

## CONSERVATION PRACTICE SPECIFICATION

### Range Planting - 550

Range Planting – 550 shall be planned and applied in accordance with the standard detailed in the Field Office Technical Guide (FOTG) - Section IV – Conservation Practices. This document provides additional parameters, recommendations, references, and requirements for developing site-specific plans for this practice.

#### 1. Refer to [Herbaceous Vegetation Establishment Guide](#) (FOTG, Section I- Reference Subjects) for:

- Seeding dates (Part 1)
- Seedbed preparation (Part 2)
- Seeding equipment (Part 3)
- Drill Calibration (Part 4)
- Seed requirements (Part 5)
- Seeding depth (Part 6)
- Cover and companion crops (Part 7)
- Management and protection during establishment (Part 8)
- Procedure for stand evaluation (Part 9)

#### 2. Seed Mix Requirements

- a. All 550 Range Planting seed mixes must contain a minimum of 5% forbs.
- b. Total forb percentage cannot exceed 25%.
- c. Individual forb species cannot exceed 5% (however there are selected forb species that cannot exceed 2% due to their competitiveness, please see the tables below).

#### 3. Selecting Species and Varieties

- a. Determine the Ecological Sites from the soils information located in either the [Web Soil Survey](#) or the county specific Interpretive Table in FOTG – Section II – Soil Information subsection.
- b. Refer to Table 1 of this guide for recommended species and percent minimums and maximums for the Ecological Site(s).
- c. Refer to Herbaceous Vegetation Establishment Guide for approved named varieties and full seeding rates of native grasses, forbs and shrubs. Use named varieties when available.

#### 4. Planning Considerations

- a. Where water erosion is a concern, all tillage and seeding operations should be performed across the general slope of the fields where appropriate. When seeding into light textured soils, adequate cover is required to prevent excessive erosion.
- b. For improved germination, scarification of legumes with hard seed coats is recommended. Scarification is especially important with the following species: purple prairie clover, white prairie clover, leadplant and Canada milkvetch.
- c. Slender wheatgrass and Canada Wildrye are short-lived species but establish rapidly and provides quick cover.

**5. Guidelines for stand evaluation**

- a. Stand must have a minimum density of two rhizomatous grass plants per square foot, or four plants per square foot for bunchgrasses or mixtures of bunch and rhizomatous type grasses; or in the case of grass/legume/forb mixtures, two grass plants and one legume or forb plant per square foot.
- b. See Part 9 of Herbaceous Vegetation Establishment Guide for additional guidance on stand evaluation.
- c. All stands must go through at least one winter before making final stand evaluation.

**6. Established stand management**

- a. Grazing - Refer to Prescribed Grazing-528 Specification for management after establishment. All conservation practices are located in FOTG – Section IV – Conservation Practices.
- b. Other management practices that may apply after establishment: Herbaceous Weed Management-315, Prescribed Burning-338, Upland Wildlife Habitat Management-645.

**7. Documentation**

- a. Use ND-CPA-9 (electronic or hardcopy) to document practice planning and installation. All forms are located in [FOTG – Section IV – Forms](#).

**Ecological Site Description Abbreviations**

Badlands Fan (BF)	Saline Overflow (SOv)	Shallow Marsh (SwM)
Choppy Sands (CS)	Saline Lowland (SL)	Stony Hills (SH)
Clayey (Cy)	Saline Subirrigated (SSb)	Subirrigated (Sb)
Clayey Terrace (CyT)	Sands (Sa)	Subirrigated Sands (SbSa)
Claypan (Cp)	Sandy (Sy)	Thin Clayey (TCy)
Closed Depression (CD)	Sandy Claypan (SyCp)	Thin Claypan (TCp)
Limy Sands (LSa)	Sandy Terrace (SyT)	Thin Loamy (TLy)
Limy Subirrigated (LSb)	Savannah (Sv)	Thin sands (TSa)
Limy Residual (LR)	Shallow Clayey (SwCy)	Very Shallow (VS)
Linear Meadow (LrM)	Shallow Loamy (SwLy)	Wet Land (WL)
Loamy (Ly)	Shallow Sandy (SwSy)	Wet Meadow (WM)
Loamy Overflow (LyOv)	Shallow Gravel (SwG)	
Loamy Terrace (LyT)		

**Table 1. Recommended Species by Ecological Site for MLRA 53A & 53B**

Minimum and maximum percentage of species per site (All mixtures will have a minimum of 100% and a maximum of 150% for pollinator plantings). 5/ Consult appropriate ecological site description for information on reference plant community composition.

