



KB SEED
SOLUTIONS
SEED FOR FUTURE GENERATIONS

COVER CROP GOALS

- 1. Sequester Nutrients**

Cover crops can scavenge and cycle nutrients from deep within the soil profile making them available in the root zone of subsequent crops, improving yields and reducing runoff.
- 2. Break Up Soil Compaction**

Deep roots break through compacted soil to create pore space, improving aeration, water movement and helping soil organisms flourish.
- 3. Create a Nitrogen Source**

Legumes produce additional nitrogen (N) by fixing atmospheric nitrogen in the soil.
- 4. Reduce Erosion**

Foliage buffers the soil from raindrops, protecting it from erosion, while a healthy root system holds soil in place.
- 5. Weed Control**

Cover crops create competition for winter annuals and other weeds by shading them out and preventing them from robbing valuable nutrients from cash crops.
- 6. Additional Forage**

Certain cover crop species have added benefit of providing a valuable forage source for livestock.
- 7. Rebuilds Soil Biology**

Cover crops feed soil biology. As they grow, roots extrude biology enhancing sugars. After termination they add organic matter and store carbon for years.
- 8. Provide Pest Control**

Some cover crops reduce nematode populations by causing premature egg hatching.
- 9. Increase Moisture Holding Capacity**

Growing biomass and organic matter reduce runoff and evaporation while increasing soil moisture.
- 10. Create Financial Value**

Cover crop benefits create the opportunity for better yield potential in cash crops, lower input costs and ultimately higher land values. Many states and counties offer cost-sharing initiatives for this important practice.

CONTACT US TODAY!

To find the KB Seed distributor nearest you, call 1-866-716-7333 or visit kbseed.com

KB SEED SOLUTIONS

SEED FOR FUTURE GENERATIONS

The seed source that is involved from production to delivery to your farm.

Fourth generation Oregon grass seed farmers Wayne Kizer and Nick Bowers know that decisions made today can impact your business for seasons and generations to come.



If you're thinking about planting a cover crop, consider this: KB Seed Solutions' products not only improve your soil, but can help improve your yield.

Nick and Wayne do more than provide you with seed. Their knowledge will help you integrate cover crops into your operation to make you more successful and profitable.

- **Proven Cover Crop Genetics**
- **Farmer-to-Farmer Integrity**
- **Knowledgeable Source**
- **Experienced Seed Growers**



Nick Bowers and Wayne Kizer



From Our Farm to Your Farm

KB Seed Solutions is located in the heart of the "Grass Seed Capital of the World" in Harrisburg, Oregon.



From farmer to farmer, KB Seed provides me with service, quality and integrity that I am looking for. Best of all, they support the conservation efforts that I strive for.

Mike Starkey
Brownsburg, Indiana



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WHY ANNUAL RYEGRASS AND NO-TILL?

Conventional tillage oxidizes soil organic matter and leaves the soil exposed and vulnerable to erosion and water runoff. Fuel and equipment costs are higher with conventional tillage systems.

Covering corn and soybean fields with cover crops for the winter is not new. However, annual ryegrass has properties which reduce the risk associated with other cover crops. After a year, positive soil changes are generally evident. After several years, expenses for nitrogen may be reduced. In dry conditions, annual ryegrass contributes to bigger crop harvests because its deep roots create channels that crop roots readily follow to moisture.

Annual Ryegrass creates a vast root system that improves the texture and the amount of organic matter in the soil structure. Access to deeper soil also allows crops to mine nutrients previously trapped beneath compacted layers.

Livestock manure disposal, a problem on many farms, can be an asset if applied to annual ryegrass. Annual ryegrass scavenges excess nitrogen (keeping it in the soil profile) which is then available for the next crop.



Annual ryegrass roots break through soil compaction layers to reach deep water and nutrients. It leaves improved soil structure and increased organic matter in its path.

“

We have been planting annual ryegrass for over ten years now. We farm mostly clay pan soils. The annual ryegrass root depth breaks through the clay. It has also been the best option for us to prevent erosion. Annual ryegrass works well planted into green, we have raised 80+ bushel soybeans using this method.

