two varieties of the same type without barriers
- 0.5 mile isolation for two similar varieties when barriers are present
- 1.5 miles isolation for two varieties of different types without barriers
- 0.75 mile isolation for two dissimilar varieties when barriers are present

# Genetic Maintenance - Population Size

- Cross-pollinated crops: 80 - 100 plants minimum for resiliency of the population
- Avoid inbreeding depression
- Maintain genetic diversity
- Genetic resiliency for important traits
- Plan for losses, plant at least 200 plants

# Genetic Maintenance

- Early Season
  - -top height & stature
- Mid Season
  - - foliar disease
  - - upright stature
- Late Season
  - - root shape & color
  - - crown size
  - - blunting



# Harvest Techniques



- Harvest when 60 – 70% of seeds are brown
- Pull plants or cut at base
- Windrow onto “tarps”
- Make sure roots stay off the tarp

# Post Harvest Drying Seed/Plants



- Completes maturity
- Dries plant material for separation
- Preserves seed
- Techniques: breathable cloth, table, screens, turning, fans, heat

# Drying Seed:

Covered area with good circulation



# Drying seed options



# Dry Seeded Crops

## Fanning and Winowing: Gravity Separation



Light Seed & Chaff

Heavy seed



# Screening



- Separation by size
- Remove larger chaff
- Remove smaller debris
- Separate seed sizes
- Screening materials

# Screen Cleaner





# Seed Storage

- Moisture Content – check w/ a bag or coin envelope!
- Cleanliness
- Temperature F + %Humidity = < 100
- Containers: envelopes, jars, rubbermaid, tupperware, bags
- Commercial longevity 3 – 4 yrs / personal 5 – 7 years
- Location: dry, cool, refrigerators and freezers, avoid temperature fluctuations