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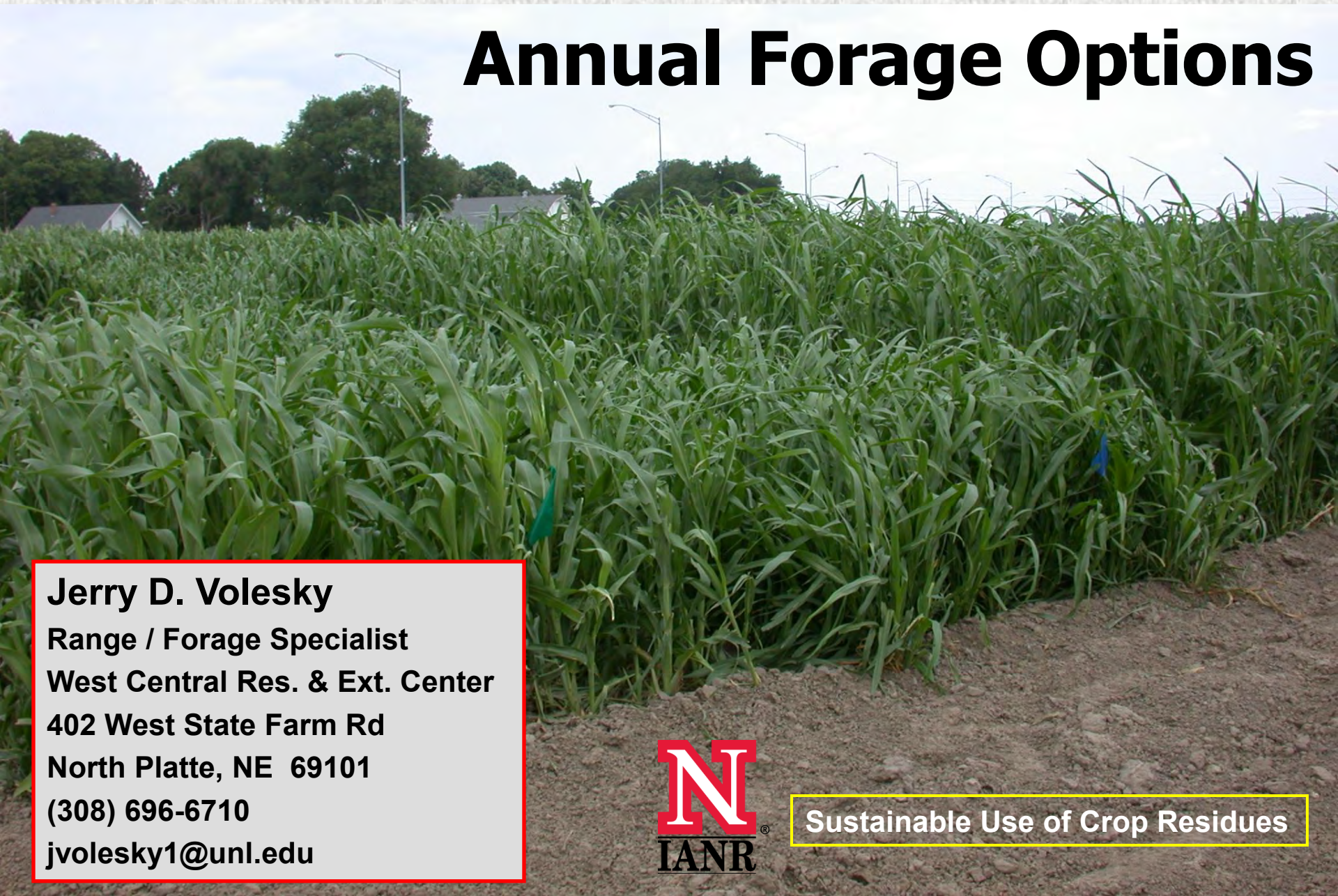
Know how. Know **now.**

Annual Forage Options



Jerry D. Volesky
Range / Forage Specialist
West Central Res. & Ext. Center
402 West State Farm Rd
North Platte, NE 69101
(308) 696-6710
jvolesky1@unl.edu