Species/Ecological Site *indicates species not compatible in MLRA	CD	Cp & TCp	CS / Tsa	Cy	LSb	Ly / LyS	LyOv/Ov	Sa	Sb	SL / SOv	SM / WL	SwG & VS	SwLy/SwCy	Sy	SyCp	Tly / TCy	WM / LFM
<b>Grasses 1/</b>																	
Alkali sacaton (SPAI)	5-10	5-10							5-10					5-10			
American managrass (GLGR)										5-20							
American sloughgrass (BESY)	5-10									5-10							5-10
Big bluestem (ANGE)			5-10	5-30	5-20	5-30		5-30	5-30				5-10				
*Bluebunch wheatgrass (PSSP6)																	
Blue joint grass (CACA4)	5-10			5-10		5-10		5-10		5-10							5-10
Blue grama (BOGR2)		5-20	5-20	5-10	5-10	5-10	5-10	5-10	5-10		5-20	5-20	5-10	5-10	5-10		
Buffalograss (BODA2)		5-20												5-10			
Canada wildrye (ELCA4)	5-10	5-10	5-20	5-10	5-10	5-10	5-20	5-10	5-10		5-10	5-10	5-10	5-10	5-10	5-10	
Fowl bluegrass (POPA2)	5-10		5-10	5-10				5-10	5-10	5-10		5-10		5-10	5-10	5-20	
Fowl manna grass (GLST)	5-10					5-10		5-10	5-10	5-10							5-10
Green needlegrass (NAVI4)		5-20	5-30	5-10	5-30	5-20	5-10	5-20			5-10	5-10	5-20	5-20	5-20		
Indiangrass (SONU2)				5-10		5-10		5-10									
*Indian ricegrass (ACHY)																	
Inland Saltgrass (DISP)		5-10	5-10	5-10					5-10						5-10	5-10	
Little bluestem (SCSC)		5-10	5-30	5-10	5-30	5-10	5-20	5-20	5-20		5-30	5-30	5-10	5-20	5-30		
Needleandthread (HECO26)		5-20	5-20	5-10		5-10	5-10	5-20			5-20	5-20	5-10	5-20	5-10		
Northern reedgrass (CASTI3)																	5-30
Nuttall alkaligrass (PUNU2)	5-20	5-10							5-10								
Porcupinegrass (HESP11)			5-10	5-20	5-10	5-10	5-10	5-20				5-20		5-20			
Prairie cordgrass (SPPE)	5-10			5-10				5-10	5-20	5-30							5-30
Prairie dropseed (SPHE)				5-10	5-10	5-10		5-10									
Prairie junegrass (KOMA)		5-10	5-10	5-10	5-10	5-10	5-10	5-10			5-10	5-10	5-10	5-10	5-10		
Prairie sandreed (CALO)			5-30					5-30			5-10	5-10	5-20	5-30	5-10		

**Table 1. Recommended Species by Ecological Site for MLRA 53A & 53B**

Minimum and maximum percentage of species per site (All mixtures will have a minimum of 100% and a maximum of 150% for pollinator plantings). 5/ Consult appropriate ecological site description for information on reference plant community composition.

Species/Ecological Site *indicates species not compatible in MLRA	CD	Cp & TCp	CS / Tsa	Cy	LSb	Ly / LyS	LyOv/Ov	Sa	Sb	SL / SOv	SM / WL	SwG & VS	SwLy/SwCy	Sy	SyCp	Tly / TCy	WM / LFM
Sand bluestem (ANHA)			5-30				5-30				5-10		5-20	5-20			
Sand dropseed (SPCR)			5-10				5-10				5-10		5-10	5-10			
Sideoats grama (BOCU)		5-10	5-20	5-20	5-20	5-20	5-20	5-20	5-20		5-20	5-20	5-10	5-20	5-20		
Slender wheatgrass (ELTR7)	5-20	5-20		5-10	5-10	5-10	5-10	5-10	5-10	5-20	5-10	5-20	5-10	5-10	5-20	5-10	
Switchgrass (PAVI2)	5-10	5-10		5-10	5-20	5-10	5-10		5-20	5-10			5-10				5-10
Thickspike Wheatgrass (ELLAP)	5-10	5-10	5-10	5-10	5-10	5-10	5-10	5-10	5-10	5-10		5-10	5-10	5-10	5-10	5-10	5-10
Western wheatgrass (PASM)	5-30	5-30	5-10	5-20	5-20	5-20	5-20	5-10	5-20	5-40		5-20	5-20	5-30	5-30	5-20	5-20
Whitetop (SCFE)	5-20										5-30						5-20
Slough sedge (CAOB3)	5-20										5-30						5-10
<b>Forbs 2/</b>																	
Alexander																	
Golden (ZIAU)							*		*								*
Heart-Leaved (ZIAP)							*		*								*
American vetch (VIAM)				*	*	*	*	*	*				*	*	*		
Aster																	
Blue (SYLA3)					*	*	*		*				*				
Heath (SYER)		*		*	*	*	*		*				*				
New England (SYNO2)							*		*								*
Black-eyed susan 3/ (RUHI2)			*	*	*	*	*	*	*		*		*		*	*	*
Blanketflower (GAILL)		*		*		*					*		*	*	*		
Blue vervain (VEHA2)									*								*
Canada anenome (ANCA8)					*	*	*		*		*				*		*
Canada tickclover (DECA7)					*		*		*								
Columbine, red (AQCA)							*		*								

**Table 1. Recommended Species by Ecological Site for MLRA 53A & 53B**

Minimum and maximum percentage of species per site (All mixtures will have a minimum of 100% and a maximum of 150% for pollinator plantings). 5/ Consult appropriate ecological site description for information on reference plant community composition.

