



**PENNINGTON**®

**FIELD GUARD™**  
**COVER  
CROP**  
Seed Mixtures



**PROTECTS THE SOIL — SAVES YOU MONEY**

# WHO IS PENNINGTON SEED?

Pennington has a long history in the farming industry starting with the first members of the Pennington family that moved from Europe to Morgan County Georgia in the 1700's. The Pennington's have always farmed the land and since 1945 they have provided farmers with the seed they need to grow their own healthy crops. Now with over 70 years of experience in developing, testing and offering the highest quality seed available, Pennington has become one of the largest seed companies in the United States. We package over 200 million pounds of seed annually and ship these products throughout the country and around the world. Pennington's commitment to U.S. agriculture continues with the current offering of our proprietary cover crop products. Cover crops not only benefit the soil but also the bottom line of every farmer that uses them. This helps keep our agricultural industry strong and growing so farmers like you can keep feeding America.



# WHY USE A COVER CROP?

In today's farming community, everyone understands much more about soil health than in years past. More acres are in conservation or no-till systems than ever before and those farmers are seeing the benefits of a healthier soil. Many are taking the next step by planting cover crops and keeping their soil's natural cycles intact through the winter. Higher yields, lower production costs, increased water retention, weed suppression, improved tilth, nitrogen fixation and nutrient recycling are just a few benefits from growing a cover crop. American farmers are making a positive impact in their communities through land stewardship practices like planting cover crops. In this way, farmers are leading the way to protect our natural resources for future generations.

## Conventional Tillage



Conventional Tillage leaves less than 15% residue on the soil surface.

## Conservation Tillage



Conservation Tillage leaves at least 30% residue on the soil surface.

## No-Till



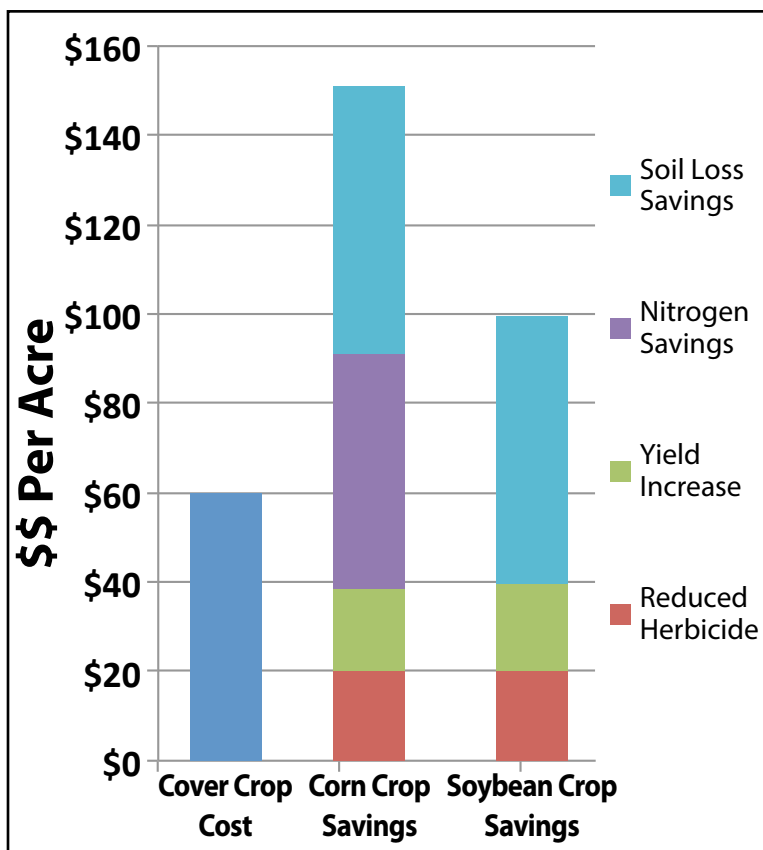
No-Till leaves the soil covered 100% of the time.

# COVER CROPS...

- Can supply organic nitrogen that can be used by the subsequent crop lowering the amount of purchased N needed and cutting production costs.
- Increase soil organic matter resulting in improved soil tilth which leads to increased water infiltration, less soil compaction and higher populations of beneficial soil organisms – all key components of maximizing cash crop yields.
- Reduce soil erosion losses from wind and water; conserving soil and protecting water and air quality.
- Reduce soil nutrient leaching by capturing and holding nitrogen, phosphorus and potassium. These nutrients can then be used by the future cash crop which helps protect the quality of surface and underground water.
- Act as a mulch to increase and extend soil moisture retention resulting in less crop moisture stress and higher yield potential.
- Reduce the population of unwanted weeds through soil shading and competition. It can also serve as a mulch for the next cash crop, suppressing weeds and reducing herbicide usage and expense.
- Break the disease and pest cycles.
- Can be used as both a cover crop and grazing forage which spreads costs and adds value to multiple farm enterprises.
- Benefit many wildlife species; promote beneficial insects and increase pollination activity

