USDA United States Department of Agriculture

CONSERVATION ENHANCEMENT ACTIVITY

CONSERVATION STEWARDSHIP PROGRAM

E328M

Diversify crop rotation with canola or sunflower to provide benefits to pollinators

Conservation Practice 328: Conservation Cropping System

APPLICABLE LAND USE: Crop (Annual & Mixed)

RESOURCE CONCERN: Animals

ENHANCEMENT LIFE SPAN: 1 year

Enhancement Description

Diversify existing crop rotation by adding pollinator friendly canola or sunflower crops into the rotation. The crop rotation shall include a minimum of three different crops. Each year, the pollinator friendly crop will be planted on a minimum of 5% of cropland acres contained within the agricultural operation. Use of insecticides compliant with grower industry best management practice is allowed only during pre-bloom and bloom of canola or sunflower.

Criteria

- Crops will be grown in a planned sequence and shall include a minimum of three different crops.
- The crop rotation must include at least one year of canola or sunflower. Other pollinator friendly crops may be included. For these criteria, a pollinator friendly cover crop is considered a different crop. A pollinator friendly crop is defined as a crop, planted for harvest or as a cover crop, which provides nectar for pollinators and other beneficial insects. Examples of pollinator friendly crops are canola, sunflowers, clovers, and borage. To meet the purpose and definition of a pollinator friendly crop, these "flowering" crops must be allowed to bloom prior to harvest or termination. **<REFER TO STATE SPECIFIC LIST OF POLLINATOR FRIENDLY CROPS>**

- Each year the enhancement is planned, the pollinator friendly crop will be planted on a minimum of 5% of cropland acres contained within the agricultural operation. Plan/contract the actual acres planted to the pollinator friendly crop.
- Where applicable, plan suitable crop substitutions when the planned crop cannot be planted due to weather, soil conditions, or other local situations.
- Foliar systemic insecticides may not be applied to the pollinator friendly crop.
- Insecticides and fungicides applied during crop pre-bloom and bloom period of the canola or sunflower crop must be mitigated through integrated pest management and must follow industry best management practices.
    - Apply pesticides only when economic thresholds are met.
    - Apply pesticides at night or within two hours of sunset as this is when bees are least active.
    - Follow best practices for minimizing drift:
        - Use a low-drift nozzle, calibrate spray equipment, and use medium-to-coarse droplet size if possible.
        - Install cones or shrouds on field sprayers to reduce off- field movement.
        - When spraying fields, consider spot spraying or only applying pesticides to infested areas.
    - Select crop pest products with a residual activity of less than 8 hours.
    - Improve foraging areas for bees and other pollinators. Where possible, include flowering plants in non-crop areas. Avoid pesticide drift onto non-crop areas that include floral resources. Leave areas that include these resources intact whenever possible.

References

National Sunflower Association of Canada. Sunflower Production Guide. http://www.canadasunflower.com/production/sunflower-production-guide/

U. S. Canola Association. 2019. Best management Practices (BMPS) for Pollinator Protection in Canola Fields. https://www.uscanola.com/wp-content/uploads/2019/07/HBHC_Canola_030119.pdf

CONSERVATION STEWARDSHIP PROGRAM

Documentation and Implementation Requirements

Participant will:

- ☐ Prior to implementation, provide NRCS with the current and planned crop rotation for all cropland acres on the operation. **<REFER TO STATE SPECIFIC LIST OF POLLINATOR FRIENDLY CROPS>**
- ☐ Prior to implementation, as needed, NRCS can provide technical assistance in selecting pollinator crops for the crop rotation or substitute species that would meet the criteria of the enhancement.
- ☐ Prior to implementation, provide maps for review by NRCS of the planned crop rotation, including areas which will include the pollinator friendly crops. Each year the enhancement is planned, at least 5% of the cropland acres on the operation must be planted to a pollinator friendly crop.

Current Management Rotation (complete table for each rotation)

Field	Current Crops (in sequence)	Planting Date	Harvest Date

Planned Management Rotation including Pollinator Friendly Crops (complete table for each rotation)

Field	Planned Crops (in sequence)	Planting Date	Harvest Date	Acres in rotation

☐ During implementation, maintain records of any pesticide applications to canola, sunflower or pollinator friendly crops, including timing, material/product, application rate, and crop stage.

Field	Crop	Insecticide Applied	Application Date	Application Rate	Crop Stage

☐ During implementation, notify NRCS of any planned changes in crop rotation, pesticide applications, or management to verify the planned system meets the enhancement criteria.

☐ After implementation, if changes were made, complete the tables above to document the applied crop rotation for the contract period and provide to NRCS for review.

☐ After implementation, provide insecticide application records to NRCS for review to verify implementation meets the enhancement criteria.