Species/Ecological Site *indicates species not compatible in MLRA	CD	Cp & TCp	CS / Tsa	Cy	LSb	Ly / Lys	LyOv/Ov	Sa	Sb	SL / SOv	SM / WL	SwG & VS	SwLy/SwCy	Sy	SyCp	Tly / TCy	WM / LFM
<b>Coneflower</b>																	
Black samson (ECAN2)			*	*		*		*				*	*	*	*	*	
Greyhead (RAPI)		*	*	*		*		*				*	*	*	*	*	
Prairie (yellow) 3/ (RACO3)		*	*	*		*		*				*	*	*	*	*	
Cudweed sagewort 3/ (ARLU)		*	*			*	*	*				*		*			
Culver's root (VEV4)					*		*		*								
Cup plant (SIPE2)						*		*									*
Evening primrose (OEBI)				*	*	*	*	*					*				*
False boneset (BREU)				*				*									*
False sunflower 3/ (HEHE5)			*			*		*					*				
<b>Gayfeather</b>																	
Dotted (LIPU)		*	*	*		*		*				*	*	*		*	
Meadow (LILI)	*					*	*										*
Thickspike (LIPY)	*					*											*
Giant blue hyssop (AGFO)				*		*	*						*				
<b>Goldenrod</b>																	
Canada (SOCA6)				*		*							*				
Missouri (SOMI2)			*	*		*		*				*	*	*		*	
Stiff (SORI2)			*					*					*			*	
Tall Smooth (SOGI)	*			*	*		*		*	*			*				*
Harebell (CARO2)			*	*	*			*				*	*	*		*	
Hoary vervain (VEST)						*	*	*					*				
Illinois bundleflower (DEIL)				*		*	*		*				*				*
Indian breadroot (PEES)				*		*		*				*	*	*		*	
Ironweed (VEFA2)				*	*	*		*									*
Joe Pye weed (EUMA9)				*				*									*
Lewis flax (LILE3)				*	*	*		*	*				*		*		

**Table 1. Recommended Species by Ecological Site for MLRA 53A & 53B**

Minimum and maximum percentage of species per site (All mixtures will have a minimum of 100% and a maximum of 150% for pollinator plantings). 5/ Consult appropriate ecological site description for information on reference plant community composition.

Species/Ecological Site *indicates species not compatible in MLRA	CD	Cp & TCp	CS / Tsa	Cy	LSb	Ly / LyS	LyOv/Ov	Sa	Sb	SL / SOv	SM / WL	SwG & VS	SwLy/SwCy	Sy	SyCp	Tly / TCy	WM / LFM
<b>Milkvetch</b>																	
Canada (ASCA11)		*	*	*	*	*	*	*	*				*				
Groundplum (ASCR2)					*		*				*	*	*		*		
<b>Milkweed 6/</b>																	
Butterfly (ASTU)						*	*						*				
Showy (ASSP)	*		*		*	*		*					*		*	*	
Swamp (ASIN)	*																*
Partridge pea 6/ (CHFA2)					*								*				
Pasqueflower (PUPAP2)			*		*		*				*	*	*		*		
Plains Coreopsis (COTI3)				*	*	*	*		*				*				*
<b>Prairie clover</b>																	
Purple (DAPU5)		*	*	*		*	*	*				*	*	*	*	*	
Silky (DAVI)			*				*				*		*				
White (DAAL)		*		*	*	*	*		*		*		*		*		
Prairie onion (ALST)				*	*		*						*		*		
Prairie Phlox (PHAN4)						*		*									*
Prairie Smoke (GETR)			*	*			*				*	*	*		*		
Purple meadow rue (THDA)				*				*									*
Rocky mountain bee plant (CLSE)				*	*	*	*	*					*				
Scarlet globemallow (SPCO)		*		*	*						*	*			*		
Shell-leaf penstemon (PEGR7)			*				*						*				
Silvery lupine 6/ (LUAR3)				*	*										*		
Sneezeweed (HEAU)	*			*				*									*
<b>Spiderwort</b>																	
Long Bract (TRBR)		*	*	*	*	*	*		*	*							*
Pairie (TROCO)			*				*						*				

**Table 1. Recommended Species by Ecological Site for MLRA 53A & 53B**

Minimum and maximum percentage of species per site (All mixtures will have a minimum of 100% and a maximum of 150% for pollinator plantings). 5/ Consult appropriate ecological site description for information on reference plant community composition.

Species/Ecological Site *indicates species not compatible in MLRA	CD	Cp & TCp	CS / Tsa	Cy	LSb	Ly / LyS	LyOv/Ov	Sa	Sb	SL / SOv	SM / WL	SwG & VS	SwLy/SwCy	Sy	SyCp	Tly / TCy	WM / LFM
<b>Sunflower</b>																	
Maximillian (HEMA2)				*	*	*	*	*	*				*				*
Sawtooth (HEGR4)																	
Stiff 3/ (HEPA19)		*	*	*	*	*	*	*	*			*	*	*	*	*	
Western yarrow 3/ (ACMIO)	*	*	*	*	*	*	*	*	*	*		*	*	*	*	*	
Wild bergamot (MOFI)						*	*		*				*				
<b>Shrubs 2/</b>																	
Buffaloberry (SHEPH)							*			*			*			*	
Chokecherry 6/ (PRMA9)					*	*											
False indigo (AMNA)				*	*	*		*									*
Fourwing Saltbush (ATCA2)																	
Gardner saltbush (ATGA)																	
Golden Currant 4/ (RIAU)		*		*	*	*	*		*				*	*	*		
Juneberry (AMAL2)					*	*										*	
Leadplant (AMCA6)			*	*	*	*	*				*		*	*	*		
Prairie rose (ROAR3)		*	*	*	*	*	*	*	*		*	*	*	*	*		
Western snowberry (SYOC)				*	*	*	*	*	*		*		*		*		
*Winterfat (KRASC)																	
*WY big sagebrush (ARTRW8)																	
1/ Minimum of four grass species including at least one warm and/or cool season species. 2/ Forbs and shrubs will be limited to a maximum of 25% of the total mixture. Except those species noted in footnote #3, individual forb and shrub species will be limited to 5% of the mixture. 3/ These species will be limited to no more than 2% of the mixture. 4/ Golden currant is not rated for Thin Claypan 5/ For ESD's not listed in the table please consult your area specialist 6/ Research indicates partridge pea, milkweeds, lupines, and chockcherry can be toxic to livestock																	