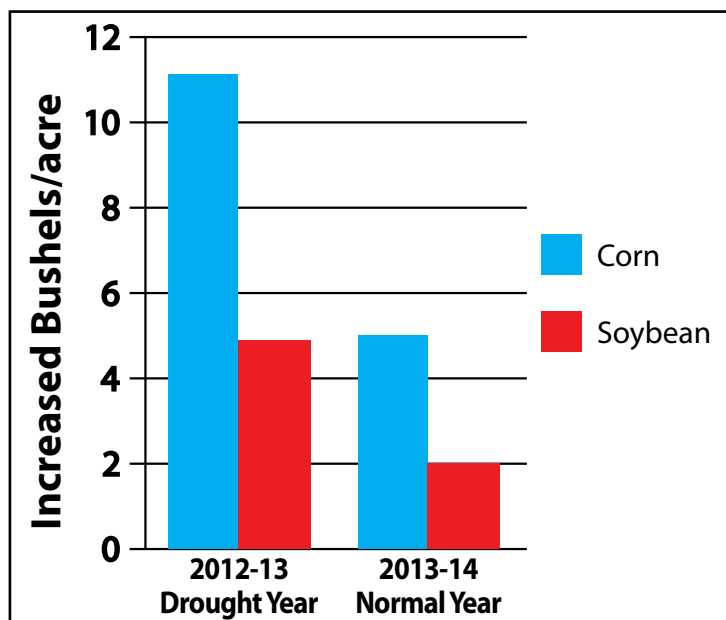
## THE COVER CROP EFFECT

### MONEY SAVED



### HIGHER YIELDS

Yields reported by farmers show increases in fields with cover crops. Drought years show even greater production gains when using a cover crop. Note normal year gains using a cover crop vs drought year gains when compared to not using a cover crop at all.



Adapted from - Report of the 2013-14 Cover Crop Survey. Conservation Technology Information Center and the North Central Region Sustainable Agriculture Research and Education Program.

# COVER CROP SPECIES PROFILE:



## Wintergrazer 70 Rye

Wintergrazer 70 was selected for wider leaves, increased tillering and greater forage production. Wintergrazer 70 is known for consistently high yields, uniform growth and excellent coverage.

### Nutrient Scavenger

Rye is the best cool-season cereal cover for scavenging unused soil N. Rye's quick-growing, fibrous root system can take up and hold as much as 100 lbs N/A until spring. A Georgia study estimated rye captured from 69 to 100 percent of the residual N after a corn crop. Rye also pulls potassium from deep in the soil profile to increase exchangeable K at the soil surface.

### Soil Cover/Erosion Control

Used in a conservation till system, rye protects the soil surface from rainfall impact, reduces surface runoff erosion and increases water infiltration rates and soil tilth.

### Weed Suppression

Wintergrazer 70 consistently produces 2-3 tons of dry matter per acre and its quick fall growth can outcompete and shade out many annual weeds. After mowing or chemical burndown, rye residue and allelochemicals (natural herbicides) can suppress annual weed populations 75 to 90%.

## AU Sunrise Crimson Clover

AU Sunrise is an improved reseeding type crimson clover variety newly released from the USDA Plant Materials Center and Auburn University. It is more winter hardy than Dixie and heads a week earlier than AU Robin and up to three weeks earlier than Dixie. AU Sunrise's fast establishment and early blooming makes it an excellent choice for cover crop use.

### Nitrogen Source

Crimson clover is a nutrient scavenger and a nitrogen producer. A crop of crimson clover will produce up to 125lbs of N and 5000lbs of dry matter.

### Weed Suppression

Crimson clover's fast fall growth and aggressive growth habit make it an excellent weed suppressor.



## ARG - 1 Annual Ryegrass

ARG-1 was selected for extended root growth to penetrate deeper into the soil profile to capture and hold excess nutrients. ARG-1 is a uniformly late maturing variety allowing for a longer termination window if spring conditions delay seeding of the summer crop. ARG-1 also makes excellent grazing, hay or silage for livestock with high digestibility, good crude protein levels and excellent palatability.

### Nutrient Scavenger

ARG-1 is a heavy nitrogen user and its deeper root system will capture large amounts of excess nitrogen unused by the previous cash crop and made available to the next cash crop.

### Soil Cover/Erosion Control

ARG-1's quick emergence and coverage protects the soil surface increasing soil tilth and water infiltration while reducing soil crusting and erosion.

### Weed Suppression

ARG-1's dense root system and aboveground biomass production help suppress early season weeds. On no-till ground, killed ARG-1 foliage makes excellent mulch that conserves moisture and suppresses spring weeds well into the growing season.

## Root Plow™ Radish

Root Plow™ Radish establishes quickly and produces a large taproot up to 3 feet long with feeder roots up to 6 feet deep. These deep roots capture excess nitrogen and other nutrients and bring them back to the surface to be released for cash crop use when the radish is winter-killed or sprayed-out.

### Soil Conditioner

Root Plow™ Radish's large taproot and many branch roots create many channels in the soil allowing for better water infiltration and helping to loosen compacted soil.

### Nutrient Scavenger

Root Plow™ Radish's deep roots and high biomass production have been shown to capture up to 170 lbs/acre of nitrogen in university studies.