Charlie Cobb
Montgomery City, Missouri

”

Annual Ryegrass

Annual ryegrass is very versatile and one of the best all-around cover crop species. It is proven to improve yields while boosting the health and nutrient value of soil. **KB Royal** and **KB Supreme Annual Ryegrass** scavenge nitrogen and promote nutrient cycling, which translates into bigger harvests and better profits. They are easy to establish and can be seeded by drilling, broadcast or aerial seeding. These proven varieties can be added to mixes or used as a stand-alone cover crop.

- Winter hardiness
- Deep rooting; breaks up hard, compacted soil
- Improves soil health, organic matter and productivity
- Scavenges for available nitrogen, reducing the need for inputs
- May reduce soybean cyst nematode pressure (*research ongoing*)
- Qualifies for state and federal conservation incentives
- Excellent source of livestock forage



TRAITS	POOR	GOOD	VERY GOOD	EXCELLENT
Winter Hardiness				●
Nutrient Scavenging				●
Quick Growth			●	
Weed Suppression			●	
Erosion Control				●
Grazing/Forage				●
Nitrogen Source	●			
Soil Builder				●
Interseed				●

SEEDING APPLICATION	
Seeding Rate (Lbs/Ac)	Drilled: 10-15 Broadcast: 15-20 Aerial: 20-25
Seeding Depth	0-.5 inch
Min. Germ. Temp	40°
Seeds/Lb	162,000

“

KB Annual Ryegrass allows me to control erosion, break through compacted soil and increase water infiltration. These benefits along with the personal service are substantial to my operation.

Cameron Mills
Walton, Indiana

”

Available Only From KB Seed:

KB Royal
Annual Ryegrass

KB Supreme
Annual Ryegrass

Radish

With superior genetics and an amazingly aggressive brassica taproot, NitroRadish™ drills through compaction like it's not even there. This cover crop radish germinates and grows quickly; has a large, deep penetrating tap root; dies over the winter (in cold climates); decomposes quickly; has high nutrient content; and contains bio-active plant chemicals. It has the ability to recycle nutrients which will improve your soil quality and economic crop production.

- Improved soil tilth
- Proven deep taproot
- Recycle nutrients
- Good weed suppression
- Improved water infiltration



TRAITS	POOR	GOOD	VERY GOOD	EXCELLENT
Winter Hardiness	●			
Nutrient Scavenging	●			
Quick Growth	●			
Weed Suppression	●			
Erosion Control	●			
Grazing/Forage	●			
Nitrogen Source	●			
Soil Builder	●			
Interseed	●			

SEEDING APPLICATION	
Seeding Rate (Lbs/Ac)	Drilled: 3-6 Broadcast: 8-12 Aerial: 12-16
Seeding Depth	.25-.75 inch
Min. Germ. Temp	50°
Seeds/Lb	28,000 (average)

“

In these last five years I've tried lots of different cover crop mixes from lots of different seed companies. KB Royal Ryegrass and Nitro Radish quickly became two of my favorites. KB Royal handles any condition we put it in including standing water! Nitro Radish breaks up compaction, mines nutrients and emergence is always excellent.

Johnny Hunter
Parma, Missouri

”

Available From KB Seed:



Purple Top Turnips

This variation of turnip is great for putting nutrients back into the soil. The globe roots take about 55 days to reach maturity. Turnips should die in December. They may live until spring with a mild winter but are easy to kill.

- Easy spring kill
- Holds nutrients until spring
- Low odor
- Attracts beneficial insects



TRAITS	POOR	GOOD	VERY GOOD	EXCELLENT
Winter Hardiness	-----●-----			
Nutrient Scavenging	-----●-----			
Quick Growth	-----●-----			
Weed Suppression	-----●-----			
Erosion Control	●-----			
Grazing/Forage	-----●-----			
Nitrogen Source	●-----			
Soil Builder	●-----			
Interseed	-----●-----			

SEEDING APPLICATION	
Seeding Rate (Lbs/Ac)	Drilled: 3-5 Broadcast: 4-6 Aerial: 4-6
Seeding Depth	.25-.75 inch
Min. Germ. Temp	45°
Seeds/Lb	192,800

Rapeseed

Rapeseed is a brassica that compliments annual ryegrass. It is able to grow at relatively low temperatures. It has a coarse root system and differs from the fine root system of annual ryegrass and creates a small tuber about 1" with a 6-8" tap root. Rapeseed does well on a wide variety of well-drained soils.