**Table 2. Recommended Species by Ecological Site for MLRA 54, 58C, & 58D**

Minimum and maximum percentage of species per site (All mixtures will have a minimum of 100% and a maximum of 150% for pollinator plantings). 5/ Consult appropriate ecological site description for information on reference plant community composition.

Species/Ecological Site *indicates species not compatible in MLRA	CD	Cp / TCp	CS / Tsa	Cy	CyT	LSa	Ly	LyT	LyOv	Sa	Sb	SL	SwCy	SwG / VS	SwLy	SwM / WL	SwSy	Sy	SyCp	SyT	Tly / Lr	WM
<b>Grasses 1/</b>																						
Alkali sacaton (SPAI)	5-10	5-10									5-10							5-10				
American managrass (GLGR)															5-20							
American sloughgrass (BESY)	5-10														5-10							5-10
Big bluestem (ANGE)				5-10	5-15		5-20	5-15	5-30		5-30						5-10		5-10			
Bluebunch wheatgrass (PSSP6)												5-20	5-20	5-20	5-20	5-20						
Blue joint grass (CACA4)	5-10							5-10		5-10	5-10				5-10							5-10
Blue grama (BOGR2)		5-30	5-20	5-20	5-10	5-10	5-10	5-10	5-10	5-10		5-10	5-20	5-20		5-20	5-10	5-10	5-15	5-10		
Buffalograss (BODA2)		5-30		5-10			5-10											5-10		5-10		
Canada wildrye (ELCA4)	5-10	5-10	5-20	5-10	5-10	5-10	5-10	5-10	5-20	5-10	5-10		5-10	5-10		5-20	5-10	5-10	5-10	5-10	5-10	5-10
Fowl bluegrass (POPA2)	5-10																					5-20
Fowl manna grass (GLST)	5-10							5-10		5-10	5-10				5-10							5-10
Green needlegrass (NAVI4)		5-20		5-30	5-30	5-10	5-30	5-20	5-20	5-10	5-20		5-20	5-10	5-10		5-10	5-20	5-20	5-20	5-20	5-20
*Indiangrass (SONU2)																						
Indian ricegrass (ACHY)			5-10										5-10									
Inland Saltgrass (DISP)	5-10	5-10		5-10	5-10						5-10										5-10	5-10
Little bluestem (SCSC)		5-10	5-30	5-10	5-10	5-30	5-10		5-20	5-20	5-20		5-20	5-30	5-30		5-30	5-10	5-20	5-10	5-30	
Needleandthread (HECO26)		5-20	5-20	5-10	5-10	5-20	5-10	5-10	5-20			5-20	5-20	5-20		5-20	5-10	5-20	5-10	5-10		
Northern reedgrass (CASTI3)																						5-30
Nuttall alkaligrass (PUNU2)	5-20	5-10									5-10											
Porcupinegrass (HESP11)				5-10	5-10		5-10	5-20	5-10		5-20						5-10		5-10	5-20		
Prairie cordgrass (SPPE)	5-10									5-10	5-20				5-30							5-30
Prairie dropseed (SPHE)								5-10		5-10												
Prairie junegrass (KOMA)		5-10	5-10	5-10	5-10	5-10	5-10	5-10	5-10	5-10		5-10	5-10	5-10		5-10	5-10	5-10	5-10	5-10		

**Table 2. Recommended Species by Ecological Site for MLRA 54, 58C, & 58D**

Minimum and maximum percentage of species per site (All mixtures will have a minimum of 100% and a maximum of 150% for pollinator plantings). 5/ Consult appropriate ecological site description for information on reference plant community composition.

