



COVER CROPS FOR UTAH GARDENS

Michael Johnson, Grand County Extension Agent
Maggie Wolf, Salt Lake County Extension Agent
Rich Koenig, Extension Soil Specialist

Reviewed June 2010

Utah soils are inherently low in organic matter. As a result, soil structure, water infiltration and percolation, water holding capacity, and tilth (ease of tilling) are often poor. Increasing organic matter content is the single most important thing gardeners can do to improve their soil. However, adding organic matter can be difficult and expensive if a high quality, local source is not available.

Cover crops (also sometimes called green manures) are plants grown, not for harvest, but for the express purpose of incorporating them back into the soil to increase organic matter levels. Cover crops can, in addition to improving soil physical conditions, aid in the control of erosion and weeds, and prevent compaction. They also provide a habitat for beneficial insects, improve soil fertility, stimulate soil biological activity, and absorb and help recycle plant nutrients, especially nitrogen, between growing seasons.

Many plants can be grown as cover crops. Different plants vary in their benefits, adaptation to sites and climates, and role in garden rotations. For example, legumes add nitrogen as well as organic matter to soil. Fast growing plants with fibrous root systems such as wheat, barley and oats produce large amounts of organic matter and help control erosion. Compaction can be reduced by growing plants with a deep tap root system such as alfalfa, sweetclover or mustards.

WAYS TO USE COVER CROPS

In a rotation. In a two-year rotation, divide the garden into two sections and put garden plants in one and cover crops in the other. Each year alternate planting garden crops or cover crops in the two sections. A three-year rotation can also be practiced with two years in garden and one year in cover crop. Perennials such as strawberries and asparagus are normally confined to a separate section of the garden.

Winter cover crop. Plant cold-tolerant cover crops in late summer or early fall after removing annual garden plants. Allow covers to grow until the following spring when the garden area is needed.

Summer cover crop. Plant summer annual cover crops in the spring in fallow (unused) sections of the garden or after an early crop like lettuce is harvested. Summer cover crops reduce weed infestation and soil compaction in fallow areas.

Strip Cropping. Plant strips of cover crops between rows of garden plants to control weeds and reduce compaction between rows.

Interplanting or companion planting. Plant the cover crop in early spring. After germination, till a strip out of the cover crop and sow garden plants in this strip. Mow the remaining cover crop periodically to provide a pathway between garden strips. This practice may not be suitable for plants grown on hills or in narrow rows. Also, fast growing cover crops may produce too much organic matter and interfere with the garden crop.

MANAGING COVER CROPS

Test the soil. While cover crops can be used to “catch” nutrients and keeping them from leaching out of the soil, they do require adequate levels of nutrients to establish and produce large quantities of organic matter. Test the soil to determine if nutrients are deficient, or if there are other soil problems such as high levels of soluble salts. Select cover crops suited to the soil conditions and fertilize as recommended.

Prepare the soil. Prepare the soil by plowing or tilling to incorporate surface organic material and loosen and smooth the soil to provide a uniform seed bed.

Sow Seed. Seed can be planted in furrows or rows, or broadcast and covered with a thin layer of soil. It is important to have good soil-seed contact and to plant at the correct depth. Seeding depth varies with seed size but a general rule-of-thumb is to plant seed at a depth no more than three times its diameter. For small seeded plants such as clover this may be as shallow as 1/4 inch. Seeding rate recommendations are summarized in Table 1.

Irrigating cover crops. Irrigate cover crops similar to other garden annuals. Cover crops will deplete soil moisture so the site may need to be pre-irrigated before planting the garden.

Incorporating A Cover Crop. Turn the cover crop under before it blooms. Immature plants decompose and release nutrients faster than mature plants, although mature plants produce more organic matter. Cover crops should not be allowed to go to seed or they may become a weed in the garden. Treating with an herbicide like glyphosate before the cover crop is incorporated will insure that the plants will not regrow. Cover crops can be mowed or chopped to aid in incorporation and enhance decomposition. Garden tillers or tractor-mounted tillers work better than hoeing or hand-spading to fully incorporate the cover crop organic material.

