

KENTUCKY COVER CROP GUIDANCE

December 2015

Table 1. Species, seeding dates, and seeding rates for Winter Cover Crops (340) in rotations of annual crops. Use the heavier seeding rates when broadcast seeding or when seeding conditions are not ideal or outside the preferred seeding dates. All seeding recommendations are for pure live seed (PLS)

ID #	PLANT SPECIES	PREFERRED SEEDING DATES (Month/Day)	SEEDING RATE (lbs./Ac.)	REMARKS
1	Cereal Rye	8/15 – 11/1	50 - 75	Rye is more tolerant than wheat to herbicide carryover. Due to a potential allelopathic effect, avoid using wheat or rye for a temporary cover when planning native grasses as the permanent cover. It should be noted that oats may winter kill in Kentucky.
2	Wheat	10/10 – 11/1	90	
3	Oats	9/15 – 10/15 3/1 – 4/1	64 - 90	
4	Aroostook Rye	8/15 – 11/15	112	Will germinate at colder temperature. Use for late seeded cover crops. Faster germination and more canopy at cooler temperatures than wheat, rye, or oats. Limited availability.
5	Annual Ryegrass	8/15 – 10/1	18 - 25	Due to its potential to become a weed problem in Kentucky, only use this cover as a temporary cover construction practices or to aid permanent cover establishment. Do not use before native grasses.
6	Cereal Rye	East of I-65	35	Soil Quality Cover Crop recommended for the entire state of KY. For maximum nitrogen fixation, cover crop mixture should not be killed before April 15 th West of I-65 or April 30 th East of I-65.
	Crimson Clover	8/15 – 9/15	10	
	Red Clover	West of I-65	8	
	*Daikon Radish	9/1 – 9/30	1.5	
7	Cereal Rye	East of I-65	35	Soil Quality Cover Crop recommended for the entire state of KY. For maximum nitrogen fixation, cover crop mixture should not be killed before April 15 th West of I-65 or April 30 th East of I-65.
	Austrian Winter Pea	8/15 – 9/15	28	
	Crimson Clover	West of I-65	10	
	*Daikon Radish	9/1 – 9/30	1.5	
8	Cereal Rye	East of I-65	35	Soil Quality Cover Crop recommended for the entire state of KY. For maximum nitrogen fixation, cover crop mixture should not be killed before April 15 th West of I-65 or April 30 th East of I-65.
	Crimson Clover	8/15 – 9/15	10	
	Hairy Vetch	West of I-65	12	
	*Daikon Radish	9/1 – 9/30	1.5	
9	Cereal Rye	East of I-65	35	Soil Quality Cover Crop recommended for the entire state of KY. For maximum nitrogen fixation, cover crop mixture should not be killed before April 15 th West of I-65 or April 30 th East of I-65.
	Red Clover	8/15 – 9/15	8	
	Austrian Winter Pea	West of I-65	28	
	*Daikon Radish	9/1 – 9/30	1.5	
10	Cereal Rye	East of I-65	35	Soil Quality Cover Crop recommended for the entire state of KY. For maximum nitrogen fixation, cover crop mixture should not be killed before April 15 th West of I-65 or April 30 th East of I-65.
	Hairy Vetch	8/15 – 9/15	12	
	Austrian Winter Pea	West of I-65	28	
	*Daikon Radish	9/1 – 9/30	1.5	
11	Cereal Rye	East of I-65	35	Soil Quality Cover Crop recommended for the entire state of KY. For maximum nitrogen fixation, cover crop mixture should not be killed before April 15 th West of I-65 or April 30 th East of I-65.
	Hairy Vetch	8/15 – 9/15	12	
	Red Clover	West of I-65	8	
	*Daikon Radish	9/1 – 9/30	1.5	

*In situations where crop field does not have a compaction issue Daikon Radish can be removed from the cover crop mixture and seeding date can be extended to October 15th.

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12	Cereal Rye Daikon Radish	8/15 – 9/30	50 – 75 2 - 5	Effective cover crop mixture to sequester fall N left in the soil from cash crop production. Early sowing of cover crop mixture will insure better establishment of daikon radish and better N sequestration.
13	Hairy Vetch	8/1 – 9/10	20 - 30	Hard seeds may germinate later and pose a problem in wheat or soybeans. May also be used with tobacco.
14	Tall Fescue or Orchard grass	2/1 – 4/15 & 8/20 – 9/30	10 - 15 10 - 15	These grasses may be seeded with red clover, alsike clover, or ladino clover as indicated below. Use orchard grass over fescue when wildlife is a concern.
15	Red Clover or Alsike Clover or Ladino Clover	2/1 – 4/15 & 8/1 – 9/10	8 - 12 4 - 6 1 - 3	These legumes should be included in a mix with fescue or orchard grass. Inoculate the legume seeds with proper inoculant.
16	Crimson Clover	8/1 – 10/15	20 - 30	Winter annual legume. Good canopy. Not suited to poorly drained soils. Will produce more forage at lower temperatures than other clovers. Not as winter hardy as other cover crop options.
17	Austrian Winter Pea	8/1 – 10/15	48	Winter annual legume with wildlife benefits. High Nitrogen Fixation/High Biomass crop. Not as winter hardy other cover crop options.
18	Cereal Rye Crimson Clover	8/15 – 10/15	35 20	This cover crop mixture is designed to be sown in late summer/early fall to fix nitrogen naturally in the soil system for the following cash crop while controlling erosion.
19	Cereal Rye Red Clover	8/15 – 9/15	35 10	This cover crop mixture is designed to be sown in late summer to fix nitrogen naturally in the soil system for the following cash crop while controlling erosion.
20	Cereal Rye Austrian Winter Pea	8/15 – 10/15	35 40	This cover crop mixture is designed to be sown in late summer/early fall to fix nitrogen naturally in the soil system for the following cash crop while controlling erosion.
21	Cereal Rye Hairy Vetch	8/15 – 9/15	35 20	This cover crop mixture is designed to be sown in late summer to fix nitrogen naturally in the soil system for the following cash crop while controlling erosion.