Species/Ecological Site *indicates species not compatible in MLRA	CD	Cp / TCp	CS / Tsa	Cy	CyT	LSa	Ly	LyT	LyOv	Sa	Sb	SL	SwCy	SwG / VS	SwLy	SwM / WL	SwSy	Sy	SyCp	SyT	Tly / LIR	WM
Prairie sandreed (CALO)			5-30		5-30				5-30				5-10	5-10		5-30	5-20	5-30	5-30	5-10		
Sand bluestem (ANHA)			5-30		5-30				5-30				5-10			5-30	5-20	5-20	5-30			
Sand dropseed (SPCR)			5-10		5-10				5-10				5-10			5-10	5-10	5-10	5-10			
Sideoats grama (BOCU)		5-10	5-20	5-20	5-20	5-20	5-20	5-20	5-20	5-20		5-20	5-20	5-20		5-20	5-10	5-20	5-10	5-20		
Slender wheatgrass (ELTR7)	5-20	5-20		5-10	5-10	5-10	5-10	5-10	5-10	5-10	5-20	5-10	5-20	5-10	5-10	5-10	5-10	5-20	5-10	5-10	5-10	5-10
Switchgrass (PAVI2)				5-10		5-10	5-10	5-10		5-20	5-10						5-10		5-10		5-10	
Thickspike Wheatgrass (ELLAP)	5-10	5-10	5-10	5-10	5-10	5-10	5-10	5-10	5-10	5-10	5-10	5-10	5-10	5-10		5-10	5-10	5-10	5-10	5-10	5-10	5-10
Western wheatgrass (PASM)	5-30	5-30	5-10	5-20	5-30	5-20	5-20	5-30	5-20	5-10	5-20	5-40	5-30	5-20	5-20		5-10	5-30	5-30	5-20	5-20	5-30
Whitetop (SCFE)	5-20																5-20					5-20
Slough sedge (CAOB3)	5-20														5-30							5-10
<b>Forbs 2/</b>																						
<b>Alexander</b>																						
Golden (ZIAU)									*		*											*
*Heart-Leaved (ZIAP)																						
American vetch (VIAM)				*		*		*	*	*							*	*		*		
<b>Aster</b>																						
Blue (SYLA3)						*		*		*							*					
Heath (SYER)		*		*		*		*		*							*					
New England (SYNO2)								*		*												*
Black-eyed susan 3/ (RUHI2)								*	*				*				*					*
Blanketflower (GAILL)		*		*		*	*					*	*			*	*	*		*		
Blue vervain (VEHA2)										*												*
Canada anenome (ANCA8)					*	*		*	*	*											*	*
Canada tickclover (DECA7)								*		*												
<b>Coneflower</b>																						
Black samson (ECAN2)		*	*	*		*	*	*		*	*	*	*	*		*	*	*	*	*	*	*

**Table 2. Recommended Species by Ecological Site for MLRA 54, 58C, & 58D**

Minimum and maximum percentage of species per site (All mixtures will have a minimum of 100% and a maximum of 150% for pollinator plantings). 5/ Consult appropriate ecological site description for information on reference plant community composition.

Species/Ecological Site *indicates species not compatible in MLRA	CD	Cp / TCp	CS / Tsa	Cy	CyT	LSa	Ly	LyT	LyOv	Sa	Sb	SL	SwCy	SwG / VS	SwLy	SwM / WL	SwSy	Sy	SyCp	SyT	Tly / Lr	WM
Greyhead (RAPI)		*	*	*	*		*	*		*			*	*	*		*		*	*	*	
Prairie (Yellow) 3/ (RACO3)		*	*	*	*	*	*	*	*	*			*	*	*		*	*	*	*	*	
Columbine, red (AQCA)								*		*												
Cudweed sagewort 3/ (ARLU)		*		*	*		*	*	*	*			*					*	*	*		
Culver's root (VEVI4)								*		*												
*Cup plant (SIPE2)																						
Evening primrose (OEBI)			*	*			*	*	*									*		*		
False boneset (BREU)										*												*
False sunflower 3/ (HEHE5)			*				*	*		*	*							*		*		
Gayfeather																						
Dotted (LIPU)			*	*	*	*	*	*		*			*	*	*		*	*	*	*	*	
Meadow (LILI)																						
Thickspike (LIPY)	*							*														*
*Giant blue hyssop (AGFO)																						
Goldenrod																						
Canada (SOCA6)				*			*											*				
Missouri (SOMI2)			*	*	*	*	*	*		*			*	*	*		*	*		*	*	
Stiff (SORI2)			*			*				*						*	*		*			
Tall Smooth (SOGI)	*			*	*		*	*	*	*	*										*	*
Harebell (CARO2)			*	*			*		*	*			*			*	*			*		
Hoary vervain (VEST)						*		*	*								*					
Illinois bundleflower (DEIL)																						
Indian breadroot (PEES)				*			*		*			*	*	*		*	*			*		
Ironweed (VEFA2)						*		*		*												*
Joe Pye weed (EUMA9)										*												*
Lewis flax (LILE3)		*	*	*	*	*	*	*	*	*	*		*	*	*		*	*	*	*	*	

**Table 2. Recommended Species by Ecological Site for MLRA 54, 58C, & 58D**

Minimum and maximum percentage of species per site (All mixtures will have a minimum of 100% and a maximum of 150% for pollinator plantings). 5/ Consult appropriate ecological site description for information on reference plant community composition.

