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RAPESEED *(Brassica campestris/Brassica napus)*

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Rapeseed is a large, stemmy, winter or spring annual. It is related to mustard, cabbage, broccoli, cauliflower, and turnip. *B. campestris* is primarily a spring annual, and *B. napus* a winter annual, although both have winter and spring varieties.

Rapeseed grows from 3 to 5 feet tall. It has bright yellow, four-petaled flowers, a deep taproot, and a fibrous near-surface root system. Seeds are small (90,000–150,000/lb), round, and brown-black.

Environmental preferences and limitations

Rapeseed does well on a wide variety of well-drained soils. It prefers a pH between 5.5 and 8.3 and is moderately tolerant of saline soils. It will not tolerate poorly drained or flooded soils, especially during establishment.

Rapeseed is able to grow at relatively low temperatures. The minimum soil temperature for planting is 45°F, and the maximum is 85°F. Winter hardiness is excellent if plants reach a rosette size of six to eight leaves before the first killing frost. If they experience a hard frost or wet soils before they reach this stage, losses are likely. The small taproot of young seedlings is susceptible to breakage by frost heaving. Rapeseed is very sensitive to planting date in all areas. In western Oregon, rape crops have failed entirely when planted after October 15.

Uses

Rapeseed is grown for its oil and meal, and as a cover crop. Rapid fall growth captures part of the available soil nitrogen, which otherwise might be lost to leaching, and provides good ground cover over winter.

Rapeseed produces large amounts of biomass and is good at suppressing weeds. Its root system can help loosen plow pans and improve soil tilth.

Dry matter and N accumulation

In a mid-Willamette Valley replicated trial over 4 years, Dwarf Essex rapeseed planted in mid-September accumulated a maximum of 4.3, minimum of 0, and average of 2.6 tons dry matter/acre and a maximum of 136, minimum of 0, and average of 67 lb N/acre by mid-April. The crop failed entirely 1 year due to a late planting date and cold, wet fall weather.

Management

When you plant rapeseed, the seedbed should be smooth, firm, and packed. However, overtilling can cause crusting that interferes with emergence.

The recommended seeding rate is 5–8 lb/acre if drilled, and higher if broadcast. Drill seed in 6–10 inch wide rows, no deeper than ¾ inch. If moist soil is deeper than ¾ inch and irrigation is not available, use a hoe opener to push dry soil aside to allow deep placement, but shallow soil coverage of seed.

Most grain drills can be used. Alfalfa calibration settings usually work if rapeseed calibrations are not provided.

Seeding should occur from mid-August to mid-September so that plants achieve the six- to eight-leaf stage before cold weather begins. Fall irrigation, if necessary, speeds up establishment and improves crop stand and winter hardiness.

Incorporate rapeseed during spring bloom. It usually needs to be mowed or chopped before being turned under. Due to the relatively low C:N ratio of rapeseed residue, decomposition is rapid (except for fibrous stems), and soil organisms involved in the decomposition process do not compete with the following crop for N.

Volunteer rapeseed can cause problems harvesting some green vegetables and seed crops. Separation of rapeseed residues is difficult because the bulk density of stems and/or the size and shape of pods are similar to the harvested crop (e.g., green beans, dry sugar beet seed). Rapeseed can be a serious weed in sugar beet seed production.

The percentage of hard seed varies among varieties. Canola varieties have fewer hard seeds than industrial varieties. Hard seed may be acceptable for self-reseeding covers in orchards and vineyards.

Quick facts: Rapeseed

Common names	Canola, rape, rapeseed, summer turnip
Hardiness zone	7 (see Figure 1)
pH tolerance	5.5–8.3
Best soil type	Well-drained
Flood tolerance	Low, especially during establishment
Drought tolerance	High
Shade tolerance	No information
Mowing tolerance	Low
Dry matter accumulation	3 tons/acre
N accumulation	80 lb/acre
N to following crop	Very little or none
Uses	Use to break up plow pans, smother weeds.
Cautions	Will not survive in saturated soils during establishment; plant before September 15 in western Oregon.

