

TABLE 1
SEEDING FOR CRITICAL AREAS
TEMPORARY COVER OR NURSE CROP

SPECIES OR MIXTURE	SEEDING RATE (LBS/ACRE)		RECOMMENDED SEEDING DATES		DRAINAGE DROUGHTY	ADAPTATION POORLY DRAINED	ACIDITY pH
		TEMPORARY NURSE	PLANT HARDINESS ZONE 4&5	6&7			
1. Redtop	5	3	3/15 – 7/01 8/01 – 9/01	3/01 – 6/15 8/15 – 9/15	X	X	4.0 -7.5
2. Annual Ryegrass	40	20	3/15 – 7/01 8/01 – 9/01	3/01 – 6/15 8/15 – 9/15	X	X	5.5 -7.5
3. Field Bromegrass	40	20	3/15 – 7/01 8/01 – 9/01	3/01 – 6/15 8/15 – 9/15	X		6.0 -7.0
4. Spring Oats	96	48	3/15 – 7/01	3/01 – 6/15	X		5.5 -7.0
5. Sudangrass	40	20	7/01 – 8/01	6/15 – 8/15	X		5.5 -7.5
6. Millet	30	15	7/01 – 8/01	6/15 – 8/15	X	Japanese	4.5 -7.0
7. Winter Rye	168	84	8/01 – 11/01	8/15 – 11/15	X		5.5 -7.5
8. Winter Wheat	180	90	8/01 – 11/01	8/15 – 11/15	X		5.0 -7.0

TABLE 2
SEEDINGS FOR CRITICAL AREAS
PERMANENT COVER¹

SPECIES OR MIXTURE	SEEDING RATE (LBS/ ACRE)		DRAINAGE DROUGHTY	ADAPTATION POORLY DRAINED	ACIDITY ADAPTATION pH
	PREPARED DRILLED CULTIPACKED	UNPREPARED ADVERSE SITE HYDROSEDED			
1. Tall Fescue	60	75	X	X	4.0- 8.0
2. Tall Fescue and Red Fescue or Hard Fescue	40 10	60 15	X		5.0 -7.5
3. Tall Fescue Birdsfoot Trefoil ^{3/4}	20 6	30 10	X	X	5.0 -7.5
4. Red Fescue or Hard Fescue Birdsfoot Trefoil ^{3/4}	20 20 6	30 30 10	X		5.0 -7.5
5. Tall Fescue or Red Fescue or Hard Fescue Sericea lespedeza ^{3/5}	20 20 20 20	30 30 30 30	X		5.0- 7.5
6. Reed Canarygrass	20	30	X	X	5.0 -7.5
7. Reed Canarygrass Birdsfoot Trefoil ^{3/4}	20 6	30 10	X	X	5.0 -7.5

TABLE 2
SEEDINGS FOR CRITICAL AREAS
PERMANENT COVER ¹

SPECIES OR MIXTURE ²	SEEDING RATE (LBS/ ACRE)		DRAINAGE DROUGHTY	ADAPTATION POORLY DRAINED	ACIDITY ADAPTATION pH
	PREPARED DRILLED CULTIPACKED	UNPREPARED ADVERSE SITE HYDROSEEDED			
8. Crownvetch ³ and Tall Fescue or Red Fescue or Hard Fescue or Perennial Ryegrass	10 20 20 20 20	15 30 30 30 30		X	6.0- 7.5
9. Crownvetch ³ Birdsfoot Trefoil ^{3/4} Tall Fescue	10 6 20	15 10 30	X		6.0 -7.5
10. Flatpea ^{3/7} and Tall Fescue or Red Fescue or Hard Fescue or Perennial Ryegrass	20 20 20 20 20	30 30 30 30 30	X		5.0 -7.5
11. Perennial Pea ^{3/7} and Tall Fescue or Red Fescue or Hard Fescue or Perennial Ryegrass	40 20 20 20	60 30 30 30			5.0 -7.5

