Vegetable seed production in the Pacific Northwest is an important agricultural industry. Vegetable seeds are usually produced under contract with specific seed companies. These contracts generally specify acres to be planted, minimum seed quality accepted, seed grading, and pricing.

Turnips belong to the family Cruciferae, genus Brassica, species campestris. Within Brassica campestris (n=10), there are a number of different subgroups, which can intercross readily:
- rapifera subgroup (also B. rapa and B. septiceps)—turnip
- chinensis subgroup—Chinese mustard, celery mustard, pakchoi
- pekinensis subgroup—Chinese cabbage, celery cabbage, pe-tsai
- perviridis subgroup—tendergreen mustard
- ruvo subgroup—broccoli raab, rapa, Italian turnip

Rutabagas belong to the genus Brassica, species napus (also known as the Rape group). Within Brassica napus (n=19), there are these subgroups:
- napobrassica subgroup—rutabaga, Swede, Swedish turnip (some class this as a separate species)
- pabularia subgroup—Siberian kale, Hanover salad, winter rape

Brassica campestris subgroups have a chromosome number of n=10, while the Brassica napus groups have the chromosome number n=19. The species B. napus (n=19) will intercross with B. Campestris (n=10) under controlled conditions.

Although some of the resulting hybrids have been reported to be fairly fertile, such crossing is not considered to be important in commercial seed production, and no special isolation distance is needed.

Isolation
Check with your seed company field representatives about isolation requirements for the specific cultivars that you plan to grow. Check to see if adjoining fields are being used to produce cultivars that may result in unwanted crosses. If you should have such neighboring fields, try to negotiate a change or otherwise, relocate your planned production area.

Isolation requirements depend partly on type classifications:
- Group 1: fall-seeded turnips
  Cultivars: Purple Top White Globe, Seven Top, White Egg, and Amber Globe
- Group 2: spring turnips
  Cultivars: Crawford, Shogoin
- Group 3: hybrid turnips
  rutabagas

Here are the minimum isolation distances between fields for these classifications:
- Between any two cultivars within Group 1: 1 mile
- Between any two cultivars within Group 2: 1 mile (except 1 mile for foreign spring turnips)
- Between any cultivar in Group 1 and any cultivar in Group 2: 1 mile
- Between any two cultivars within Group 3: 2 miles
- Between any cultivar in Group 3 and any cultivar in Groups 1 or Group 2: 2 miles

Siberian kale does not cross-pollinate with any cultivar in Groups 1 or 2, nor will it cross-pollinate with Brassica oleracea crops (cabbage, Brussels sprouts, cauliflower, broccoli, and kohlrabi). However, be sure to isolate Siberian kale 1 mile from any cultivar of rutabaga (Swede) that’s being grown for seed.

Culture
Cultivars in Group 1 are seeded in the fall, usually in mid-September. Cultivars in Group 2 are seeded in the spring.

Choose fertile soils for the production of these crops. Soil needs to be well-drained, as these crops will be subject to winter or early spring rains in some production areas, especially west of the Cascades.
Select ground that is free of quackgrass, other troublesome grasses, and mustard weeds. These are not easily controlled by the herbicides registered for turnips and rutabagas.

It’s especially important to avoid fields with a known history of cruciferous weeds such as wild turnips (Brassica rapa and B. campestris) and wild mustard (B. campestris, B. nigra, and B. juncea). These may cross with your crops, and you can’t readily separate the seeds from your crop seed. Avoid, too, other troublesome weeds like pigweed (Amaranthus sp.) and lambsquarter (Chenopodium album). Some weeds—such as cranesbill (Geranium sp.), common groundsel, and grasses—grow during the winter when cultivation is impossible, and they will severely compete with your overwintering seed crops.

Pollination

Turnips and rutabagas are cross-pollinated by insects; however, some self-pollination does occur. Bee-pollinated plants produce better quality seed with higher germination and better seedling vigor when bee hives are provided.

If commercial bees are working in your field at the same time you’re planning to apply insecticides, be sure to advise your local beekeepers before you apply the insecticides. There are very few wild honey bees! Honey bees working in fields belong to someone, so be sure when spraying.

Soil preparation

The same practices for vegetable seed crops are the same as for the small-seeded vegetable crops themselves. Prepare a medium-fine seedbed. Apply lime (if your soil test indicates a need for it), a broadcast fertilizer, and herbicides (if you plan to use them before planting).