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Rapeseed may be sensitive to residual herbicides, including sulfanated ureas and triazines.

Production restrictions

Rapeseed production is regulated in Oregon and other Pacific Northwest states. The Oregon Department of Agriculture (ODA) has established rapeseed production districts. In order to grow rapeseed, even as a cover crop, you may need to "activate" the production district in your area. Before you seed, check with ODA or your county office of the OSU Extension Service about possible production restrictions. Much of the Willamette Valley is a restricted production zone due to potential cross pollination between rapeseed and other brassica seed crops.

Pest interactions

Rapeseed normally competes well with weeds, especially grasses. When followed by a cereal crop, volunteer rapeseed can be killed with broadleaf herbicides.

Rapeseed fits well into rotations with non-brassica crops; it is immune to many of the diseases that attack them. However, rapeseed itself is susceptible to pathogens that can build up in the soil rapidly. Therefore, plant rapeseed in the same field only once every 4 years.

Other brassica crops also are susceptible to the diseases of rapeseed. If brassica crops are part of the summer rotation, you probably should not use rapeseed as a cover crop. Rapeseed is susceptible to sclerotinia stem rot, which also infects potatoes, beans, and carrots. Be sure to consider sclerotinia effects on crops in your rotation system.

Flea beetles can seriously damage seedlings. If flea beetles are a problem during establishment, you may need to use seed insecticide treatments or foliar sprays.

A winter rapeseed cover crop can be used as part of a rotation to lower soil populations of Columbia root-knot nematode (*Meloidogyne chitwoodi*), which infects potatoes. Rapeseed is a non-host of Columbia root-knot nematode, and its decomposing residues release nematicidal compounds. The best rotational control before potato involves planting summer non-host crops for 2 years, and then a winter rapeseed cover crop. Incorporate rapeseed in mid-March of the spring potatoes are to be planted.

Note that the ability of rapeseed to decrease nematode populations is specific to the nematode type. For example, Dwarf Essex has not successively reduced the populations of root lesion or dagger nematodes in berry field trials.

Using rapeseed as a break crop in wheat can greatly reduce the incidence of the disease take-all (*Gaeumannomyces graminis*).

Rapeseed flowers have been observed to attract several species of hoverflies (Syrphidae), the larvae of which are predators on aphids.

Varieties/cultivars

Canola is a term for rapeseed varieties that contain low levels of both erucic acid (in their oil) and glucosinolates (in their meal). These characteristics increase palatability for human and animal consumption. Oil from other varieties generally is used only for industrial purposes.

All varieties grow similarly and provide biomass and N uptake. However, industrial types are most likely to reduce nematode populations. This effect results from their higher levels of glucosinolate, which is believed to be the active agent in nematicidal activity.

For more information

World Wide Web

Orchard floor management information—http://www.orst.edu/dept/hort/weeds/floormgt.htm

OSU Extension Service publications—eesc.orst.edu

The University of California, Davis cover crop information—http://www.sarep.ucdavis.edu/sarep/ccrop/

Oregon Cover Crop Handbook

This publication also is part of *Using Cover Crops in Oregon*, EM 8704, which contains an overview of cover crop usage and descriptions of 13 individual cover crops. To order copies of EM 8704, send your request and $5.50 per copy to:

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Figure 1.—Oregon plant hardiness zone map. Rapeseed normally will survive in ***Zone 7*** *or any warmer zone. (Extracted from the USDA's national plant hardiness zone map, based on average annual minimum temperature in °F.)*
Zone 4 = -30 to -20; Zone 5 = -20 to -10
Zone 6 = -10 to 0; Zone 7 = 0 to 10
Zone 8 = 10 to 20; Zone 9 = 20 to 30

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