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# Using Winter Grain as a Cover Crop in the Home Garden

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Talk of growing grain conjures up images of golden fields stretching to the horizon. But for home gardeners who want a cover crop or a temporary grassed garden walkway, grain also has a place in the back yard. Although grains do not fix atmospheric nitrogen into the soil like peas, clovers or other legumes sometimes used as green manures or cover crops, they establish more quickly and tolerate foot traffic better than most legumes. In particular, winter grains have unique properties that make them useful in a garden setting.

Oats, barley, wheat, rye and triticale (a cross between rye and wheat) are small grains commonly grown in Utah. Grains are classified by their flowering and heading habit as spring, winter, or facultative. Spring grains are planted in the spring and produce seed heads later in the same growing season. Winter grains (also called fall grains) are planted in the fall and overwinter as small plants that resume growth in the spring and produce grain in the summer. Winter grain plants require vernalization (prolonged exposure to cold) before they can flower. Facultative grains share the flowering habits of both spring and fall grains, and will produce seed heads whether planted in the spring or fall.

## Fall-Planted Winter Grain

The cold hardiness and vernalization requirement of winter grains makes them uniquely suited for use as green manures or ground covers. For example, winter grain can be planted from mid-August through early October, after annual flowers have faded and vegetables have been harvested. The overwintering grain plants not only suppress weeds and protect against erosion, but add valuable organic matter when tilled under the following spring.

Winter rye, triticale, wheat and barley are the best options for fall-planted garden cover crops. Rye is the most winter-hardy grain, followed in order of hardiness by triticale, wheat, barley and oats. Winter oats will not reliably survive Utah winters, and seed is difficult to find. However, even grain plants that don't survive the winter still hold the soil in place and provide organic matter to till under. Local Extension offices or farm supply stores can provide information on which winter grains are best adapted to a given locale.

## Spring-Planted Winter Grain

If winter grain is planted in the spring, the plants are not vernalized and thus will not flower—or will flower so late in the summer that little or no viable seed is produced. This trait makes spring-planted fall grains ideal for situations where a temporary, non-reseeding cover crop is wanted. Examples include walkways between vegetable beds and vacant areas that would otherwise require herbicide treatment or repeated tillage to suppress weeds.

Any winter grain can be planted in the spring, although winter barley offers advantages over wheat, rye or triticale. In 15 years of garden trials in east-central Utah, spring-planted winter barley proved much less likely to produce seed heads than rye or triticale, and tolerated foot traffic better than wheat. Winter barley varieties commonly available in Utah include Schuyler, Kold, Strider and Scio, among others. Regardless of which winter grain is used for spring planting, make sure that it is a true winter variety before purchasing seed. Some seed suppliers do not distinguish between winter and facultative grains. A facultative variety will readily flower and produce seed if planted in the spring.





Spring-planted winter barley in between garden beds. This barley has not been mowed.



Seeding grain using a drop spreader. The photo on the right shows grain seeds on the soil surface before incorporation into the soil.



Barley seedlings 2 weeks after planting.





Barley plants in garden walkways 4 weeks (left) and 8 weeks (right) after planting. This barley has been mowed.

Regardless of which grain is used, the goal is to grow a ground cover that will not reseed itself, which can be tilled under at the end of the growing season.

Spring-planted winter grain can be sown when vegetables are planted, from early spring through summer. Early planting gives the grain plants a head start on troublesome warm-season annual weeds like pigweed and green foxtail. Spring-planted winter grain plants grow 10 to 12 inches tall if left unmowed, but can be mowed like a lawn if a more manicured look is desired.

Most farm supply stores only stock winter grain seed in the summer and fall, so gardeners who want to plant winter grain in the spring should plan ahead and purchase seed the previous year. Look for certified seed, which guarantees that the grain is free of weed seed and other contaminants. Grain seed is normally sold in 50 lb bags. One bag will last several years in a typical home garden. Unused seed should be stored in a cool, dry place in an airtight plastic or metal container to protect against insects and rodents.

## Planting Grain in the Garden

Begin with a tilled, weed-free seedbed. Apply 3/4 to 1 cup of ammonium sulfate (21-0-0) or 16-16-8 fertilizer per hundred square feet prior to tilling to provide starter fertilizer for the grain seedlings. It is important to remove all existing weeds before planting so the grain seedlings will have a fair start with competing weeds. Once the seedbed is prepared, sow the grain by scattering or dropping the seeds onto the soil surface. Seed can be broadcast by hand in small areas, but a drop spreader (normally used to apply fertilizers to lawns) works well in garden walkways and larger areas. Set the

drop-spreader opening to the largest aperture and go over the area four to six times to assure an even distribution of seed. In soft, deeply-tilled ground it is easier to pull the drop spreader than to push it. Do not skimp on seed, since the objective is to quickly establish a dense ground cover. A seeding rate of 3 to 4 pints of seed per hundred square feet is not unreasonable. After the seed has been broadcast, incorporate it into the soil by raking or through shallow tillage. The goal is to cover the grain with 1/2 to 1 1/2 inches of soil. Do not be concerned if some seed remains on the soil surface. If sown at the recommended rate, there will be plenty of buried seed even though some seed is still visible. Irrigate lightly every day to keep the seedbed moist and to prevent soil crusting until the seedlings emerge (usually 7 to 10 days after planting). A regular garden watering schedule of 1 to 2 inches of irrigation per week is sufficient for grain plants once they are established.

## Potential Problems

Grain competes with adjacent plants for water, nutrients and sunlight. Competition is not a problem when grain is planted in walkways between beds that are 4 or more feet wide. Grain planted between narrower beds or between individual rows may suppress the growth of vegetables or flowers.

Like all plants, grains need water. A grain walkway or cover crop may be impractical if irrigation water is scarce or expensive. Although grain can be grown with any type of watering system, sprinklers are preferable to drip or furrow irrigation. Drip lines might be damaged by mowing or foot traffic, and furrows are difficult to maintain in a thick stand of grain.

A healthy patch of grain will suppress—but not totally eliminate—weeds. Steps should be taken to control weeds that pop up, since allowing them to go to seed defeats the purpose of the cover crop. Although a selective herbicide could (in theory) be used to remove broadleaf weeds from the grain, potential herbicide drift, volatility and soil persistence pose unacceptable risks in a flower or vegetable garden. In most situations weeds can be kept in check by hand weeding, and the grain can be mowed periodically to remove flowers or immature seed (including unwanted heads of grain). If weeds get completely out of hand, till the grain under and re-plant.

Like many other plants, grains engage in a kind of chemical warfare called allelopathy that inhibits the germination and growth of competing plants (including weeds). Allelopathic compounds are exuded from the roots of living grain plants, and are produced temporarily by the breakdown of grain roots, leaves and stems. Also, fungi and bacteria that decompose tilled-under grain plants utilize nitrogen, making it unavailable to the next crop until decomposition is complete. Mature, dry, brown plant material requires more supplemental nitrogen for breakdown than young, succulent, green plant material. To prevent stunting of succeeding crops, apply 1 cup of nitrogen fertilizer per 100 square feet before tilling under grain, and do not plant vegetables or flowers within 2 weeks after tilling under grain to allow allelopathic compounds to dissipate.

Grains produce abundant leaf and stem tissue and a thick mass of roots. A stout tiller or sharp shovel will be needed to incorporate grain plants into the soil. It may be necessary to mow the grain before the area can be tilled, especially if the plants have overwintered and are beginning to send up seed heads.

## References

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