NRCS will:

☐ As needed, provide technical assistance in selecting pollinator crops for the crop rotation or substitute species that would meet the criteria of the enhancement.

☐ As needed, provide additional assistance to the participant as requested.

☐ Prior to implementation, verify the crop rotation meets the criteria of the enhancement. *Plan/ contract the actual acres planted to canola or sunflower.*

☐ During implementation, evaluate any planned changes in crop rotation, pesticide applications, or management to verify the new system meets the enhancement criteria.

- ☐ After implementation, if there were any changes to planned rotation or management evaluate the applied crop rotation using information provided from the participant to verify the applied rotation meets the enhancement criteria.
- ☐ After implementation, review pesticide application records to verify implementation meets the enhancement criteria.

NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

Participant Name _____Contract Number_____

Total Amount Applied _____ Fiscal Year Completed _____

_____ _____

NRCS Technical Adequacy Signature Date

ALABAMA – E328M Diversify Crop Rotation with Canola or Sunflower to Provide Benefit to Pollinators

-The crop rotation shall include a minimum of three different crops with at least one year of canola or sunflower.
-The existing rotation must be improved by the addition of pollinator friendly crops not currently grown.
-Only the acres planted to the pollinator friendly crop shall be contracted for payment.
-The pollinator friendly crop will be planted on a minimum of 5% of the cropland acres.
-Complete the tables in the national jobsheet regarding the current and planned rotation.
-Complete the tables in the national jobsheet regarding records of insecticide applications to the pollinator friendly crop.
-All pollinator friendly crops must be allowed to complete flowering before termination.
-Foliar systemic insecticides may not be applied to the pollinator friendly crop.
-Refer to the attached list for approved pollinator crops for Alabama for additional crops in the rotation. Seed for pollinator crops must not be treated with systemic insecticides. Documentation of non-treated seeds must be available. Contact the state agronomist regarding crops not listed**.**

Note that seeds coated with insecticides would be prohibited for this practice.						
Crop	**Scientific name**	**Primary Use**	**Additional Use**	**Notes**	**Sources (see below for details)**	
Alfalfa	*Medicago sativa*	harvestable	cover crop, wildlife		NASS, Smith	
Basil	*Ocimum basilicum*	harvestable				
Bean, fava or bell	*Vicia faba*	harvestable				
Bean, lablab hyacinth	*Lablab purpureus*	harvestable	harvestable		Smith	
Bean, lima	*Phaseolus lunatus*	harvestable			NASS	
Bean, snap (bush)	*Phaseolus vulgaris*	harvestable			NASS	
Bean, snap (pole)	*Phaseolus coccineus*	harvestable			NASS	
Bean, velvet	*Mucuna pruriens*	harvestable			Nichols	
Borage	*Borago officinalis*	harvestable				
Buckwheat	*Fagopyrum esculentum*	harvestable	cover crop, wildlife		Nichols , Smith	
Canola	*Brassica napus*	harvestable				
Chickpea	*Cicer arietinum*	harvestable			NASS	
Chicory	*Cichorium intybus*	cover crop	wildlife			
Cilantro	*Coriandrum sativum*	harvestable				
Clover, alsike	*Trifolium hybridum*	cover crop				
Clover, alyce	*Alysicarpus vaginalis*	cover crop	cover crop		Smith	
Clover, arrowleaf	*Trifolium vesiculosum*	cover crop	pasture legume, wildlife		Surrency, Smith	
Clover, berseem	*Trifolium alexandrinum*	cover crop				
Clover, crimson	*Trifolium incarnatum*	cover crop			AL Extn (legume cover crops), Smith	
Clover, kura	*Trifolium ambiguum*	cover crop				
Clover, red	*Trifolium pratense*	cover crop	wildlife		Smith	
Clover, rose	*Trifolium hirtum*	cover crop				
Clover, strawberry	*Trifolium fragiferum*	cover crop				