- Captures nitrogen
- Large biomass
- Weed suppression
- Improves soil tilth
- Attracts beneficial insects



TRAITS	POOR	GOOD	VERY GOOD	EXCELLENT
Winter Hardiness	-----●-----			
Nutrient Scavenging	-----●-----			
Quick Growth	-----●-----			
Weed Suppression	-----●-----			
Erosion Control	-----●-----			
Grazing/Forage	-----●-----			
Nitrogen Source	●-----			
Soil Builder	●-----			
Interseed	-----●-----			

SEEDING APPLICATION	
Seeding Rate (Lbs/Ac)	Drilled: 4-6 Broadcast: 6-8 Aerial: 6-8
Seeding Depth	.25-.5 inch
Min. Germ. Temp	41°
Seeds/Lb	157,000

Crimson Clover

Crimson clover is a legume that has been traditionally used as a forage in the southern United States. In recent years, farmers have begun successfully using this rapidly growing winter annual as a cover crop in a variety of rotations including corn, soybeans, wheat, cotton, potatoes, snap beans and grain sorghum. Crimson clover is adapted to cool conditions and tolerates most soil types making it a versatile plant.



- Nitrogen fixation
- Improve soil quality
- Weed suppression
- Erosion control
- Attracts beneficial insects

TRAITS	POOR	GOOD	VERY GOOD	EXCELLENT
Winter Hardiness	●			
Nutrient Scavenging	●			
Quick Growth	●			
Weed Suppression	●			
Erosion Control	●			
Grazing/Forage	●			
Nitrogen Source	●			
Soil Builder	●			
Interseed	●			

SEEDING APPLICATION	
Seeding Rate (Lbs/Ac)	Drilled: 12-15 Broadcast: 15-18 Aerial: 15-18
Seeding Depth	.25-.5 inch
Min. Germ. Temp	42°
Seeds/Lb	149,800

Premium Hairy Vetch

Hairy vetch is a cool-season annual legume. It is a very beneficial cover crop option, providing weed control, fixing nitrogen, increasing organic content and improving soil tilth. Planting six weeks prior to a frost can increase its winter hardiness. Recent studies show hairy vetch can survive winters that decimate most other cover crop species. TNT Vetch is a high-performing variety specifically designed for cover crop purposes.

- Cold tolerant
- High producer of dry matter
- Drought tolerant
- Produces nitrogen



Available From KB Seed:



TRAITS	POOR	GOOD	VERY GOOD	EXCELLENT
Winter Hardiness	●			
Nutrient Scavenging	●			
Quick Growth	●			
Weed Suppression	●			
Erosion Control	●			
Grazing/Forage	●			
Nitrogen Source	●			
Soil Builder	●			
Interseed	●			

SEEDING APPLICATION	
Seeding Rate (Lbs/Ac)	Drilled: 15-15 Broadcast: 15-20 Aerial: 20-25
Seeding Depth	.5-1 inch
Min. Germ. Temp	60°
Seeds/Lb	20,000

Winter Peas

Winter peas have good winter hardiness and are highly palatable for livestock as forage. Winter peas provide good weed suppression, biomass and produce nitrogen. These peas can be planted in the fall and germinate quickly.



- Fast germination
- Weed suppression
- Cost effective
- Erosion control
- Attracts beneficial insects

TRAITS	POOR	GOOD	VERY GOOD	EXCELLENT
Winter Hardiness	-----●-----			
Nutrient Scavenging	-----●-----			
Quick Growth	-----●-----			
Weed Suppression	-----●-----			
Erosion Control	-----●-----			
Grazing/Forage	-----●-----			
Nitrogen Source	-----●-----			
Soil Builder	-----●-----			
Interseed	-----●-----			

SEEDING APPLICATION	
Seeding Rate (Lbs/Ac)	Drilled: 40-50 Broadcast: Not Rec. Aerial: Not Rec.
Seeding Depth	1-1.5 inch
Min. Germ. Temp	40°
Seeds/Lb	3,500

KB SA Blend

A new blend for those who want to plant an early cover crop. This mix will work excellent following wheat or other cash crops that are harvested in July.