IANR

Sustainable Use of Crop Residues

Annual Forages

Cool Season Annuals

Spring seeded:

Oats
Spring triticale
Spring barley
Field peas
Several other legumes
Italian or annual ryegrass
(Winter wheat, rye, or triticale)

Spring cool-season annuals

- **Planting date:**
  - **Mid-March to mid-April (soil 43 – 45°F)**
  - **Less yield with later planting**
  - **Check for potential residual herbicide**
- **Seeding rate:**
  - **Check with seed supplier or Extension office**
  - **NebGuide G2185** ***(Utilizing Annual Forages with Limited Irrigation for Beef Cattle During and Following Drought)***
- **Fertilization:**
  - **Soil test**
  - **Extension Circ.: EC 155** ***(Nutrient Management for Agronomic Crops in Nebraska)***
  - **50 – 75 lb N/acre (irrigated small grains)**

Forage yield of spring-seeded oats and rainfall – irrigation amounts, North Platte, NE.

Year	Yield (T/ac)	Rain (in.)	Irrigation (in.)
2012	2.45	2.93	6.88
2007	2.65	13.15	1.62
2006	3.13	8.05	4.94
2005	3.35	10.86	3.00
2004	3.13	10.18	3.89
2004 (dryland)	2.44	10.18	- -
2003	3.65	9.99	5.40
2002	2.90	3.72	8.65
Average	2.96	8.63	4.90

[1] During planting to harvest period.

Annual Forages

Warm Season Annuals

Late-spring or summer seeded:

Millet (grazing & hay types)
S X S hybrids
Sorghum
Sudangrass
Crabgrass
Teff
Corn
Several legumes

Warm-season annuals

- **Planting date:**
  - **Mid-May to August (soil 60 – 70°F)**
  - **Less yield (regrowth potential) with later planting**
- **Seeding rate:**
  - **Check with seed supplier or Extension office**
  - **NebGuide G2183** ***(Summer Annual Forage Grasses)***
- **Fertilization:**
  - **Soil test**
  - **Extension Circ.: EC 155** ***(Nutrient Management for Agronomic Crops in Nebraska)***
  - **40 – 80 lb N/acre (high end when irrigated)**

Range of dry matter yield for summer annual forages under irrigated conditions.

Forage	Tons/acre
Sudangrass	4.1 to 4.8
Sorghum-sudangrass hybrid	4.2 to 5.3
Forage sorghum	4.4 to 5.3
Pearl millet	3.8 to 4.5
Foxtail millet	2.8 to 3.8
Teff	2.6 to 3.8

* Yield ranges include the primary and regrowth harvest for all forages except forage sorghum and foxtail millet.

48 days (13-Sep.) after 27-July seeding

September yield of irrigated, warm-season annual forages planted July 11 or July 27, 2007, North Platte, NE.

Forage (planted July 11)	September yield (Tons/acre)
'*Grazex 725 BMR*' sorghum-sudangrass	4.18
'White Wonder' foxtail millet	2.43
'Tiffany' teff	2.36
Forage (planted July 27)	
'*Grazex 725 BMR*' sorghum-sudangrass	3.96
'White Wonder' foxtail millet	2.83
'Tiffany' teff	2.34

Annual Forages

Summer or late-summer seeded (for fall / winter forage):

Oats, barley, spring triticale, spring wheat, ryegrass, peas, and/or turnips, other brassicas

