



SQL04 - Montana Supplement – REVISED 1/31/12

Use of Cover Crop Mixes – (Soil Quality Enhancement Activity)

Montana Clarification

For Montana this enhancement requires the use of cover crop mixes that contain five (5) or more different species of cover crops. A mixture of cool and warm season broadleaves, warm season grasses and legumes with a minimum of two crop types different than the predominant crop in the current rotation. No species can consist of more than one third (1/3) of the mix and not more than 10 percent cool season grasses can be planted. Haying or harvesting is not allowed. Some distinctions of SQL04 over SQL02 and SQL05 are:

- SQL04 planting mixes cannot be used as credit for SQL02 and SQL05 on the same land;
- This enhancement can be planted between crops in the fallow year;
- In Montana, it is not recommended to plant cover crops following harvest of small grains in a dry land situation due to limited precipitation. If irrigation is possible, cover crops could be planted after harvest;
- SQL04 does require that the crops planted after the cover crop be no-tilled;
- Cover crops, such as a “cocktail mix” grown in the fallow year could be planted in early spring for a cool season mix or planted in late spring to early summer when using a warm season mix. Cover crops should be terminated prior to seed set to reduce chance cover crop species from becoming weeds in the following crops. When termination is done should be determined by planting date, species planted, seed set and soil moisture.

Montana Specifications

Grazing is allowed not to exceed 50 percent of the current year’s growth where a minimum of a six (6) inch stubble height is maintained. Cover crop termination methods are frost killed, chemical application or mechanical. Cover crops should be terminated prior to seed set to prevent species from becoming weeds in subsequent crops. Depth of soil moisture should be considered when terminating cocktail mixes to conserve soil moisture for following crops.

TABLE 1. POTENTIAL COVER CROPS FOR MONTANA ^{1/}

Cool Season Broadleaves	Warm Season Broadleaves	Cool Season Grasses	Warm Season Grasses
alfalfa	beans, field	barley, spring	corn
beet	buckwheat	oats, spring	millet
camelina	chickpea	triticale, spring	sorghum
canola, spring	cowpea	triticale, winter	sudangrass
clover, spp.	soybeans	wheat, spring	sorghum/sudangrass crosses
flax	safflower ^{2/}	wheat, winter	teff
lentils	sunflower		
peas, field			
radishes, deep-rooted (forage or daikon)			

<u>sweetclover</u>			
turnips			
vetch			

- ^{1/} Cover crop species can have a wide range of seeding dates ranging from spring to fall depending on specific use and climatic conditions. Generally soil moisture must be apparent within the top two inches of soil to ensure planting success. This is not a complete list; consult your local NRCS office for other species.
- ^{2/} Safflower should be planted as early as small grains but needs a full growing season for optimum seed production.

FULL SEEDING RATES FOR MAXIMUM PRODUCTION OF COVER CROP SPECIES

SPECIES	DRILLED SEEDING RATES (lb./ac. PLS)	
	Dryland	Irrigated
alfalfa	5	6
barley, spring	45-60	60-75
beet, sugar ^{3/}	Not recommended	45,000 (# seeds/ac)
buckwheat	40-50	40-50
camelina	3-5	5-7
canola spring	5-8	5-8
chickpea (desi)	80-100	80-100
chickpea (kabuli)	125-150	125-150
clover berseem	8	9
Clover spp	3-6	3-6
corn ^{3/}	10-15,000 (# seeds/ac)	32-40,000 (# seeds/ac)
Flax	25-30	30-35
Cowpeas	20-30	30-40
lentils (IndianHead-22,000sds/lb)	40-70	40-70
millet, Foxtail	4-12	4-12
Millet, Pearl	10-20	10-20
millet, Proso	15-30	15-30
Oats	50-60	60-70
peas field	70-150	70-150
radishes, deep-rooted (forage or daikon)	8	10
Safflower	15-30	15-30
Sorghum	5-8	8-10
sorghum / Sudangrass crosses	5-8	8-10
Soybeans	25-40	35-45
sudangrass	25-30	25-30
sunflower ^{3/}	14-21,000 (# seeds/ac)	20-25,000 (# seeds/ac)
sweetclover	4	3-6
teff	4-5	5-6
triticale spring	50-60	60-70
triticale winter	45-55	55-65
turnips	8	8
vetch, chickling	60	60
vetch, hairy	25-30	25-30
wheat spring	50-60	60-80
wheat winter	40-60	50-70

^{1/} **Cover crop species can have a wide range of seeding dates ranging from spring to fall depending on specific use and climatic conditions. Generally soil moisture must be apparent**

- within the top two inches of soil to ensure planting success. This is not a complete list; consult your local NRCS office to plant other species.
- 2/ Seeding rates are for a single species planted for maximum crop production; adjust rates for mixtures based on desired percent composition of species.
- 3/ Seed size can vary widely; consider planting by number of seeds per square feet or acre to ensure adequate stands. Recommended seed rates for corn, sugar beet and sunflower are based on seeds per square foot.

Incompatible Enhancements

Some enhancements are not compatible with other enhancements. If you have a question, contact your local NRCS field office

Eligible Land

Cropland

Applicable Amount

Acres of cropland

- **Planned and actual mixture and seeding rates (PLS), of selected species/cultivars.**

Documentation Requirements

1. **Written documentation for each year describing, in detail, the following items:**
 - a. **Cover crops species used and date planted. Percent of mix and Pure Live Seed (PLS) seeding rates for each species based on a seed analysis (within one year). “Pure live seed” means the product of the percentage of germination plus hard seed or dormant seed multiplied by the percentage of pure seed, divided by 100, with the result expressed as a whole number.**
 - b. **Date and amount of fertilizer applied, based on a current year (within 12 months) soil analysis.**
 - c. **Method to kill cover crop and date completed, and**
 - d. **Crop planted after cover crop and tillage equipment and method(s) used.**
2. **A map showing fields where the enhancement is applied**
3. **Photographs of fields showing cover crop mix.**
4. **Estimate of cover crop biomass production in lbs/ac.**
5. **Percent of cover crop grazed and stubble height after grazing (if applicable).**

I acknowledge that I have read and understand all that is required for the implementation of this CSP Enhancement Activity.

Contract participant

Date