

TECHNICAL NOTE

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PLANT MATERIALS NO. 18

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Green Manure and Cover Crops for the Inland Pacific Northwest

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Prior to the introduction of industrial fertilizers and pesticides in the 1940s and 50s, green manure and cover crops were used extensively in the Pacific Northwest to provide nutrients and prevent erosion. Typical rotations included field pea and legume-grass mixtures plowed in or harvested before planting grain crops. Vineyards and orchards also historically relied on these types of crops to improve and maintain soil quality. Throughout the last 60 years, green manure and cover crops have remained vital components of organic farming systems. Recently they have been considered again for conventional systems, due to concerns of rising fertilizer and chemical costs, soil erosion, declining soil quality, and increased intensity of crop pests.

Green manure and cover crops are known for providing a variety of benefits, including: protecting soil from erosion caused by water and wind, improving soil organic matter and structure, enhancing soil microbial activity, supplying or scavenging nutrients, suppressing nematodes and soil-borne diseases, suppressing weeds, and loosening subsurface soil layers. Cover crops can be harvested, grazed, or left standing to provide pollinator and wildlife habitat. If the cover crop is incorporated into the soil, it is typically referred to as a green manure crop.

The benefits of using a cover crop are not without costs, and these should be carefully considered prior to including a cover crop in a rotation. A considerable amount of information on cover crops is available through the following sources:

General information:

<http://attra.ncat.org/attra-pub/covercrop.html>

Specific benefits of cover crops:

<http://grant-adams.wsu.edu/agriculture/covercrops/benefits/index.htm>

Step-by-step information about how to choose a cover crop:

http://grant-adams.wsu.edu/agriculture/covercrops/how_to_choose_a_cover_crop.htm

Information about cover crops for the Columbia Basin:

http://grant-adams.wsu.edu/agriculture/covercrops/columbia_basin_covercrops.htm

Information on analyzing the costs and problems associated with cover crops:

http://grant-adams.wsu.edu/agriculture/covercrops/costs_problems.htm

Additional cover crop publications:

<http://grant-adams.wsu.edu/agriculture/covercrops/pubs/index.htm>

Information on reduced tillage and cover crops:

<http://pnwsteep.wsu.edu/tillagehandbook/chapter2/021489.htm>

Information on using cover crops in vineyards:

<http://cru.cahe.wsu.edu/CEPublications/eb2010/eb2010.pdf>

Information on using winter wheat as a cover crop to control wind erosion in the Columbia Basin:

<http://cru.cahe.wsu.edu/CEPublications/eb2030e/eb2030e.pdf>

For information on using green manures in potato cropping systems:

<http://cru.cahe.wsu.edu/CEPublications/eb1951e/EB1951E.pdf>

For information on the Relay Crop Concept for cover crops:

http://www.ars.usda.gov/research/publications/publications.htm?seq_no_115=199447

For information on plant characteristics or using cover crops or green manures as a component of a Nutrient management plan: USDA PLANTS Database: Crop Nutrient Tool:

<http://npk.nrcs.usda.gov/>

See also: NRCS AGRONOMY TECHNICAL NOTES

NO. 2 Winter Cover Crops for the Irrigated Sandy Soils in the Columbia Basin

http://efotg.nrcs.usda.gov/references/public/WA/A.2Winter_Cover_Crops_for_Irrigated_Sandy_Soils.pdf

NO. 8 Late Fall Seeded Cover Crop Trials

http://efotg.nrcs.usda.gov/references/public/WA/A.8Late_Fall_Seeded_Cover_Crop_Trials.pdf

NO. 10 Planting Dates for the Fall Cover Crops in the Irrigated Columbia Basin

http://efotg.nrcs.usda.gov/references/public/WA/A.10_Planting_Dates_for_Fall_Cover_Crops.pdf

NO. 11 Wind Erosion Control in Washington Potatoes

http://efotg.nrcs.usda.gov/references/public/WA/A.11Wind_Erosion_Control_in_WA_Potatoes.pdf

And: NRCS Cover Crop 340 Conservation Practice Standard:

[http://efotg.nrcs.usda.gov/references/public/WA/WA-COVER_CROP\(340\)\(Feb_2000\).pdf](http://efotg.nrcs.usda.gov/references/public/WA/WA-COVER_CROP(340)(Feb_2000).pdf)

NRCS Cover Crop 340 Job Sheet:

<http://efotg.nrcs.usda.gov/references/public/WA/JobSheet-CoverCrop-WA.doc>

NRCS Cover Crop 340 Specification Guidance for Design and Implementation Procedures:

http://efotg.nrcs.usda.gov/references/public/WA/Cover_Crop-340.pdf