

Annual Ryegrass Cover Crop Management for Corn and Soybean Production

2012 Management Recommendations

by Mike Plumer, Cover Crop Specialist
Mark Mellbye, OSU Extension Agronomist
Andy Hulting, OSU Extension Weed Management Specialist

Annual ryegrass is a vigorous cool season grass with an extensive fibrous root system. When managed correctly, annual ryegrass is a very beneficial cover crop. This publication covers the most important management practices, ones which we have learned over the past 12 years of field testing on Midwest farms. Practices that are essential to growing a successful annual ryegrass cover crop.

Establishing Annual Ryegrass:

Fields need to be free of established weeds when annual ryegrass is seeded. During the fall, winter annuals are becoming established and are very difficult to detect. Henbit, purple deadnettle, chickweed, cheat, downy brome and winter barley can become very competitive with the germinating annual ryegrass. If the field has a history of winter annuals, a burndown herbicide application before planting will ensure a clean field and quick start for the annual ryegrass. Glufosinate or glyphosate may be used before seeding to provide good winter annual weed control. Select a field that will not have winter wheat in the crop rotation because annual ryegrass can be difficult to control selectively in winter wheat with currently labeled herbicides.

No-till drilling is the most efficient method to establish an annual ryegrass cover crop. The seed should be planted at a rate of 12-15 lbs/a at a depth of $\frac{1}{4}$ " to $\frac{1}{2}$ ". Another method that can be used to establish annual ryegrass is broadcast seeding (15-25 lbs/a). Broadcast seeding with an airflow spreader results in a uniform spread of the seed and allows annual ryegrass to be mixed with fertilizer, typically 100 lbs of 0-0-60. This reduces the time and expense that drilling requires. The main drawback with this method is that annual ryegrass emergence is weather dependent and it also requires an additional 8-10 pounds of seed per acre. A variation of the broadcast seeding method is the use of a fertilizer buggy to spread the annual ryegrass seed and fertilizer mix. Fertilizer buggy seeding requires that everything be double spread to ensure that the ryegrass seed is uniformly distributed due to the difference in weight between the fertilizer and the seed.



SUMMARY

Planting Date: Early planting is very important. Annual ryegrass is fast to emerge while it's still warm, but is slower than rye or wheat later in the fall as soil temperatures cool.

Seeding Rate: 12-25 lb/acre depending on date and planting method. Use higher rates with broadcast or aerial seedings and with later planting dates.

Control Timing: Spray or apply burn down herbicide before jointing, usually late March or early April. Thorough coverage is important.

Herbicide: Use an adequate rate of glyphosate (2-3 pt/acre), a medium spray pattern and spray during favorable conditions.

Aerial seeding is one way to get the seeding done earlier in the growing season. In standing corn, aerial seeding should be done when the corn is starting to turn yellow or brown. There needs to be approximately 50% of the sunlight passing through the corn canopy to the ground so the annual ryegrass will germinate. Aerial seeding into standing soybeans needs to be done when the soybeans have turned yellow and the first leaves are falling off the plants. Aerial seeding into standing corn is the standard practice north of Interstate 70 to insure timely seeding and well established stands of annual ryegrass that are winter hardy. Use the broadcast seeding rate of 18-25 lbs/a when aerial seeding and make sure the pilot has calibrated the spreader to understand the width of the spread pattern so that there are no streaks where seed was not applied to the field. Recently, ryegrass has been seeded into standing corn using modified "Hi-Boy" spreaders and sprayers with excellent results.

Date of Seeding:

Seeding date is an extremely important factor to ensure establishment and growth of annual ryegrass before winter. While annual ryegrass establishes readily when temperatures are warm in late summer, it is slower to germinate and establish than winter wheat or cereal rye when soil and air temperatures are cooler in September and October, and some ryegrass varieties are very slow to establish. The rule of thumb for the planting date of an annual ryegrass cover crop is simply as soon as possible after corn or soybean harvest. From Interstate 70 south, the best seeding dates that have worked are between September 10 to October 1, and north of Interstate 70 between late August to September 15. To increase plant growth and winter hardiness, use 30 lbs/a of nitrogen fertilizer or manure applications to stimulate quicker stands to improve winter hardiness and increase growth. Plantings south of Interstate 70 after the October 15 date are subject to problems with stand loss, slow growth and less winter hardiness. Earlier seeding dates result in plants that may get too large and reduce the winter hardiness of the annual ryegrass resulting in dieback in January, but the increased rooting depth of this crop will still be beneficial to the soil.

Drilling the ryegrass ensures quicker germination and emergence, often 7-10 days compared to broadcast, better



Early ryegrass growth

root development and allows for a later planting date and lower seeding rates. The addition of 30 lbs Nitrogen per acre. or manure at planting greatly increases the vigor of the ryegrass seedlings, significantly increases the top growth and establishment and is recommended when the seeding date is delayed. This nitrogen fertility can be part of the fall fertilization program if diammonium phosphate is used and the nitrogen component is very little additional cost.

Seeding rates for drill establishment are 12-18 lbs/a. Broadcast and aerial seedings need to be 15-25 lbs/a and increases as the seeding date gets later.