- **Planting date: late July through August**

Winter wheat, rye, triticale

Planting date: late August – September

- **Some fall/winter forage, mostly the following spring**


Forage Cocktail / Cover Crop
in wheat residue


Turnip
Soybean
Lentil
Pea
Oil seed radish
Sorghum

Small Grains – Fall Forage

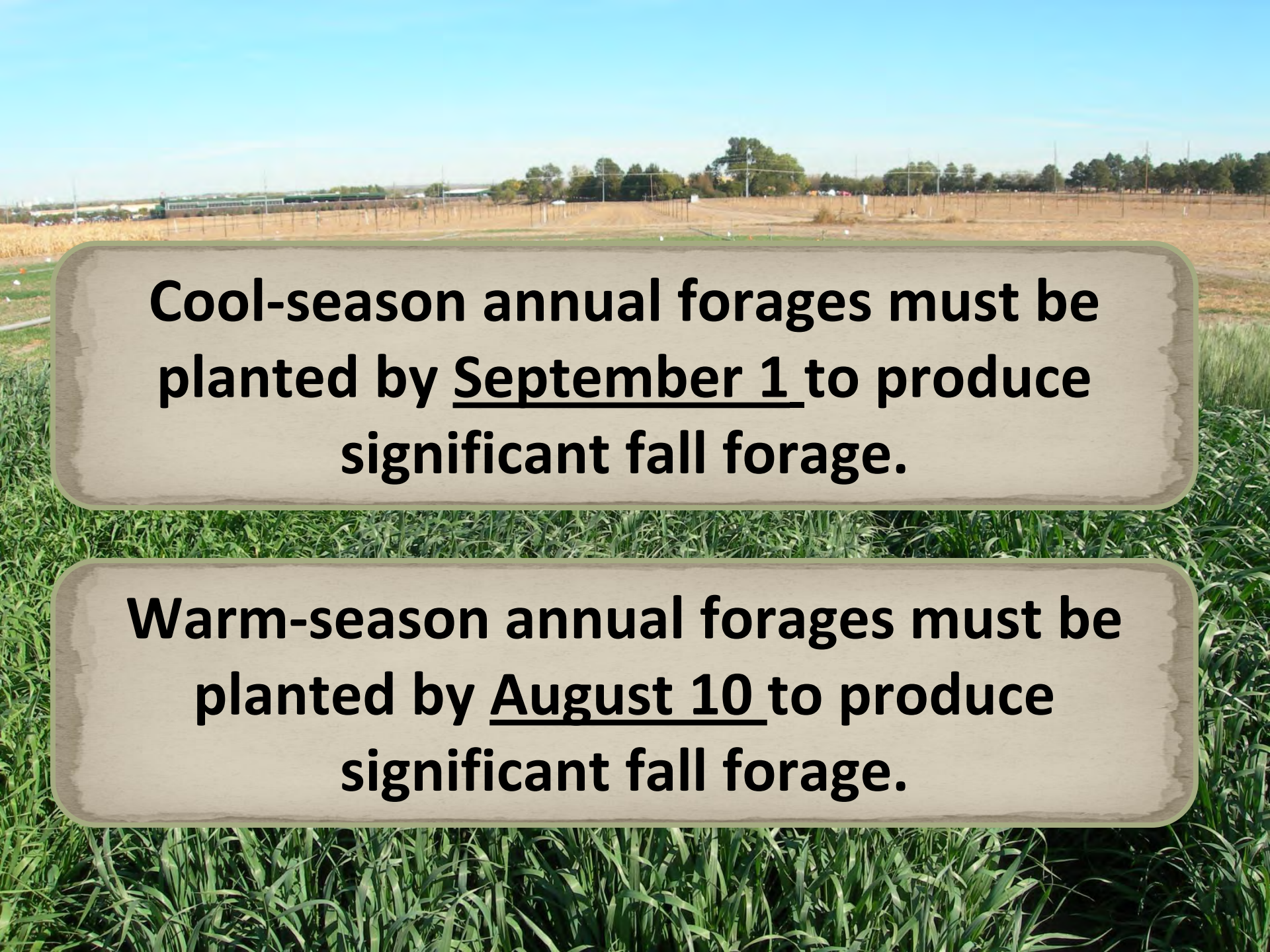
Planting date: August 13, 2012

Fall small grain harvest date, height at harvest and forage yield, North Platte, NE – 2012[1,2].			
Entry	Harvest date	Height	Forage yield[2]
		(inches)	*(tons/acre)*
Spring triticale	29-Oct	38	4.48[A]
'Shelby' oats	29-Oct	35	4.07[AB]
'Haybet' barley	29-Oct	30	3.88[B]
'Brick' hard red spring wheat	29-Oct	31	3.17[C]
'Stallion' oats	29-Oct	32	3.08[C]
Winter wheat	29-Oct	15	2.38[D]
'Ocala' annual ryegrass	29-Oct & 30-Nov	14	1.33 + 0.28 = 1.62[E]
'Fria' annual ryegrass	29-Oct & 30-Nov	13	1.18 + 0.29 = 1.47[E]
$LSD_{0.05}$	- -	- -	0.56

[1] All entries planted on August 13, 2012.