Species/Ecological Site *indicates species not compatible in MLRA	CD	Cp / TCp	CS / Tsa	Cy	CyT	LSa	Ly	LyT	LyOv	Sa	Sb	SL	SwCy	SwG / VS	SwLy	SwM / WL	SwSy	Sy	SyCp	SyT	Tly / LIR	WM
Milkvetch																						
Canada (ASCA11)			*	*		*	*	*		*									*			
Groundplum (ASCR2)						*	*		*				*	*		*	*		*	*		
Milkweed 6/																						
Butterfly (ASTU)								*	*								*					
Showy (ASSP)	*		*		*			*		*												*
Swamp (ASIN)															*							*
Partridge pea 6/(CHFA2)						*											*					
Pasqueflower (PUPAP2)			*			*			*			*	*	*		*	*			*		
Plains Coreopsis (COTI3)								*		*												*
Prairie clover																						
Purple (DAPU5)			*	*	*	*	*	*	*	*		*	*	*		*	*	*	*	*	*	*
Silky (DAVI)			*						*				*			*	*		*			
White (DAAL)				*	*	*	*	*		*				*			*		*	*		
Prairie onion (ALST)				*					*				*			*	*					
Prairie Phlox (PHAN4)								*		*												*
Prairie Smoke (GETR)			*	*		*			*			*	*	*		*	*			*		
Purple meadow rue (THDA)										*												*
Rocky mountain bee plant (CLSE)						*		*	*	*							*					
Scarlet globemallow (SPCO)		*		*	*	*	*					*	*	*							*	
Shell-leaf penstemon (PEGR7)			*						*								*	*	*			
Silvery lupine 6/ (LUAR3)				*		*											*			*		
Sneezeweed (HEAU)	*									*												*
Spiderwort																						
Long Bract (TRBR)		*		*	*	*	*	*			*											*
Pairie (TROCO)			*			*			*								*		*			

**Table 2. Recommended Species by Ecological Site for MLRA 54, 58C, & 58D**

Minimum and maximum percentage of species per site (All mixtures will have a minimum of 100% and a maximum of 150% for pollinator plantings). 5/ Consult appropriate ecological site description for information on reference plant community composition.

Species/Ecological Site <i>*indicates species not compatible in MLRA</i>	CD	Cp / TCp	CS / Tsa	Cy	CyT	LSa	Ly	LyT	LyOv	Sa	Sb	SL	SwCy	SwG / VS	SwLy	SwM / WL	SwSy	Sy	SyCp	SyT	Tly / LIR	WM
<b>Sunflower</b>																						
Maximillian (HEMA2)				*		*	*	*		*									*		*	
*Sawtooth (HEGR4)																						
Stiff 3/ (HEPA19)	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
Western yarrow 3/ (ACMIO)	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
Wild bergamot (MOFI)				*		*	*	*		*									*			
<b>Shrubs 2/</b>																						
Buffaloberry (SHEPH)				*			*	*			*			*					*	*		
Chokecherry 6/ (PRMA9)				*		*	*	*											*			
False indigo (AMNA)					*		*	*		*					*						*	
Fourwing Saltbush (ATCA2)		*									*	*										
Gardner saltbush (ATGA)		*									*											
Golden Currant 4/ (RIAU)			*			*	*	*		*		*	*	*			*			*		
Juneberry (AMAL2)						*		*												*		
Leadplant (AMCA6)			*	*		*	*	*	*								*	*	*			
Prairie rose (ROAR3)		*	*	*	*	*	*	*	*	*		*	*	*		*	*	*	*	*	*	
Western snowberry (SYOC)			*	*		*	*	*	*	*							*		*			
Winterfat (KRASC)		*	*	*		*	*					*		*						*		
WY big sagebrush (ARTRW8)			*									*		*		*						
<p>1/ Minimum of four grass species including at least one warm and/or cool season species.</p> <p>2/ Forbs and shrubs will be limited to a maximum of 25% of the total mixture. Except those species noted in footnote #3, individual forb and shrub species will be limited to 5% of the mixture.</p> <p>3/ These species will be limited to no more than 2% of the mixture.</p> <p>4/ Golden currant is not rated for Thin Claypan</p> <p>5/ For ESD's not listed in the table please consult your area specialist</p> <p>6/ Research indicates partridge pea, milkweeds, lupines, and chockcherry can be toxic to livestock</p>																						

**Table 3. Recommended Species by Ecological Site for MLRA 56 and 55A&B**

Minimum and maximum percentage of species per site (All mixtures will have a minimum of 100% and a maximum of 150% for pollinator plantings). 5/ Consult appropriate ecological site description for information on reference plant community composition.