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PERMANENT COVER ¹

SPECIES OR MIXTURE ²	SEEDING RATE (LBS./ACRE)		DRAINAGE DROUGHTY	ADAPTATION POORLY DRAINED	ACIDITY ADAPTATION pH
	PREPARED DRILLED CULTIPACKED	UNPREPARED ADVERSE SITE HYDROSEEDED			
12. Alfalfa and ^{3/6}	10	15			6.5 -7.5
Tall Fescue or	10	15			
Reed Canarygrass or	8	12			
Smooth Bromegrass or	8	12			
Orchardgrass or	3	5			
Timothy ⁹	4	6			
13. Birdsfoot Trefoil ^{3/4/6}	6	10			5.0 -7.5
and Tall Fescue or	6	10	X	X	
Reed Canarygrass or	6	10	X		
Smooth Bromegrass	6	10		X	
Orchardgrass	3	5			
Timothy	2	3	X		
14. Tall Fescue and/or	60	75			5.0 - 8.0
Perennial Ryegrass	30	45	X	X	
and/or Red Fescue	30	45			
and/or Kentucky	20	30	X		
Bluegrass					5.5 - 7.0
15. Switchgrass ⁶	10	15	X	X	5.0 -7.5

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PERMANENT COVER ¹

SPECIES OR MIXTURE ²	SEEDING RATE (LBS./ACRE)		DRAINAGE DROUGHTY	ADAPTATION POORLY DRAINED	ACIDITY ADAPTATION pH
	PREPARED DRILLED CULTIPACKED	UNPREPARED ADVERSE SITE HYDROSEDED			
16. Switchgrass ⁶	10	15	X	X	5.0 -7.5
Birdsfoot Trefoil ^{3/4}	6	10			
17. Deertongue ⁶	15	25	X		3.5 -7.5
18. Deertongue ⁶	15	25	X		5.0 -7.5
Birdsfoot Trefoil ^{3/4}	6	10			

PLANTING DATES
COOL SEASON PLANTS (MIXES 1-14)

	Hardiness Zone 6 & 7	Hardiness Zone 4 & 5
Optimum	03/01 -04/15	03/15 -05/01
Normal Range	11/15 -06/15	11/01 -07/01
	08/15 -00/15	08/01 -09/01
Project	11/15 -09/15	1/01 -09/01

WARM SEASON PLANTS (MIXES 15-18)

	Hardiness Zone 6 & 7	Hardiness Zone 4 & 5
Optimum	03/01 -04/15	03/15 -05/01
Normal Range	12/01 -04/15	1/15 -05/01

¹Use a nurse crop from Table 1 selected for the site conditions and sown at the nurse crop seeding rate.

²Consult the Agronomy Guide for cultivar recommendations of forage and turf species. Other species:

Crownvetch 'Penngift'
Flatpea 'Lathco'
Perennial Pea 'Lancer'
Switchgrass 'Blackwell' - Erosion control
 'Cave-in-Rock' - Forage
 'Shelter' - Wildlife
Deertongue 'Tioga'

³Inoculate legume seeds, use four times the normal rate of inoculate when hydroseeding.

⁴Birdsfoot Trefoil is not recommended in MLRA 148 and 149, where crown and root rots may injure the stand.

⁵Sericea lespedeza is only recommended in MLRA 148 and 149.

⁶Use these mixtures on gentle, less erosive slopes; must be drilled or broadcast and cultipacked.

⁷Drill or broadcast 1/2-inch deep and cultipack flatpea and perennial pea.