TYPES OF COVER CROPS

Table 1 summarizes some commonly used cover crops, their growth habits, and seeding rate recommendations. Cover crops are divided into three broad categories based on growth habits:

Perennials. Perennials persist for several years without replanting. Perennials can be maintained for several years or grown as a cover crop for one season. Perennials must be killed before incorporating so that they will not regrow and become weeds. Perennials may be seeded in spring or late summer to early fall.

Summer Annuals. Summer annuals are seeded in spring or summer and grown until the end of the season. Although a few annuals will survive frosts, most will die over winter.

Winter Annual. Winter annuals are normally seeded in the fall, 30 to 40 days before killing frost. Most will survive the winter. Depending on the time of seeding, some growth will occur in the fall and early spring before incorporation.

Table 1. Commonly used cover crops, their growth characteristics and seeding rate recommendations.

| Name | Type | Growth characteristics | Seeding rate |
|----------------------|--------------------|---|--------------------------|
| Alfalfa | Perennial | Cold tolerant, nitrogen-fixing legume. Low shade tolerance; deep rooted; drought tolerant. | ½ - 1 lb per 1000 sq ft |
| Hairy indigo | Perennial | Short-lived, not cold tolerant (killed by frost) legume. Low shade tolerance; drought tolerant. Slow establishment. | ½ lb per 1000 sq ft |
| Red clover | Perennial | Short-lived, cold tolerant, nitrogen-fixing legume. Shade and drought tolerant. | ½ - 1 lb per 1000 sq ft |
| Sweetclovers | Annual or biennial | Short-lived, cold tolerant, nitrogen-fixing legume, strong tap root. | ½ to 1 lb per 1000 sq ft |
| Buckwheat | Summer annual | Cold sensitive; moderate shade and drought tolerance; rapid establishment and growth. | 1 - 2 lb per 1000 sq ft |
| Garden pea | Summer annual | Cold sensitive, nitrogen-fixing legume. Low shade and traffic tolerance. | 5 to 15 lbs/1000 sq ft |
| Mustards or turnips | Summer annual | Cold tolerant; tap rooted. | 1/4 lb per 1000 sq ft |
| Spring grains | Summer annual | Includes wheat, barley and oats. Cold tolerant; rapid growth rate. Inexpensive seed. | 2 - 4 lbs/1000 sq ft |
| Austrian winter peas | Winter annual | Moderately cold and drought tolerant, nitrogen-fixing legume. Low shade and traffic tolerance. | 2 - 4 lbs/1000 sq ft |
| Hairy vetch | Winter annual | Cold tolerant, nitrogen-fixing legume. Moderately shade and drought tolerant. | 1-2 lbs/1000 sq ft |
| Winter wheat | Winter annual | Cold tolerant and rapidly establishing; inexpensive seed. | 2 ½ lbs/1000 sq ft |
| Winter rye | Winter annual | Cold tolerant and rapidly establishing; drought and shade tolerant; inexpensive seed. | 2 ½ lbs/1000 sq ft |

Utah State University is committed to providing an environment free from harassment and other forms of illegal discrimination based on race, color, religion, sex, national origin, age (40 and older), disability, and veteran's status. USU's policy also prohibits discrimination on the basis of sexual orientation in employment and academic related practices and decisions.

Utah State University employees and students cannot, because of race, color, religion, sex, national origin, age, disability, or veteran's status, refuse to hire; discharge; promote; demote; terminate; discriminate in compensation; or discriminate regarding terms, privileges, or conditions of employment, against any person otherwise qualified. Employees and students also cannot discriminate in the classroom, residence halls, or in on/off campus, USU-sponsored events and activities.

This publication is issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Noelle E. Cockett, Vice President for Extension and Agriculture, Utah State University. (HG/521)