Table 1.—General fertilizer rates (in pounds per acre) for turnips and rutabagas

<table>
<thead>
<tr>
<th>Fertilizer operation</th>
<th>Nitrogen (N)</th>
<th>Phosphorus (P₂O₅)</th>
<th>Potash (K₂O)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall turnips and rutabagas</td>
<td>Banded at seeding</td>
<td>40-60</td>
<td>50-150</td>
</tr>
<tr>
<td></td>
<td>Spring sidedress</td>
<td>50-80</td>
<td>0-50</td>
</tr>
<tr>
<td>Spring turnips</td>
<td>Banded at seeding</td>
<td>40-60</td>
<td>0-150</td>
</tr>
<tr>
<td></td>
<td>Sidedress</td>
<td>40-60</td>
<td>0-150</td>
</tr>
</tbody>
</table>

Fertilizer

Seed company field representatives will suggest fertilizer rates for new growers. Rates should always be based on recent soil test information. Table 1 shows general fertilizer rates. Use at least 1 ½ to 2 pounds of both N and P per acre before planting. Apply the potassium (potash) last in Table 1; soil test results are not available.

Use the nitrogen in split applications—that is, at planting and at spring sidedressing. Measure it carefully; nitrogen applications that total 150 pounds or more per acre may result in lodging.

Band all phosphorus at planting; if possible, for wide-row spacings, or broadcast it before planting crops on which you plan to use a grain drill.

Planting

Sow fall turnips directly in the field in early September. They grow through the winter, and they bloom and mature early the following year. Plant spring turnips as early as you can prepare a good seedbed.

Plant both types at the rate of 1 to 1 ½ pounds of seed per acre. Spacing between rows can vary considerably. Space hybrid seed rows 2 to 3 feet apart. For open-pollinated cultivars, space the rows between 6 inches (when you plant with a grain drill) and 24 inches.

Pest control

Diseases. Important diseases of both turnips and rutabagas are white blight, downy mildew, black rot, black leg, and club root. For specific control measures, consult the current edition of the Pacific Northwest Plant Disease Control Handbook (see "For further reading," page 3).

Insects. Cabbage maggots will usually be a serious problem; soil-applied insecticides are effective in controlling them. Watch carefully for flea beetles—they can severely damage seedlings in a few days’ time. For specific control suggestions, see the current edition of the Pacific Northwest Insect Control Handbook and WREP 11, Insect Management on Crops Grown for Seed (see...
“For further reading,” righthand column, this page. Consult your seed company field representative or your county Extension agent.

Weeds. Check again the weeds listed under “Culture,” page 1. For chemical weed control, see the current edition of the Pacific Northwest Weed Control Handbook (“For further reading,” righthand column, this page). Check with your county Extension agent, commercial applicators, and your seed company representative. Follow the instructions on the herbicide label.

The seeds of cruciferous weeds like wild mustard and wild radish could become contaminants if these weeds are present. They’re nearly impossible to control chemically; rotation and cultivation are necessary to eliminate them.

Harvesting
Cut a turnip seed crop a little on the green side; the seed shatters badly if it’s allowed to ripen fully while standing. Cut and windrow plants when they have taken on a greenish-yellow tinge. At this stage, some brown seed will show in the pod.

Following a curing period (2 to 3 weeks), you can use a standard combine—with reduced cylinder speed and lowered concaves—to thresh your crop.

Be careful to avoid damage to your seed after harvest. Protect it from moisture, overheating, and contamination.

For further reading
To order any of these publications, enclose the amounts indicated and mail your order to either of these addresses:

Bulletin Mailing Office
Oregon State University
Corvallis, OR 97331-4202

Bulletin Department
Cooperative Extension Service
Cooper Publications Bldg.
Washington State University
Pullman, WA 99164-5912


Pacific Northwest Insect Control Handbook, a Pacific Northwest Extension publication (latest edition; published annually). Single copy $15.00 plus $2.50 postage.


Pacific Northwest Weed Control Handbook, a Pacific Northwest Extension publication (latest edition; published annually). Single copy $15.00 plus $2.50 postage.

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A turnip field in full bloom (Willamette Valley, Oregon).
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