For more information on all our SoilBuilder cover crop mixes, including assistance selecting cover crops appropriate for your specific situation, go to www.ArrowSeed.com or contact your local ARROW SEED dealer.

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www.ArrowSeed.com
Your soil is alive – filled with bacteria, fungi, protozoa, arthropods and more, all working to naturally cycle nutrients and develop soil organic matter, further enriching the soil and providing a perfect place for your crops to thrive.

This microbial activity is fed by roots of growing plants – and the longer these beneficial soil organisms are fed, the richer the soil becomes. This is where SoilBuilder™ cover crops from ARROW SEED shine – they lengthen your soil’s growing season and provide a mechanism by which nutrients are made available to plants. Through their decomposition, organic carbon and organic matter increase in the soil.

Soil carbon is the key; it’s tied directly to all measures of soil quality. If you build soil organic matter, you’ll see the difference in your soil’s appearance, texture, structure and performance. You’ll see reduced erosion, improved water handling capabilities and an ideal seedbed for the next crop.

“One percent organic matter contains about 1,200 pounds of nitrogen, 345 pounds of phosphorus and 150 pounds of sulfur per acre.”

Dr. Ray Ward
Ward Laboratories Inc.
We have made the decision to incorporate cover crops into our operation and have planted an ARROW SEED SoilBuilder mix for the past three years. The economic return has been beneficial and we have increased the acres planted each year.

Brad Quadhammer
Hildreth, Neb.
The right mix.

“ I have planted an ARROW SEED SoilBuilder mix for the past two years and we have been able to graze 35 pairs of cattle on 35 acres for seven weeks with rotational grazing. The corn crop on the following year showed a 10-15 bushel yield increase over conventional eco-fallow fields.”

Steve L’Heureux
Upland, Neb.

Three-year on-farm field test results (average)

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<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Yield (tons/acre)</td>
<td>3.98</td>
</tr>
<tr>
<td>Pounds/acre</td>
<td>7,923</td>
</tr>
<tr>
<td>Carbon (pounds/acre)</td>
<td>3,238</td>
</tr>
<tr>
<td>Nitrogen (pounds/acre)</td>
<td>158</td>
</tr>
<tr>
<td>Phosphorus (pounds/acre)</td>
<td>24</td>
</tr>
<tr>
<td>Potassium (pounds/acre)</td>
<td>176</td>
</tr>
<tr>
<td>Calcium (pounds/acre)</td>
<td>93</td>
</tr>
<tr>
<td>Zinc (pounds/acre)</td>
<td>0.28</td>
</tr>
<tr>
<td>C:N ratio</td>
<td>22</td>
</tr>
</tbody>
</table>

Note: Results are average over three years (2008-2010) and include 22 total tests from on-farm field plots on total above ground biomass.

Soilbuilder cover crops include a diverse mix of grass plants, brassicas and legumes that are known for establishing themselves quickly. The mix of seeds matters because cover crops perform and grow better when multiple plant types are included to create a balanced stand that features a variety of leaf types and root structures to enhance the soil building effort. A balanced stand creates the most efficient canopy structure to maximize snow retention, erosion control, soil coverage and act as a grazing resource. The goal is to provide the most benefits to the soil and to the next planted crop. Plus you’ll save time and effort by having ARROW SEED recommend the right mix for your situation and offer guidance in planting methods for your operation.
Grasses like sorghum, annual rye, winter rye, oats and triticale are great at establishing quickly and holding the soil in place, significantly reducing erosion from wind and rain. They improve soil structure, rapidly feed soil organisms and in the process add a significant amount of organic matter and total biomass.

Brassicas like turnips, rape and oilseed radishes help alleviate compaction by opening pockets in the soil and are ideal for nutrient recycling. They provide excellent forage for your livestock, pull soil nutrients up where roots from other crops can better access them and decompose quickly so their residue is available for the next crop.

Legumes like field peas, lentils, forage soybeans and hairy vetch fix nitrogen from the atmosphere so it is available for crops planted later – particularly corn. At the same time, legumes add biomass and help stabilize and improve the soil.