Winter Green Manure Cover Crop Mixture

22	Cereal Rye	8/15 – 10/1	40	Primarily for high biomass production and high nitrogen production. Care should be taken to kill vetch prior to seed maturation in the spring of the year to avoid volunteer vetch growth in the future. When grown during the normal growing season (i.e. planted according to the dates recommended) the biomass should be rolled down in the spring and no-till planted through with a cash crop to receive maximum benefits from this cover.
	Winter Peas		30	
	Hairy Vetch		10	
	Crimson Clover		10	

NOTE: When aerial sowing cover crop (or cover crop mixtures) increase seeding rate by 25% and insure aerial seeding of cover crop is performed before leaf drop of cash crop.

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Table 2. Species, seeding dates, and seeding rates for Summer Cover Crops(340).

Use heavier seeding rates when seedbed or seeding conditions are not ideal or when outside the preferred seeding dates. If aerial seeding, sow before cash crop leaf fall and increase seeding rate by 25%. Note: ALL PLANT SPECIES LISTED IN BELOW TABLES SHOULD BE SOWN AS A COMPLETE MIXTURE. All seeding recommendations are for pure live seed (PLS).

Summer Annual Cover Crop Mixture Option #1

PLANT SPECIES	PREFERRED SEEDING DATES (Month/Day)	SEEDING RATE (lbs/Ac)	REMARKS
Pearl Millet	6/1 – 6/15	1	Summer annual cover crop mixtures are excellent for increasing diversity in the soil microbial food web.
Proso Millet		2	
Sudan		4	
Soybean		15	If any species in the summer annual cover crop mixture is already being grown in the existing crop rotation it may be deleted from the summer annual cover crop mixture with a corresponding increase in another like kind species. For example: Delete soybeans due to rotation already containing soybeans- a corresponding increase in another legume should be made.
Cowpea		20	
Sunflower		1	
Radish		1	
Corn		1	

NOTE: No-till drill is the preferred method of seeding.

-Other species that could be added into mixture include: Phacelia (1 lb/ac), Sunn Hemp (5 lbs/ac), etc.

-When aerial sowing cover crop (or cover crop mixtures) increase seeding rate by 25% and insure aerial seeding of cover crop is performed before leaf drop of cash crop.

Summer Annual Cover Crop Mixture Option #2

PLANT SPECIES	PREFERRED SEEDING DATES (Month/Day)	SEEDING RATE (lbs/Ac)	REMARKS
Oats	6/1 – 6/15	10	Summer annual cover crop mixtures are excellent for increasing diversity in the soil microbial food web.
Austrian Winter Pea		5	
Cowpea		3	If any species in the summer annual cover crop mixture is already being grown in the existing crop rotation it may be deleted from the summer annual cover crop mixture with a corresponding increase in another like kind species. For example: Delete soybeans due to rotation already containing soybeans- a corresponding increase in another legume should be made.
Pearl Millet		3	
Sunn Hemp		2	
Ethiopian Cabbage		1	
Radish		1	

NOTE: No-till drill is the preferred method of seeding.

-Other species that could be added into mixture include: Phacelia (1 lb/ac), Berseem Clover (5 lbs/ac), etc.

-When aerial sowing cover crop (or cover crop mixtures) increase seeding rate by 25% and insure aerial seeding of cover crop is performed before leaf drop of cash crop.

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Summer Green Manure Cover Crop Mixture, Option #3

PLANT SPECIES	PREFERRED SEEDING DATES (Month/Day)	SEEDING RATE (lbs./Ac.)	REMARKS
Bell Beans	3/1 – 4/15	35	Primarily for high biomass production and high nitrogen production. Care should be taken to kill vetch prior to seed maturation to avoid volunteer vetch growth in the future.
Magnus Peas		20	When grown during the normal growing season (i.e. planted according to the dates recommended) the biomass should be rolled down and no-till planted through with a fall cereal cover crop to receive maximum benefits from this summer annual cover crop mixture.
Hairy Vetch		25	
Oats or Cereal Rye		10	Terminate September 1-30 with a winter cover crop sown no later than 10/15. If cover crop is grazed only take 50% of biomass and leave 50% of biomass on the soil surface to increase soil health and feed soil microbial food web.

Single Species Summer Annual Cover Crops

PLANT SPECIES	PREFERRED SEEDING DATES (Month/Day)	SEEDING RATE (lbs./Ac.)	REMARKS
Buckwheat	7/1 – 7/30	30 - 60	Excellent potential for summer biomass production.
Sudangrass and Sorghum/Sudan Hybrids	5/10 - 8/1	20 - 40	Excellent potential for summer biomass production and weed suppression. Potential for prussic acid problems in livestock.
Pearl Millet	5/1 – 8/1	15 – 25 (broadcast)	Excellent potential for summer biomass production and weed suppression. Potential for prussic acid problems in livestock.
Proso Millet	5/1 – 8/1	20 - 30	Excellent potential for summer biomass production and weed suppression.
Cowpeas	5/1 - 6/30	60 - 120	Inoculate, short term summer legume. Good nitrogen fixation cover.

Organic Guidance

- Depending on the crops grown in an organic system, any of the cover crops listed in this document above could work in an organic system.
- If weed suppression is the goal then single species summer or winter grass species should be utilized.
- Producers would choose the best cover crop for their system based on guidance given by their organic planner or information from their organic plan.
- Species can be substituted based on organic seed availability.