Species/Ecological Site *indicates species not compatible in MLRA	CD	CP & TCp	CS (TSa)	Cy	LSb	Ly	LyOv	LySv	Sa	Sb	SbSa	SL	SwCy/ SwLy	SwG	SwM	Sy	SyCp	TLy	WM / LTM
<b>Grasses 1/</b>																			
Alkali sacaton (SPAI)	5-10	5-10									5-10					5-10			
American managrass (GLGR)														5-20					
American sloughgrass (BESY)	5-10													5-10					5-10
Big bluestem (ANGE)			5-10	5-30	5-20	5-30			5-30	5-30					5-20				
*Bluebunch wheatgrass (PSSP6)																			
Blue joint grass (CACA4)	5-10			5-10		5-10			5-10					5-10					5-10
Blue grama (BOGR2)		5-20	5-20	5-10	5-10	5-10	5-10		5-10		5-20		5-10	5-20		5-10	5-10	5-10	
Buffalograss (BODA2)		5-20															5-11		
Canada wildrye (ELCA4)	5-10	5-10	5-20	5-10	5-10	5-10	5-10		5-20	5-10	5-10	5-10		5-10		5-10	5-10	5-10	5-10
Fowl bluegrass (POPA2)	5-10																		5-20
Fowl manna grass (GLST)	5-10						5-10		5-10		5-10			5-10					5-10
Green needlegrass (NAVI4)		5-20		5-30	5-10	5-30	5-20		5-10	5-20			5-20	5-10		5-20	5-20	5-20	
Indiangrass (SONU2)				5-20	5-10	5-20			5-25										
Indian ricegrass (ACHY)																			
Inland Saltgrass (DISP)		5-10		5-10	5-10						5-10								5-10
Little bluestem (SCSC)		5-10	5-30	5-10	5-30	5-10	5-20		5-20	5-20	5-20		5-20	5-30		5-10	5-20	5-30	
Needleandthread (HECO26)		5-20	5-20	5-10		5-10	5-10		5-20		5-10		5-20	5-20		5-10	5-20	5-10	
Northern reedgrass (CASTI3)																			5-30
Nuttall alkaligrass (PUNU2)	5-20	5-10									5-10								
Porcupinegrass (HESP11)				5-10	5-20	5-10	5-10		5-10	5-20	5-20					5-20		5-20	
Prairie cordgrass (SPPE)	5-10			5-10					5-10		5-20			5-30					5-30
Prairie dropseed (SPHE)				5-10	5-10	5-10			5-10	5-10								5-10	
Prairie junegrass (KOMA)		5-10	5-10	5-10	5-10	5-10	5-10		5-10	5-10	5-10		5-10	5-10		5-10	5-10	5-10	
Prairie sandreed (CALO)			5-30						5-30		5-10		5-10		5-20	5-30	5-10		
Sand bluestem (ANHA)			5-30						5-30		5-10		5-10		5-20	5-20			

**Table 3. Recommended Species by Ecological Site for MLRA 56 and 55A&B**

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Species/Ecological Site <i>*indicates species not compatible in MLRA</i>	CD	CP & TCp	CS (TSa)	Cy	LSb	Ly	LyOv	LySv	Sa	Sb	SbSa	SL	SwCy/ SwLy	SwG	SwM	Sy	SyCp	TLy	WM / LTM
Sand dropseed (SPCR)			5-10						5-10		5-10			5-10		5-10	5-10	5-10	
Sideoats grama (BOCU)		5-10	5-20	5-20	5-20	5-20	5-20		5-20	5-20	5-20		5-20	5-20		5-10	5-20	5-20	
Slender wheatgrass (ELTR7)	5-20	5-20		5-10	5-10	5-10	5-10		5-10	5-10	5-10	5-20	5-10	5-20	5-10	5-10	5-20	5-10	
Switchgrass (PAVI2)	5-10	5-10		5-20	5-20	5-20	5-20			5-20	5-20	5-10				5-10			5-10
*Thickspike Wheatgrass (ELLAP)																			
Western wheatgrass (PASM)	5-30	5-30	5-10	5-20	5-20	5-20	5-20		5-10	5-20	5-10	5-40	5-20	5-20		5-30	5-30	5-20	5-20
Whitetop (SCFE)	5-20															5-30			5-20
Slough sedge (CAOB3)	5-20															5-30			5-10
<b>Forbs 2/</b>																			
<b>Alexander</b>																			
Golden (ZIAU)							*												*
Heart-Leaved (ZIAP)					*	*			*										*
American vetch (VIAM)			*	*	*	*		*	*	*					*	*	*		
<b>Aster</b>																			
Blue (SYLA3)				*	*	*			*	*					*				
Heath (SYER)	*		*	*	*	*			*						*				
New England (SYNO2)						*			*										*
Black-eyed susan 3/ (RUHI2)		*	*	*	*	*		*	*	*			*		*		*	*	*
Blanketflower (GAILL)	*		*		*							*	*		*	*	*		
Blue vervain (VEHA2)									*										*
Canada anenome (ANCA8)	*			*	*	*			*					*			*	*	*
Canada tickclover (DECA7)				*		*			*	*									
Columbine, red (AQCA)						*			*										
<b>Coneflower</b>																			
Black samson (ECAN2)		*	*		*			*					*		*	*	*		
Greyhead (RAPI)	*	*	*		*			*		*			*		*	*	*		

**Table 3. Recommended Species by Ecological Site for MLRA 56 and 55A&B**

Minimum and maximum percentage of species per site (All mixtures will have a minimum of 100% and a maximum of 150% for pollinator plantings). 5/ Consult appropriate ecological site description for information on reference plant community composition.