TABLE 3
PLANTING FOR CRITICAL AREAS
TREES SUITABLE FOR SURFACE MINES

SPECIES	LOWER LIMIT pH TOLERANCE	TOLERANCE TO ¹ SHADE	DRAINAGE ADAPTATION	ELEVATION ²
CONIFERS				
Larch, Japanese	4.0	intermediate	excessive-poor	
Pine, Austrian	4.0	intermediate	well	
Pine, Pitch Pine, Red	4.0	intolerant	excessive-well	below 3000 feet
	4.0 -4.5	intolerant	excessive-well	above 2000 feet
Pine, Scotch	4.0	intolerant	well	
Pine, Virginia	4.0	intolerant	excessive-well	below 2500 feet
Pine, White	4.5	intermediate	well-poor	
Spruce, Norway	4.5 -5.0	tolerant	well	
Spruce, White	4.5 -5.0	tolerant	well-poor	
HARDWOODS				
Alder, European Black	3.5	intolerant	well-poor	below 2500 feet
Aspen, Bigtooth	4.0	intolerant	excessive-well	
Aspen, Quaking	4.0	intolerant	excessive-well	
Ash, Green	4.0	intermediate	well-poor	below 2500 feet
Ash-White	4.0	intermediate	somewhat poor	below 2500 feet
Birch, Gray	3.5	intolerant	excessive-well	
Birch, Sweet	4.0	intermediate	excessive-well	
Chestnut, Chinese	5.0	intermediate	well	
Locust, Black ³ 'Steiner'	4.0	intolerant	excessive-well	below 3000 feet
Oak, Red	4.0	intermediate	well	
Oak, Sawtooth 'Gobbler'	5.0	intolerant	excessive-well	
Poplar, Hybrid	4.0 - 4.5	intolerant	well	

**TABLE 3
PLANTING FOR CRITICAL AREAS
TREES SUITABLE FOR SURFACE MINES**

SPECIES	LOWER LIMIT pH TOLERANCE	TOLERANCE TO ¹ SHADE	DRAINAGE ADAPTATION	ELEVATION ²
HARDWOODS				
Poplar, Yellow	4.5	intolerant	well	below 3000 feet
Sycamore	4.0 -4.5	intolerant	poor	below 2500 feet

PLANTING DATES: Plant as soon as frost is out of the ground but no later than:

HARDINESS ZONE	DATE
6 & 7	04/15
4 & 5	05/01

¹Shade tolerance of species defined as follows:

Tolerant - can withstand completely shaded conditions.

Intermediate - partial shade is tolerated; plant requires some sunlight.

Intolerant - plant requires full sunlight.

²Blank spaces indicates no restriction: "Below" means that species are to be planted below this elevation.

³May be added to mixtures in Table 2 at 3 lbs. per acre.

TABLE 4
PLANTING FOR CRITICAL AREAS
SHRUBS SUITABLE FOR SURFACE MINES

SPECIES¹	LOWER LIMIT pH TOLERANCE	TOLERANCE TO SHADE²	DRAINAGE ADAPTATION	YEARS TO FRUIT MATURITY	MONTHS OF FRUIT MATURITY
Coral berry	5.0	tolerant	excessive-well	3	September -October
Crabapple	4.5 -5.0	intolerant	well	3	September-October
Dogwood, Gray	5.0	intermediate	excessive-well	5	September-October
Dogwood, Silky	4.0	tolerant	well-poor	4-5	August-September
Honeysuckle, Amur	4.5 -5.0	intermediate	excessive-well	3-4	September-October
Indigobush	4.0	intermediate	excessive-well	3	August
Locust, Bristly	3.5	intolerant	excessive-well	3-5	September
Privet, Amur	4.5 -5.0	tolerant	well	4	September
Sumac, Aromatic	4.5	tolerant	excessive-well	5	July-August
Sumac, Shining	4.0	intermediate	excessive-well	4	September-October
Sumac, Smooth	4.5	intermediate	excessive-well	4	September -October
Viburnum, Arrowwood	4.5	tolerant	well-poor	3-5	September-October
Viburnum, Cranberrybush	4.5	intermediate	well-poor	3-5	August-September

TABLE 4
PLANTING FOR CRITICAL AREAS
SHRUBS SUITABLE FOR SURFACE MINES

PLANTING DATES: Plant as soon as frost is out of the ground but no later than:

HARDINESS ZONE	DATE
6 & 7	04/15
4 & 5	05/01

¹Recommended varieties are:

Crabapple -'Midwest', 'Roselow'
 Dogwood, Silky -'Indigo'
 Honeysuckle, Amur -'Rem Red'
 Locust, Bristly -'Arnot'
 Sumac, Aromatic -'Konza'

²Shade tolerance of species defined as follows:

Intermediate -partial shade is tolerated; plant requires some sunlight.

Intolerant -plant requires full sunlight.

Tolerant -can withstand completely shaded conditions