The KB SA blend is a 14 way mix that includes legumes, grasses, cereals and broadleaf cover crop seeds. This blend will add diversity to your cover crop program, while also providing a large amount of organic matter. KB SA blend also provides an opportunity for grazing.



- Available in 2,000 lb. totes or 50# bags
- Legumes seed will be pre-inoculated
- Cost effective
- Attracts beneficial insects

TRAITS	POOR	GOOD	VERY GOOD	EXCELLENT
Winter Hardiness	●	-----		
Nutrient Scavenging	-----●-----			
Quick Growth	-----●-----			
Weed Suppression	-----●-----			
Erosion Control	-----●-----			
Grazing/Forage	-----●-----			
Nitrogen Source	-----●-----			
Soil Builder	-----●-----			
Interseed	●	-----		

SEEDING APPLICATION	
Seeding Rate (Lbs/Ac)	Drilled: 28-35 Broadcast: Not Rec. Aerial: Not Rec.
Seeding Depth	.75 -1.5 inch
Min. Germ. Temp	50°
Seeds/Lb	Not applicable

Phacelia

Phacelia tanacetifolia is gaining popularity as a cover crop and a pollinator habitat. This fast-growing annual wildflower aggressively out-competes weeds and absorbs excess nitrates and calcium in the ground. Phacelia has a prolific root system. Most of the roots are concentrated in the top 8"-12" of soil, vastly improving the structure and organic matter in tough soils. Phacelia also keeps beneficial insects working on your farm and contributes to nematode reduction.



Available From KB Seed:



TRAITS	POOR	GOOD	VERY GOOD	EXCELLENT
Winter Hardiness	●			
Nutrient Scavenging	●			
Quick Growth	●			
Weed Suppression	●			
Erosion Control	●			
Grazing/Forage	●			
Nitrogen Source	●			
Soil Builder	●			
Interseed	●			

SEEDING APPLICATION	
Seeding Rate (Lbs/Ac)	Drilled: 2-4 Broadcast: 3-6 Aerial: 6-10
Seeding Depth	.25-.75 inch
Min. Germ. Temp	60°
Seeds/Lb	225,000 (average)

SUGGESTED PLANTING WINDOW

Annual Ryegrass

1. August 15 - September 10
2. August 20 - September 20
3. August 20 - October 10
4. August 20 - October 25

Radish

1. August 1 - August 20
2. August 10 - September 1
3. August 15 - September 10
4. August 20 - September 30

Crimson Clover

1. August 15 - September 10
2. August 20 - September 20
3. August 20 - October 10
4. August 20 - October 25

Winter Peas

1. August 15 - September 10
2. August 20 - September 20
3. August 20 - October 10
4. August 20 - October 25

Purple Top Turnips

1. August 1 - September 1
2. August 5 - September 10
3. August 10 - September 20
4. August 20 - October 5

Rapeseed

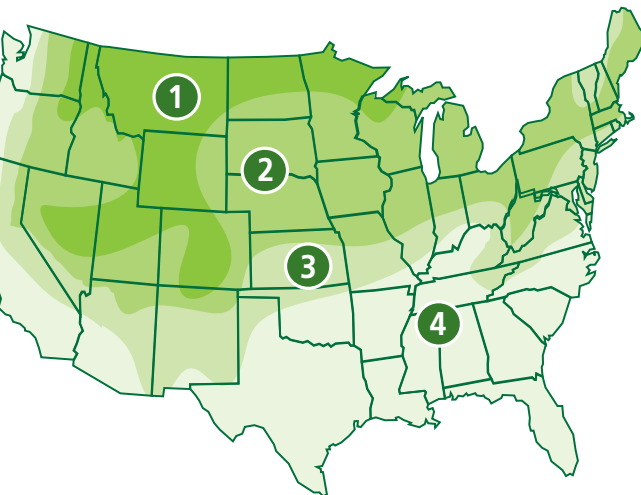
1. August 15 - September 10
2. August 20 - September 20
3. August 20 - October 10
4. August 20 - October 25