Together, grasses, brassicas and legumes improve the soil’s biological activities as they feed beneficial organisms. The result is an increase in the soil’s structure, reduced compaction, improved water holding capacity, improved water infiltration rates and a boost in nutrient exchange sites in the soil. They produce a tremendous amount of biomass for those who choose to graze cattle on their cover crop and generally add 50-100 pounds of nitrogen per acre while preventing leaching and other problems due to erosion.
Cover Crop Options

ARROW SEED also offers inoculants and seed treatments for all mixes to help ensure rapid growth and optimum nitrogen fixation.

*Note: Percentages in ARROW SEED mixes are determined by seed count.*

**Wheat Rotation**

**Burndown date: At planting**

<table>
<thead>
<tr>
<th>SoilBuilder mix includes:</th>
<th>Oats, Turnips, Radish, Cow Peas, Lentils, Forage Pea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grasses:</td>
<td>45 percent</td>
</tr>
<tr>
<td>Brassica:</td>
<td>40 percent</td>
</tr>
<tr>
<td>Legumes:</td>
<td>15 percent</td>
</tr>
<tr>
<td>Planting rate:</td>
<td>30-50 lb. per acre</td>
</tr>
</tbody>
</table>

This SoilBuilder Spring Mix is perfect for seeding following corn or soybeans and ahead of planting winter wheat. It has an ideal ratio of grasses, brassicas and legumes to keep the soil covered and intact and in good condition. It also stimulates microbial activity, conserves soil moisture and prepares the seed bed for fall wheat seeding.

This mix also works well in a corn rotation provided it can be seeded in very early spring and corn planting is later. A separate spring mix for a soybean rotation features grasses and brassicas that get beneficial soil organisms off to a good start and prep the soil ahead of soybean planting. Contact your ARROW SEED dealer for details.

The hairy vetch shown here has produced a great number of nodules, which fix nitrogen in the soil. Hairy vetch also establishes itself quickly, and, like other legumes, adds biomass to the soil.
Cover crops produce nearly four tons of biomass per acre on average, helping to capture moisture and improve the soil’s water-handling capabilities. This can protect and improve your soil’s water profile.

**Forage option:** Some growers seed up to 1.5 times the regular planting rate and allow livestock to graze the cover crop in the fall. The SoilBuilder Summer Mix provides excellent nutrition for livestock with solid protein and total digestible nutrient figures. Grazing does, however, reduce some of the soil benefits the cover crop provides. This is an option to all ARROW SEED SoilBuilder mixes.

An alternative SoilBuilder mix is also available for a soybean rotation. This mix includes a Summer Annual Forage, Oats, Turnips and Oilseed Radish that invigorate the soil while reducing erosion. Contact your ARROW SEED dealer for details on this mix option.
Quality seeds in SoilBuilder mixes germinate quickly and establish a solid cover crop that feed microbial activity in the soil. As the cover crop’s biomass decomposes, organic carbon and organic matter increase in the soil, improving the soil’s texture, structure and performance.

Late Summer Mixes

Corn Rotation

Plant prior to last irrigation or on silage ground or seed corn production fields; or drill immediately after soybean harvest

SoilBuilder mix includes: Annual Ryegrass, Oats, Turnips, Forage Rapeseed, Oilseed Radish, Austrian Winter Pea, Lentils, Forage Pea or Forage Soybean

Grasses: 65 percent
Brassicas: 25 percent
Legumes: 10 percent
Planting rate: 20-35 lb. per acre

This late summer mix greens up quick to get well established ahead of a hard freeze, which keeps beneficial organisms active into late fall. Additional biomass and root structure helps hold soil in place and capture moisture through the fall and into spring. Brassicas combat compaction while the mix as a whole encourages stover to break down more quickly. Legumes provide a helpful shot of nitrogen. This mix is typically drilled on silage ground or air seeded over mature corn prior to the final irrigation or on soybean ground prior to leaf drop or immediately after soybean harvest.