Species/Ecological Site *indicates species not compatible in MLRA	CD	CP & TCp	CS (TSa)	Cy	Lsb	Ly	LyOv	LySv	Sa	Sb	SbSa	SL	SwCy/ SwLy	SwG	SwM	Sy	SyCp	Tly	WM / LTM
Prairie (yellow) 3/ (RACO3)		*	*	*		*			*		*		*	*		*	*	*	
Cudweed sagewort 3/ (ARLU)		*	*			*	*		*		*		*		*				
Culver's root (VEVI4)				*		*			*	*									
Cup plant (SIPE2)						*			*										*
Evening primrose (OEBI)			*	*	*	*			*	*					*				
False boneset (BREU)				*					*	*									*
False sunflower 3/ (HEHE5)			*		*			*	*	*					*				
Gayfeather																			
Dotted (LIPU)		*	*	*		*		*				*	*		*		*		
Meadow (LILI)					*	*													*
Thickspike (LIPY)	*					*													*
Giant blue hyssop (AGFO)			*		*	*									*				
Goldenrod																			
Canada (SOCA6)			*		*										*				
Missouri (SOMI2)		*	*		*			*				*	*		*		*		
Stiff (SORI2)		*						*		*			*		*				
Tall Smooth (SOGI)	*		*	*		*			*		*				*				*
Harebell (CARO2)		*	*		*			*				*	*		*	*			
Hoary vervain (VEST)					*	*		*		*					*				
Illinois bundleflower (DEIL)			*		*	*			*						*				*
Indian breadroot (PEES)			*		*			*				*	*		*		*		
Ironweed (VEFA2)				*	*	*			*										*
Joe Pye weed (EUMA9)				*					*										*
Lewis flax (LILE3)			*	*	*	*		*	*	*					*		*		
Milkvetch																			
Canada (ASCA11)		*	*	*	*	*	*	*	*	*					*				

**Table 3. Recommended Species by Ecological Site for MLRA 56 and 55A&B**

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Species/Ecological Site *indicates species not compatible in MLRA	CD	CP & TCp	CS (TSa)	Cy	LSb	Ly	LyOv	LySv	Sa	Sb	SbSa	SL	SwCy/ SwLy	SwG	SwM	Sy	SyCp	TLy	WM / LTM
Groundplum (ASCR2)					*			*				*	*		*		*		
Milkweed 6/																			
Butterfly (ASTU)						*		*							*				
Showy (ASSP)	*		*		*	*			*										*
Swamp (ASIN)														*					*
Partridge pea 6/(CHFA2)					*										*				
Pasqueflower (PUPAP2)			*		*			*				*	*		*		*		
Plains Coreopsis (COTI3)				*	*	*	*		*						*				*
Prairieclover																			
Purple (DAPU5)		*	*	*		*	*		*		*		*		*	*	*		
Silky (DAVI)			*					*					*		*				
White (DACA7)		*		*	*	*	*		*				*		*		*		
Prairie onion (ALST)			*		*			*		*					*		*		
Prairie Phlox (PHAN4)						*			*										*
Prairie Smoke (GETR)			*	*	*		*	*				*	*		*		*		
Purple meadow rue (THDA)				*					*										*
Rocky mountain bee plant (CLSE)				*	*	*			*						*				
Scarlet globemallow (SPCO)		*		*	*							*	*				*		
Shell-leaf penstemon (PEGR7)			*					*		*					*				
Silvery lupine 6/ (LUAR3)																			
Sneezeweed (HEAU)	*			*	*				*		*								*
Spiderwort																			
Long Bract (TRBR)		*	*	*	*	*	*		*		*								*
Prairie (TROCO)			*					*		*					*				
Sunflower																			
Maximillian (HEMA2)		*		*	*	*	*		*	*	*				*				*

**Table 3. Recommended Species by Ecological Site for MLRA 56 and 55A&B**

Minimum and maximum percentage of species per site (All mixtures will have a minimum of 100% and a maximum of 150% for pollinator plantings). 5/ Consult appropriate ecological site description for information on reference plant community composition.

Species/Ecological Site *indicates species not compatible in MLRA	CD	CP & TCp	CS (TSa)	Cy	LSb	Ly	LyOv	LySv	Sa	Sb	SbSa	SL	SwCy/ SwLy	SwG	SwM	Sy	SyCp	TLy	WM / LTM
Sawtooth (HEGR4)			*	*	*	*			*		*		*	*		*	*	*	
Stiff 3/ (HEPA19)		*	*	*	*	*	*		*	*			*		*	*	*		
Western yarrow 3/ (ACMIO)	*	*	*	*	*	*	*		*	*	*	*	*		*	*	*		
Wild bergamot (MOFI)					*	*			*						*				
<b>Shrubs 2/</b>																			
Buffaloberry (SHEPH)											*								
Chokecherry 6/ (PRMA9)					*	*													
False indigo (AMNA)			*	*	*	*			*					*					*
*Fourwing Saltbush (ATCA2)																			
*Gardner saltbush (ATGA)																			
Golden Currant 4/ (RIAU)			*	*	*	*			*						*	*	*		
Juneberry (AMAL2)					*	*												*	
Leadplant (AMCA6)		*	*		*	*		*		*			*		*	*	*		
Prairie rose (ROAR3)		*	*	*	*	*		*	*	*		*	*		*	*	*		
Western snowberry (SYOC)			*	*	*	*		*	*	*			*		*		*		
*Winterfat (KRASC)																			
*WY big sagebrush (ARTRW8)																			
<p>1/ Minimum of four grass species including at least one warm and/or cool season species.</p> <p>2/ Forbs and shrubs will be limited to a maximum of 25% of the total mixture. Except those species noted in footnote #3, individual forb and shrub species will be limited to 5% of the mixture.</p> <p>3/ These species will be limited to no more than 2% of the mixture.</p> <p>4/ Golden currant is not rated for Thin Claypan</p> <p>5/ For ESD's not listed in the table please consult your area specialist</p> <p>6/ Research indicates partridge pea, milkweeds, lupines, and chockcherry can be toxic to livestock</p>																			