Turnip & Rutabaga

Seed Production in the Pacific Northwest

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. 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; otherwise, relocate your planned production area.

Isolation requirements depend partially 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: ½ 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 Group 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.

This publication is one of a set on producing vegetable seeds in the Pacific Northwest, prepared cooperatively by Extension specialists in Oregon, Idaho, and Washington. Each publication presents information about taxonomy, isolation, culture, pollination, soil preparation, planting, pest control (diseases, insects, and weeds), and harvesting.

Titles in the set are cucurbits; turnip and rutabaga; spinach; cabbage, Brussels sprouts, cauliflower, and kohlrabi; kale and collard; mustard and Chinese cabbage; table beet and Swiss chard; carrot, parsnip, and parsley; lettuce; radish; and onion and leek. The publications are available from local Extension Service offices in each of the three states.

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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 local beekeepers before you apply the insecticides. There are very few wild honey bees! Honey bees working in fields belong to someone, so use care when spraying.

Soil preparation

Tillage 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

Fertilizer operation	Nitrogen (N)	Phosphorus (P_2O_5)	Potash (K_2O)
Fall turnips and rutabagas			
Banded at seeding	40-60	50-150	0-150
Spring sidedress	50-80	50	0-50
Spring turnips			
Banded at seeding	40-60	50-150	0-100
Sidedress	40-60		

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. Broadcast 1½ to 2 pounds of boron per acre before planting. Apply the potassium (potash) listed in table 1 if soil test results are not available.

Use the nitrogen in split applications—that is, at planting and as 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.

Use pesticides safely!

- **Wear** protective clothing and safety devices as recommended on the label. **Bathe or shower** after each use.
- **Read the pesticide label**—even if you've used the pesticide before. Follow closely the instructions on the label (and any other directions you have).
- **Be cautious when you apply pesticides. Know** your legal responsibility as a pesticide applicator. You may be liable for injury or damage resulting from pesticide use.

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 1½ 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.

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

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

Johansen, Carl, *Insect Management and Control of Crops Grown for Seed: Precautions and Management Suggestions,* Western Regional Extension Publication WREP 11 (Pullman, Washington State University, revised 1984). Single copy $1.00 plus 25¢ postage.

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

Pacific Northwest Plant Disease 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.

Pacific Northwest cooperative Extension bulletins are joint publications of the three Pacific Northwest states—Oregon, Washington, and Idaho. Similar crops, climate, and topography create a natural geographic unit that crosses state lines. Since 1949 the PNW program has published over 250 titles. Joint writing, editing, and production has prevented duplication of effort, broadened the availability of faculty specialists, and substantially reduced costs for the participating states.

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