[2] Dry matter basis.

[ABCDE] Means followed by unlike letters significantly differ ($P < 0.05$).


Cool-season annual forages must be planted by September 1 to produce significant fall forage.
Warm-season annual forages must be planted by August 10 to produce significant fall forage.

Forages in corn residue

- Turnips, radishes
- Oats
- Annual ryegrass
- Winter rye

Turnips in silage corn residue

Turnips in seed corn residue

Grazing Annual Forages

- **Grazing not as efficient as haying.**
  - **Grazing interrupts plant growth, may reduce potential growth.**
  - **Trampling losses.**
- **Start at appropriate stage or height.**
- **Simple rotations beneficial.**
- **Staggered plantings (warm-season annuals).**

Grazing Annual Forages

- Stocking flexibility.
- Nearby ‘backup’ pasture.
- Potential of nitrates and prussic acid
- Lush green pasture (cool-season).
  - Dry hay available
  - Grass tetany (high magnesium mineral)
- NebGuide G2183 *(Summer Annual Forage Grasses)*

Start grazing at appropriate stage or height

- **Small grains (cool-season)**
  - **Spring planted: 6 to 8 inches (May 15 – 25)**
  - **Late summer planted: could allow more growth (October 1 +)**
- **Warm–season annuals**
  - **Sudangrass/pearl millet: 15 to 20 inches**
  - **S-S hybrids: 18 – 24 inches**

Simple grazing rotations beneficial

- **Warm–season annuals**
  - **EXAMPLE: Sudangrass with staggered seeding**

Field A	Field B	Field C
Seed June 1 Graze when 15-20” tall for 7 – 10 days. Move to Field B	Seed June 12 Graze for 7 – 10 days. Move to Field C	Seed June 26 Graze for 7 – 10 days. Move back to Field A (and repeat)

Carrying Capacity – Stocking Rates: Annual Forages

- 1 AU (animal unit) = 1000 lb animal
- 1 AUD (animal unit day) = 26 lb forage
- 1 AUM (animal unit month) = 780 lb forage
- Cow-calf pair = 1.5 AU
- Weaned calf (500 lb) = 0.5 AU

- Assuming 50% grazing efficiency:

1.3 AUM per ton of potential forage

Carrying capacity: Warm-season annuals:

(Sorghum-sudangrass hybrids, sudangrass, pearl millet)

Potential hay yield Tons/acre	Grazing efficiency (%)			Cow-calf pairs/acre for:		
		AUM/acre	AUD/acre	1 month	2 months	3 months
2	40	2.05	62	1.37	0.68	0.46
3	40	3.08	92	2.05	1.03	0.68
4	40	4.10	123	2.74	1.37	0.91
5	40	5.13	154	3.42	1.71	1.14
2	50	2.56	77	1.71	0.85	0.57
3	50	3.85	115	2.56	1.28	0.85
4	50	5.13	154	3.42	1.71	1.14
5	50	6.41	192	4.27	2.14	1.42
2	60	3.08	92	2.05	1.03	0.68
3	60	4.62	138	3.08	1.54	1.03
4	60	6.15	185	4.10	2.05	1.37
5	60	7.69	231	5.13	2.56	1.71