### Soil Cover/Erosion Control

Root Plow™ Radish germinates quickly and produces a quick canopy controlling runoff and protecting the soil surface from rainfall impact.



## Red Clover

Red clover is a widely adapted and dependable cover crop that produces nitrogen, conditions soil and suppresses weeds.

### Nitrogen Source

Red clover captures up to 150 lbs of nitrogen per acre. In university studies, unfertilized corn preceded by a red clover cover crop, yielded the same as corn fertilized with 160 lbs of commercial nitrogen.

### Soil Conditioner

Red clover produces a taproot that can penetrate several feet down into the soil. Extensive branch roots fill the topsoil and aid in improving soil tilth.

# THE QUALITY OF OUR SEED MIXTURES:

These quality seed combinations are specifically designed to help you protect and improve your soil, reduce your input cost and ultimately increase your profitability. All of the legumes in our mixtures are pre-inoculated which saves you time and money while giving you maximum nitrogen fixation. Plus, all of our mixtures ensure uniformity across your field unlike commodity products that often yield inconsistent performance and questionable weed content.

## Cover Star™ All Purpose Mixture

This mixture contains Wintergrazer 70 rye and AU Sunrise crimson clover. Wintergrazer 70 can scavenge up to 100 lbs/A of nitrogen from the previous cash crop and AU Sunrise will also scavenge excess nutrients while producing up to 75 lbs/A of nitrogen. Together these two cover crops enrich the soil with nitrogen and other nutrients while increasing soil tilth for the next cash crop. Plant this product at ½” depth at a rate of 50 lbs/acre.



rye

crimson clover

## YieldUp™ Green Manure Mixture

This mixture contains Wintergrazer 70 Rye, AU Sunrise Crimson Clover and red clover. Our YieldUp mix gives you all the benefits of our Cover Star All Purpose Mixture plus the added boost of nitrogen from the top N producing red clover plant. The crimson and red clovers work overtime to add nitrogen to your soil, reducing input costs and providing superior yield results. YieldUp Cover Crop mix will fix up to 125 lbs per acre of free nitrogen. Plant at ½” depth at a rate of 50 lbs/acre.



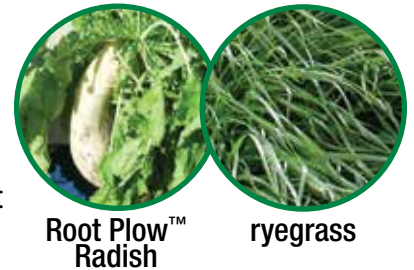
rye

crimson clover

red clover

## Pan Buster™ Soil Penetrating Mixture

This mixture contains Root Plow radish and Pennington ARG-1. Root Plow radish is a seriously deep rooted plant that breaks up hard packed soil and creates pores for water and air. It is mixed with our proprietary ryegrass, ARG-1, our best extended root variety to add even more root penetrating capability to this mix. ARG-1 has excellent winter hardiness and is a uniform and late maturing variety for a longer termination window. Plant this product at ½” depth at a rate of 12.5 lbs/acre.



Root Plow™  
Radish

ryegrass

## Custom Mix Opportunities

Pennington can custom blend virtually any seed mixture that you can request. Our seed mixtures also provide pre-inoculation on all of the legumes. This is critical in the early stages of the legume's life cycle providing more rapid and healthy growth. The added rizobia are also the main catalyst that fix nitrogen in the soil for the next crop.

Trust Pennington with your custom seed mixtures and we'll supply you with a product that is even better than you imagined!

# GENERAL ESTABLISHMENT AND MANAGEMENT GUIDELINES FOR COVER CROPS

- Follow recommended planting times for cool season annual forages for the specific geographic region.
- Lime the soil to a pH between 6.0 and 7.0 and follow soil test recommendations for nitrogen, phosphorus and potassium fertilizer needs. If practical, apply needed lime 3-4 months or more ahead of seeding the cover crop.
- Drill seed into a well-prepared, firm seedbed or use a no-till drill to seed fields included in a limited tillage production system. Special attention should be given to planting seed at the recommended depth. Planting too shallow or too deep can lead to a poor cover crop stand.
- If weeds become an issue requiring the use of a herbicide, carefully read and follow herbicide label guidelines for crop tolerance and crop rotation restrictions.
- If the cover crop is to be used for forage, grazing can begin when growth reaches 6-8 inches in height and roots are well anchored. Remove livestock when 3-4 inches of forage growth remains. Do not graze when fields are wet and soggy as it can result in excessive field compaction and plant damage.

# REASONS YOU SHOULD BUY PENNINGTON COVER CROP SEED:

- Increase yields and profits
- High quality seed
- Legumes are pre-innoculated and coated
- Uniform seed mixtures
- Formulated to meet specific agronomic needs
- Proprietary seed varieties within the mixtures
- Integrity in every bag from a company you can trust

Trust Pennington to provide you with the highest quality cover crop mixtures so you can help protect one of our most valuable resources, the soil, and become a leader in environmental stewardship.

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