Clover, subterranean	*Trifolium subterraneum*	cover crop	wildlife		Smith	
Clover, white	*Trifolium repens*	cover crop	wildlife		Smith	
Collards	*Brassica oleracea* var. *viridis*	cover crop	harvestable for greens	only if allowed to flower	NASS	
Cucumber	*Cucumis sativus*	harvestable				
Cut flowers (e.g. cosmos, zinnias)	(various)	harvestable			NASS	
Daikon	*Raphanus sativus* var. *Longipi*	cover crop	harvestable	only if allowed to flower	NASS	
Dill	*Anethum graveolens*	harvestable				
Eggplant	*Solanum melongena*	harvestable			NASS	
Fennel	*Foeniculum vulgare*	harvestable				
Flax	*Linum usitatissimum*	cover crop				
Garlic	*Allium sativum*	harvestable				
Kale	*Brassica oleracea* var. *sabellic*	cover crop	harvestable for greens	only if allowed to flower	NASS, Smith	
Lentil	*Lens culinaris*	harvestable				
Lupine, Armex	*Lupinus elegans*	cover crop			Surrency	
Lupine, sweet blue	*Lupinus angustifolius*	cover crop	wildlife		Nichols, Smith, Clark	
Lupine, white	*Lupinus albus*	cover crop		AU HOMER cultivar released	Nichols, Smith, Clark	
Meadowfoam	*Limnanthes alba*	cover crop				
Melon, cantaloupe or muskmelon	*Cucumis melo* var. *cantalupen*	harvestable			NASS	
Melon, honeydew	*Cucumis melo* 'Honey Dew'	harvestable				
Milkvetch	*Astragalus* spp.	cover crop				
Mustard greens	*Brassica juncea*	cover crop	harvestable for greens	only if allowed to flower	NASS, Nichols	
Okra	*Abelmoschus esculentus*	harvestable			NASS	
Parsley	*Could harvest, then let flower.*	harvestable			NASS	
Partridge Pea	*Chamaecrista fasciculata*	cover crop				
Partridge Pea, small	*Chamaecrista nictitans*	cover crop				

Pea, Caley	*Lathyrus hirsutus*	harvestable	wildlife		Surrency, Smith	
Pea, Austrian winter	*Pisum arvense*	cover crop	wildlife		AL Extn (legume cover crops), Smith	
Pea, green, sugar, or snow	*Pisum sativum*	harvestable			NASS	
Pea, southern (cowpeas), blackeyed, purple hull, crowder, etc.	*Vigna unguiculata*	harvestable			NASS, AL Extn (legume cover crops), Nichols, Smith	
Peppers, Bell, chile, pimientos, etc.	*Capsicum* spp.	harvestable			NASS	
Pumpkin	*Cucurbita pepo*	harvestable			NASS	
Radish, oilseed/tillage	*Raphanus sativus*	cover crop			Nichols	
Safflower	*Carthamus tinctorius*	harvestable				
Sanfoin	*Onobrychis viciifolia*	cover crop				
Sesame	*Sesamum orientale*	harvestable	cover crop, wildlife		Smith	
Squash, summer	*Cucurbita pepo*	harvestable			NASS	
Squash, winter	*Cucurbita maxima* [1]	harvestable			NASS	
Strawberry	*Fragaria × ananassa*	harvestable			NASS	
Sunflower	*Helianthus annuus*	harvestable	wildlife		NASS, Nichols, Smith	
Sunn Hemp	*Crotalaria juncea*	cover crop			AL Extn (legume cover crops), Nichols, Smith	
Sweet alyssum	*Lobularia maritima*	cover crop				
Tomatillo	*Physalis philadelphica*	harvestable				
Tomato	*Lycopersicon esculentum*	harvestable			NASS	
Turnip	*Brassica rapa* subsp. *rapa*	cover crop	harvestable for greens	only if allowed to flower	NASS, Smith	
Vetch, Cahaba	*Vicia sativa* cv. 'cahaba white'	cover crop				
Vetch, common or garden	*Vicia sativa*	cover crop	wildlife		Smith	
Vetch, hairy or chickling	*Vicia villosa*	cover crop			AL Extn (legume cover crops), Surrency, Nichols, Smith	
Vetch, purple	*Vicia americana*	cover crop				
Watermelon	*Citrullus lanatus*	harvestable			NASS	

Footnotes						
[1]Winter squash also include*s Cucurbita argyrosperma, C. moschata,* and *C. pepo.*						
Crop Information Sources						
Alabama Extension. 2018. Cover Crops: Legumes. https://www.aces.edu/blog/topics/row-cover-crop-soils/cover-crop-selection-legumes/						
Clark, A. (Ed.). 2008. Managing cover crops profitably. Diane Publishing. https://www.sare.org/Learning-Center/Books/Managing-Cover-Crops-Profitably-3rd-Edition/Text-Version/Appendix-B						
NASS, USDA. 2017. Census of Agriculture (Alabama)--State Level						
Nichols, K. 2016. Alabama: Why plant cover crops? AgFax (Jan 15). https://agfax.com/2016/01/15/alabama-plant-cover-crops/						
Smith, M, J. Armstrong, J. Johnson, and P. Mask. 2019. Plantings for						
Surrency, D. and L. Undayag. 2000. Cover Crops for the Southeast. US						
Invasive Plant Information Sources (did not include species found to be invasive or likely to be invasive in Alabama)						
Alabama Invasive Plant Council. https://www.invasive.org/species/list.cfm?id=71						
EDD MapS. https://www.eddmaps.org/species/subject.cfm?sub=6008						
IPM Images. https://www.ipmimages.org/browse/subinfo.cfm?sub=5533						