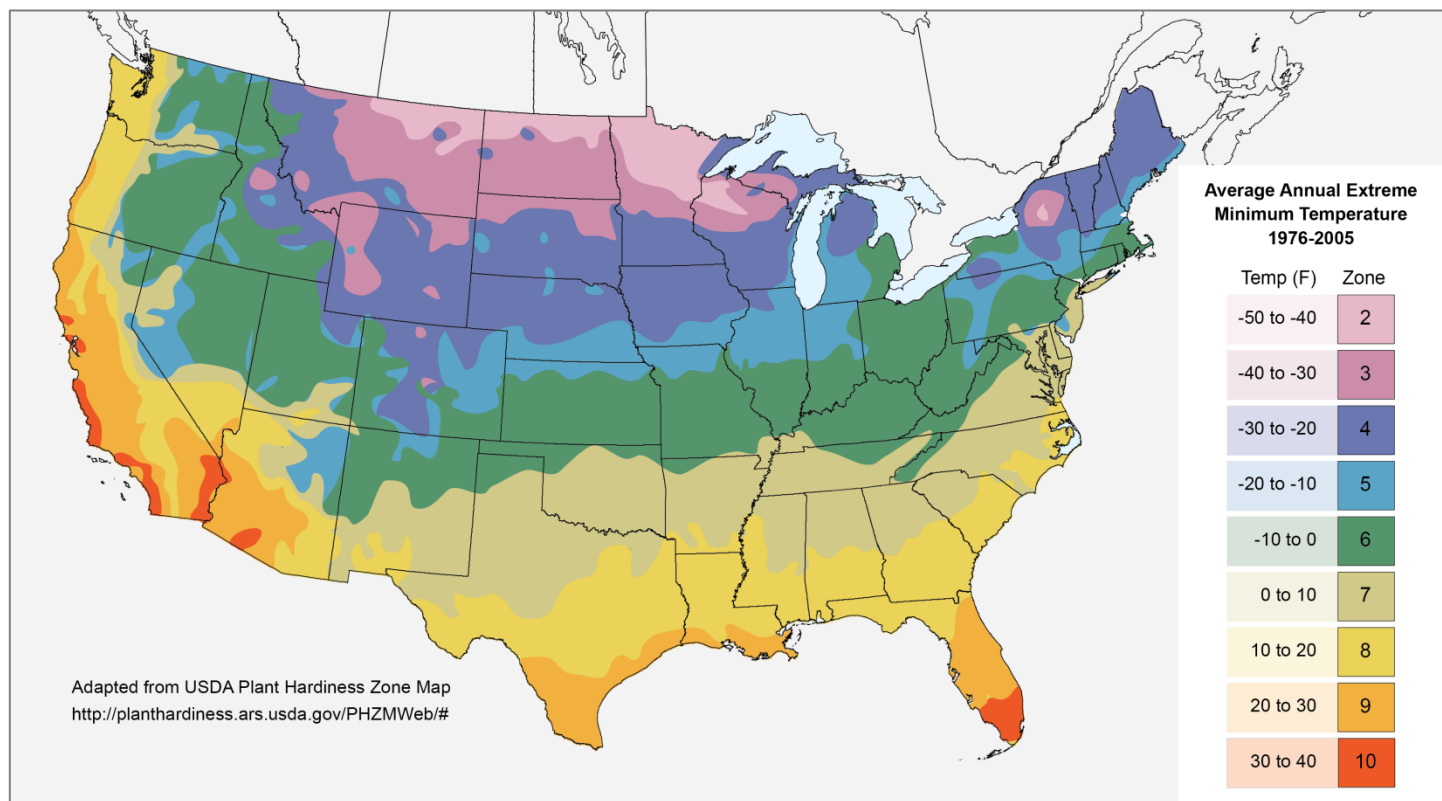


Winter Cover Crops for Corn and Soybean Cropping Systems

Select Winter Cover Crops based on Geography of Adaptation and Desired Benefits

- Interest in adding winter cover crops to corn and soybean cropping systems has increased as the ability of cover crops to improve soil quality and crop production efficiency has become more widely recognized (Heggenstaller, 2013).
- Cover crop suitability varies by geographic region. In general, minimum annual temperature is a good predictor of how well adapted a cover crop is to a specific location.
- Cover crop capabilities and management requirements vary by species. The most commonly used cover crops include species of grasses, legumes and brassicas.
- This article provides an overview of the geographic adaptability and benefits of winter cover crops commonly used in corn and soybean cropping systems.



Geographic Adaptation

- USDA plant hardiness zones can be used as a guideline to help select the best adapted cover crop for specific locations.
- The USDA plant hardiness zone map is based on the average annual minimum winter temperature, divided into 10-degree F zones.
- Table 1 summarizes the adaptability of common cover crop species by plant hardiness zone .



Cover Crop Benefits

- Cover crop benefits vary among species. Most winter cover crops compatible with corn and soybean cropping systems fall into one of three broad groups (Table 1):
 - Grasses** are versatile cover crops that establish quickly in the fall and are generally well suited for scavenging nitrogen, preventing erosion, building soil organic matter, suppressing weeds and providing additional spring forage.
 - Legumes** can add valuable nitrogen to the soil for a following corn crop, but they establish more slowly than grasses and are less well suited for protecting and building soil.
 - Brassicas** provide many of the same benefits as grasses, but break down more rapidly in the spring. Some brassicas also produce a large taproot that helps to remediate soil compaction.



Table 1. Geographic adaptation and benefit ratings for common cover crop species used in corn and soybean cropping systems. Adapted from Clark (2012) and Midwest Cover Crop Council (2012).

Cover Crop		Plant Hardiness Zone									Benefits							
		2	3	4	5	6	7	8	9	10	Scavenge Nitrogen	Prevent Erosion	Build OM	Break Compaction	Nitrogen Source	Quick Growth	Suppress Weeds	Provide Forage
Grasses	Annual ryegrass										****	***	****	****	-	**	**	**
	Winter barley										***	***	***	**	-	***	***	***
	Oats										***	**	**	*	-	****	***	***
	Winter rye										****	****	****	***	-	***	****	****
	Winter triticale										***	****	***	**	-	***	***	****
	Winter wheat										***	****	***	**	-	***	***	****
Legumes	Berseem clover										**	**	***	*	****	**	**	***
	Crimson clover										**	**	***	**	****	*	**	***
	Winter pea										*	**	**	*	***	***	*	**
	Hairy vetch										*	**	**	**	****	**	***	*
	Winter lentil										*	**	**	*	***	***	*	**
	Red clover										**	**	***	**	****	*	***	***
	Sunn hemp										***	***	****	**	****	***	***	-
Brassicas	Winter canola										****	***	***	**	-	**	***	**
	Forage turnip										***	***	**	***	-	**	***	***
	Mustards										***	***	**	**	-	***	***	*
	Radish										****	***	***	****	-	**	****	**



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