An 18-20 bushel per acre corn yield increase following a single cover crop planting on long-term quality, no-till ground was reported by Cronin Farms, Gettysburg, S.D. Plots were replicated six times on the farm.
Winter Annual Mixes Option for Corn Rotation

Burndown date: April 1 of following year or at planting

SoilBuilder mix includes: Winter Wheat, Oats, Triticale (or Annual Rye or Winter Rye), Turnips, Oilseed Radish, Austrian Winter Pea, Lentils, Common or Hairy Vetch

Grasses: 65 percent
Brassicas: 25 percent
Legumes: 10 percent
Planting rate: 20-35 lb. per acre

This late summer mix establishes itself quickly in the fall and greens up again in the spring to get beneficial soil organisms off to a quick start. Solid biomass production and a prolific root structure keep soil in place, while brassicas break up compaction. The mix as a whole creates channels corn roots will follow come spring. Legumes provide a boost of nitrogen, while the variety of vegetation captures moisture through the fall and into spring when the soil firms up quickly. This mix is typically drilled on silage ground or early harvested corn or air seeded over mature corn prior to the final irrigation or soybeans prior to leaf drop.

Ground Points

☞ The nearly four tons of biomass per acre on average cover crops provide capture and hold a great deal of snow over the winter – and shade the soil heading into winter. When combined with the improved water handling and holding capabilities of soil resulting from improved soil texture and structure, cover crops protect and can improve your soil’s water profile.

☞ Some producers utilize custom seeders who have the appropriate equipment to get cover crops planted – freeing up their time to complete harvest and other fall activities. ARROW SEED can help connect you to custom seeders if this option makes sense for your operation.

☞ Clean, quality seeds with high germination rates in mixes designed for your area establish themselves quickly. Hardy and healthy plants develop root structures rapidly, reducing compaction while providing greater total biomass.

☞ The value of increasing your soil’s organic matter has been proven across the region. Rising corn yields and adding pounds of beef to your herd are rewards for including a SoilBuilder mix on your farm.
1. Wheat Rotation (no-till fallow)

SoilBuilder mix includes:
- Oats, Turnips, Oil Seed
- Radish, Austrian Winter Pea, Lentils, Winter or Common Vetch

Grasses: 45 percent
Brassicas: 47 percent
Legumes: 8 percent

Planting rate: 25-35 lb. per acre

To prepare the planting bed for spring or winter wheat, consider this SoilBuilder Late Summer mix. A good mix of brassicas and legumes, this mix goes right to work breaking up compaction and creating beneficial channels in the soil to encourage water infiltration. It also breaks down quickly and encourages the establishment of microbes that also breakdown corn stover all while reducing wind and water erosion. This mix is typically drilled into corn stalks.
Soybean Rotation

Plant prior to leaf drop

SoilBuilder mix includes:

- Summer Annual Forage,
- Oats, winter wheat,
- Turnips, Oilseed Radish

Grasses: 75 percent
Brassicas: 25 percent
Planting rate: 20-35 lb. per acre

With our SoilBuilder Late Summer soybean rotation mix, you’ll get a high quality mix of grasses and brassicas that quickly establish themselves and build a deep, strong root base that helps break up compaction. Soil is held tightly in place to significantly reduce erosion, and the soil will better absorb and hold moisture through the fall and come spring. This mix breaks down quickly and gives a boost to microbes that do the same for corn stover. This mix is typically drilled on early harvested corn ground or air seeded prior to final irrigation.

Many cover crop mixes are ideal for grazing livestock and provide excellent nutrient value. ARROW SEED can help you determine which mix and planting rate will provide the best forage option for your situation.
ARROW SEED developed its SoilBuilder™ cover crop mixes to provide the most benefits to the soil and to the next crop in your rotation thanks to their ability to improve the soil’s structure while providing a boost in nutrients like nitrogen. We are big on performance and believe clean, quality seeds in mixes matched to the growing season establish themselves more quickly and perform better.

Our SoilBuilder cover crop mixes are rigorously examined at leading labs for noxious weeds to ensure they are free from those and other impurities found in “bin run” seed. Each variety in our mixes is tested for outstanding germination rates and combined they provide a tremendous boost in the water handling capabilities of your soil. The soil holds more water yet firms up faster than bare ground so it is more quickly ready for planting – all while reducing soil erosion.

Since it was founded in Nebraska in 1946, ARROW SEED has put a priority on seed quality and the science and know-how behind the products we offer. For SoilBuilder cover crops, our knowledge, experience and network of dealer locations are there to assist you beyond the SoilBuilder mix selection to ensure the success of your efforts to protect and improve your soil.

Good soil starts with good seed.