Hairy Vetch

1. August 15 - September 10
2. August 20 - September 20
3. August 20 - October 10
4. August 20 - October 25

KB SA Blend

1. July 15- Aug. 15
2. July 15- Sept. 1
3. July 15- September 15
4. July 15-September 30



Phacelia

1. July 1 - August 5
2. July 10 - August 15
3. July 15 - September 10
4. July 25 - October 10

**Suggested planting window may vary with weather and soil condition.*

Managing Annual Ryegrass as a Covercrop

Annual ryegrass is a popular cover crop in the Midwest. We'll help you understand the few changes in management practices you'll need to successfully integrate cover crops into your operation.

Seeding date – The ideal time to plant annual ryegrass is from the middle of August to the end of September. Seeding up to mid-October is possible but more weather dependent. Annual ryegrass will germinate in 7-10 days with sufficient soil moisture. Ideally, annual ryegrass needs 60 days of growth before a hard killing frost.

Seeding method and depth – The preferred method to seed annual ryegrass is with a no-till drill (main box works fine) about 1/4" to 3/8" deep. This provides optimal seed-to-soil contact. Other options include mixing seed with fertilizer and using an airflow or broadcasting with a fertilizer spinner. Running a fluffing harrow (like a Phillips or Phoenix) after the airflow or broadcasting will improve seed placement. Aerial seeding (airplane or high-boy sprayer with electric-motor spinner) into a standing crop is a popular option. However, in dry soil conditions or if seeding in October, it is highly recommended that a drill be used.

Seeding rate – Annual ryegrass is normally seeded at 12 lbs./ac. Increase the seeding rate to 25 lbs./ac. if aerially seeding or broadcasting. Increase rates as days get shorter and temperatures decrease.

Nitrogen – Nitrogen is most likely only needed if planting later or on low fertility soils. Apply 15-30 lbs./ac. of nitrogen (DAP and manure applications work well) to stimulate fall growth.

Expected growth – If properly seeded, one can expect to see 2-6" of top growth before a hard killing frost. Two-thirds of KB Seed ryegrass biomass is found below the surface in the form of roots. With 5" of top growth, there could be up to five feet or more in root growth in the spring. Snow cover in northern areas will help protect annual ryegrass from winterkill.

Burndown – A combination of calendar date, growth, temperature and soil moisture will determine when annual ryegrass should be sprayed with a burndown. A minimum daytime temperature in the 50s and nighttime temperature in the 40s is needed for successful translocation of glyphosate. Complete burndown may take three weeks if it occurs at a time when there is cool and cloudy weather. The warmer the temperature, the better the performance that can be expected with glyphosate.

Spraying should typically occur when the annual ryegrass is 6-12" tall. Flat fan nozzles should be used at 20-40 psi. Do not use flood jet nozzles or air induction nozzles. Water should be free of any clay particles (pond water).

Glyphosate may not control annual broadleaf cover crops if they are in a mix with annual ryegrass. When burning down annual broadleaf cover crops, it may be necessary to add 2,4-D, dicamba or a similar product to the grass herbicide for complete control. These herbicides may delay plant back times. Always read the pesticide label for more information.



Buffering and Conditioning Agents – Tests show that bringing the pH of water to 5.5 or below gets better results in the spring with glyphosate. Most herbicides, insecticides and fungicides perform best in slightly acidic water with a pH of 4.0 to 6.5.

Conditioning of water-softening agents reduce problems caused by hard water. Hard water minerals, especially calcium and magnesium ions, bind with active ingredients of some pesticides, which may decrease pesticide performance. Before using a buffer or conditioning agent, consider the specific pesticide requirements and test the water for pH. Always refer to the pesticide label.

MANAGEMENT TIPS

Visit our website for management guidelines on NitroRadish™, crimson clover, turnips and winter peas:

kbseed.com

Or talk to someone who knows:

866-716-7333

The use of annual ryegrass requires good management and timing.

For detailed application rates and management tips, visit www.kbseed.com.



“ I always seek out companies who can provide valuable advice, honest recommendations and quality products. I came across KB Seed this spring looking for help on several projects and they very quickly became my new resource and supplier. ”

Jack Hardwick
Virginia, Illinois



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