Growth and Development:

Annual ryegrass will not develop more than 2 or 3 leaves after seeding and prior to cold conditions in winter. The cover crop stand may look thin and poor but will develop some roots during warm periods, or even under snow in winter, and grows rapidly in the spring. It has been observed that later planted ryegrass may only have 2 leaves by December but measured root development has been 10-14" deep in fragipan soils and deeper in less restrictive soils.

By mid-April and sometimes earlier, most of the annual ryegrass root growth in depth has occurred. Rooting in first year no-till fields has been in the 28-31" range for fragipan and claypan soils and 48-50" in better soils. After three years of no-till crops and ryegrass cover crops each year, the rooting of the crop and ryegrass has been increased to 45-60" deep. Annual ryegrass top growth is normally 8-12" in height when these rooting depths have been measured.

Annual Ryegrass Cover Crop Control:

Control of the annual ryegrass cover crop is best done when the plant is small, 4-8" in height and before the first node has developed. Typically, this has corresponded to late March to early April. Annual ryegrass is more difficult to control after the first node has developed. Thorough spray coverage of small annual ryegrass plants using medium spray droplet sizes and moderate spray pressures is critical to achieving control. The use of air induction spray systems produce coarse droplets should be avoided, and when applying glyphosate to control annual ryegrass it is important to reduce spray application volume to 10 gallons per acre.

While one glyphosate herbicide application may provide control of the annual ryegrass, most growers should plan for two applications. Even when annual ryegrass is small it requires full rates of herbicides to achieve control. Low rates will often stress the plant making it more difficult to control at a later date. Early termination of the annual ryegrass cover crop makes control easier, reduces the amount of residue to plant corn or soybeans into, facilitates soil dry down and allows for significant decomposition of the ryegrass residue and the release of any nitrogen or other nutrients prior to uptake by the crop. More mature ryegrass residue may take several years to completely decompose. It is important to not let the ryegrass go to seed or it may create additional weed management problems in the future.

In corn crop production apply glyphosate at a rate of 2-3 pints/a of 41% glyphosate (.75-1.25 lbs a.i./a) with ammonium sulfate and surfactant in late March to early April. It is important when adding ammonium sulfate, other glyphosate additives or citric acid that they be added to the full spray tank of water and agitated for 3-5 minutes before adding the glyphosate. This is to ensure that the calcium, magnesium, iron and other minerals in the water do not interfere with the glyphosate activity. Never add atrazine or mesotrione (Callisto) in with glyphosate or annual ryegrass control can be reduced as much as 40%. If going into corn production, adding 1 lb a.i. /a simazine (Princep) for better weed control may be a concern on sandy soils. Adding Princep, Balance Pro (isoxazole), Prowl H2O (pendimethalin), Resolve or Basis (rimsulfuron), 2,4-D or Axiom (fluefenacet) at full rates have shown good activity for general weed control and trials have not shown any problems when applied with

the glyphosate burndown on control of ryegrass. Full rates of Ignite (glufosinate-ammonium) and Gramoxone (paraquat) has provided 70-85% control in ryegrass before nodes are formed and less control after the 1-2 node growth stage. Two applications three weeks apart (allowing for regrowth and retiling) have provided much better control. After the crop emerges, escapes can be controlled with labeled rates of Accent (nicosulfuron) or Option (foramsulfuron), but best control is when temperatures are above 70 degrees. Glyphosate can be used in Roundup Ready crops.

In soybean production it is still recommended that the first spray be done in late March to early April and to use a glyphosate product at the rate of 2-3 pts/a with citric acid or ammonium sulfate and surfactant. This provides for the easiest control of ryegrass at the pre-joint stage of growth. Control at this time also allows the ryegrass to decompose and provides a good seed bed for planting the soybeans. The use of Roundup Ready seed makes controlling escapes much easier. At planting time, the use of a burn down product like glyphosate will ensure there are no escapes. After the crop emerges, escapes can also be controlled with full rates of SelectMax (clethodim), Poast Plus (sethoxydim) or Fusilade DX (fluazifop) making sure to use fertilizer and surfactant or crop oil as per the label or full rates of glyphosate can be used in RR soybeans. These products have shown some problems if applied in cold temperatures. If ryegrass gets to flower stage, the control of the plant is easier but there is a high probability that the seed will be somewhat viable and produce escapes in the field the next fall.



Overseeded field after burndown

Ryegrass Management

The use of annual ryegrass as a cover crop requires fine-tuned and timely management, but can result in some significant benefits to the corn and soybean grower. Annual ryegrass must be seeded on time and at the proper rates and it must be terminated on time so that it does not become a weed in future crops. Poor management of this cover crop increases the potential for reduction in subsoil moisture and a negative effect on crop yields and increased costs. Potential benefits of utilizing annual ryegrass as a cover crop are significant changes in soil properties including improvement in soil tilth and water infiltration. A well managed ryegrass crop allows for greater crop rooting depth, improved soil aggregation, reduced erosion and increased crop yields, especially in years of low rainfall.



Overseeding ryegrass into a soybean field



OREGON RYEGRASS GROWERS SEED COMMISSION
ryegrasscovercrop.com

P.O. Box 3336, Salem, OR 97302
Ph: (503) 364-2944 • Fax: (503) 581-6819



Paid for by the Oregon Ryegrass Growers Seed Commission, an agency of the State of Oregon.