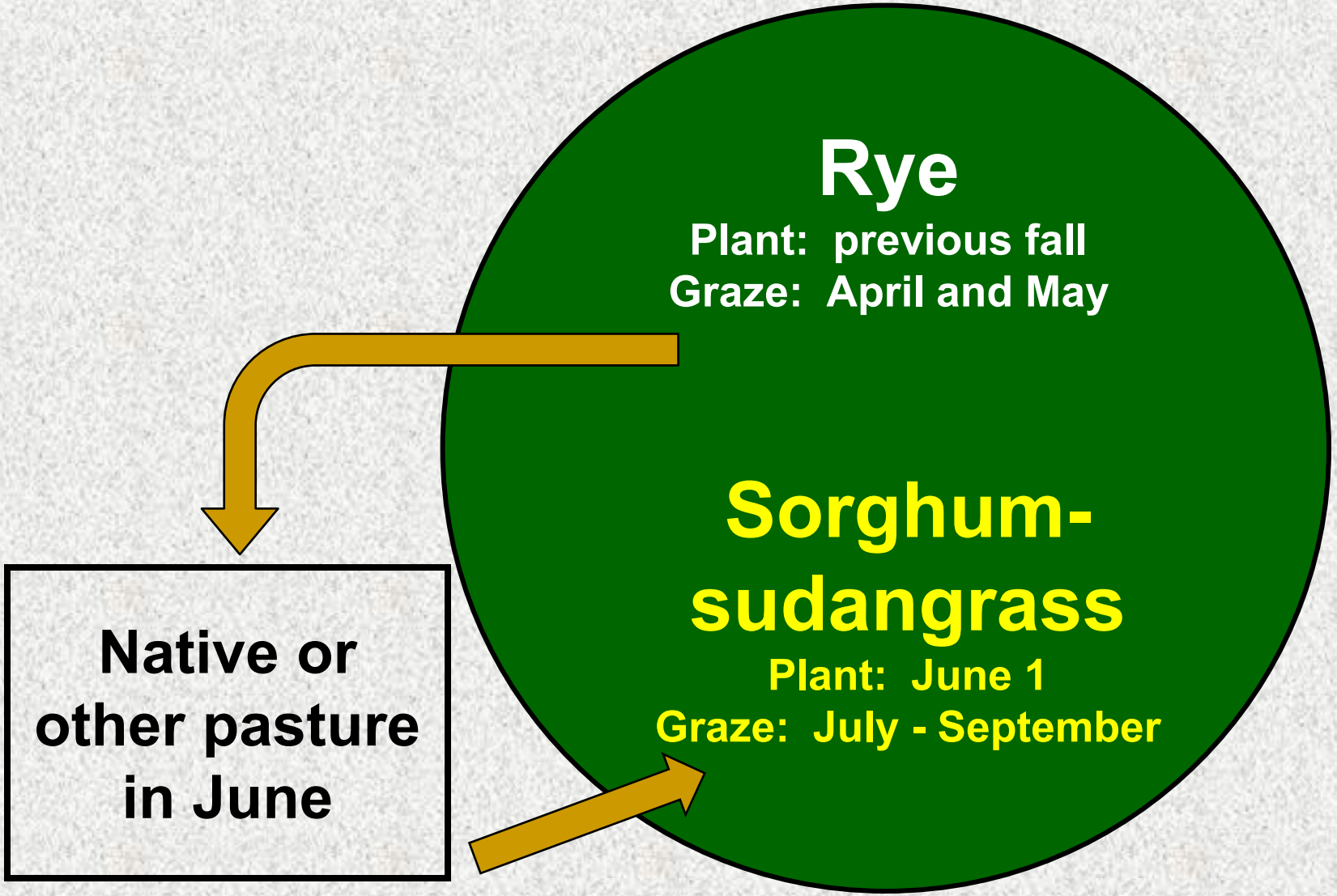
Carrying capacity: Small grain cereals:

(Oats, barley, spring triticale)

Planted late March to early April. Grazing period later May through June.

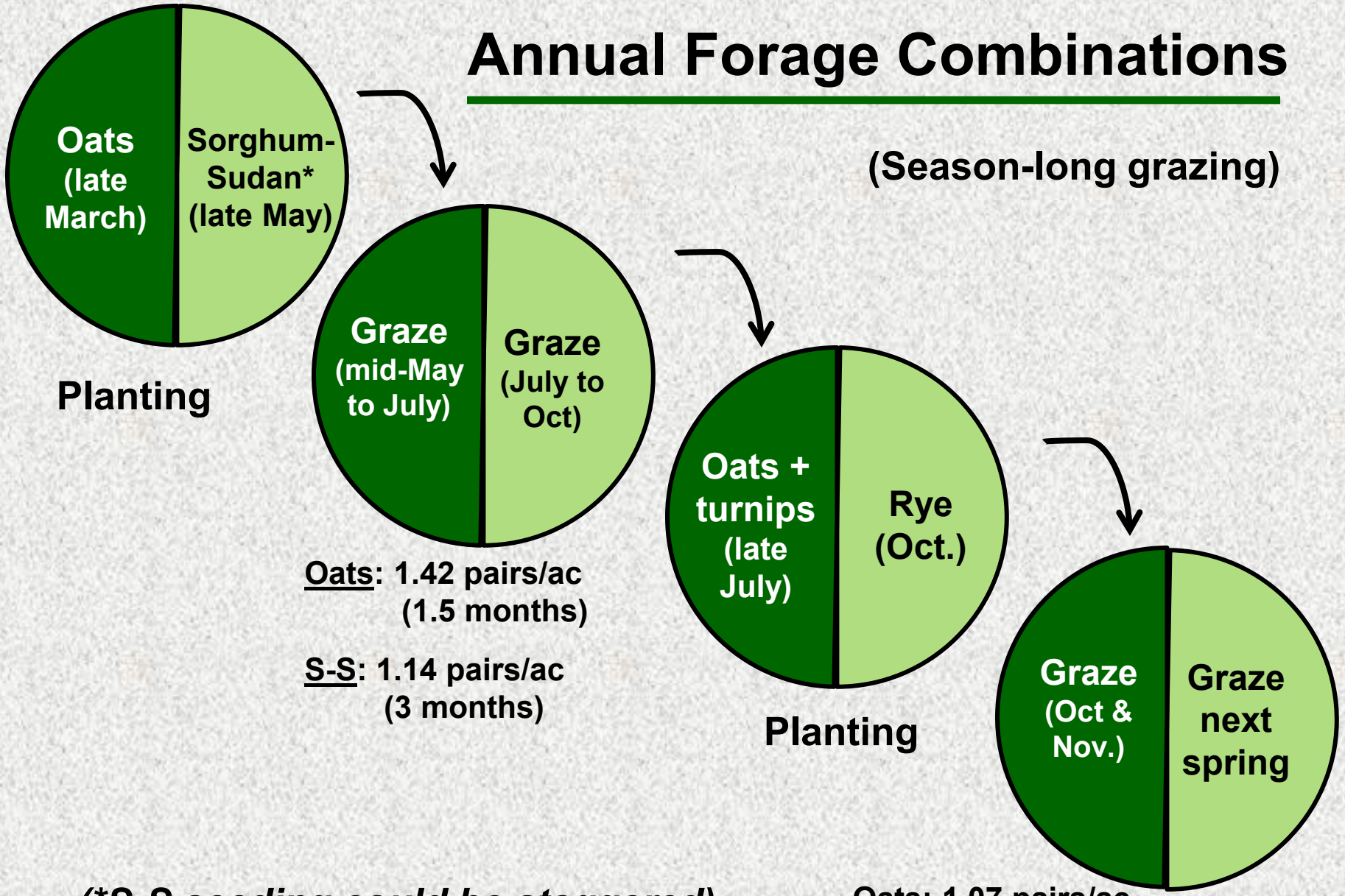
Potential hay yield Tons/acre	Grazing efficiency (%)			Cow-calf pairs/acre for:	
		AUM/acre	AUD/acre	1 month	1.5 months
1.5	40	1.54	46	1.03	0.68
2.5	40	2.56	77	1.71	1.14
3.5	40	3.59	108	2.39	1.60
1.5	50	1.92	58	1.28	0.85
2.5	50	3.21	96	2.14	1.42
3.5	50	4.49	135	2.99	1.99
1.5	60	2.31	69	1.54	1.03
2.5	60	3.85	115	2.56	1.71
3.5	60	5.38	162	3.59	2.39

Irrigated Annual Forage Combinations



Annual Forage Combinations

(Season-long grazing)



Oats: 1.42 pairs/ac (1.5 months)

S-S: 1.14 pairs/ac (3 months)

Oats: 1.07 pairs/ac (2 months)

*(*S-S seeding could be staggered)*