# Using cover crops for conservation and economical forage?

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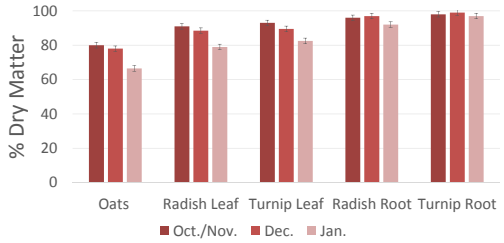
## In-vitro dry Matter digestibility

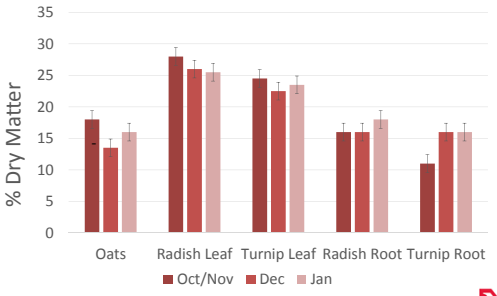



## What to plant?

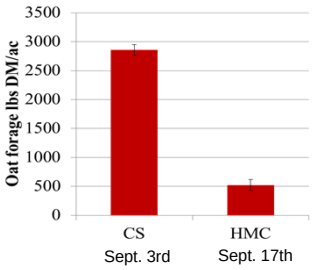
- 1st factor to consider is planting date
  - It's all about biomass!
- After August 10th but before Sept 1st (fall forage)
  - Cool season winter sensitive
  - Oats, spring barley, or spring triticale with or without brassicas (turnips, rape)
- After Sept 1st (spring forage)
  - Winter hardy cool season
  - Rye, Triticale

Planting guidelines: http://beef.unl.edu/planting-annual-forages

## Crude protein




## Effect of planting date on late summer planted Oats

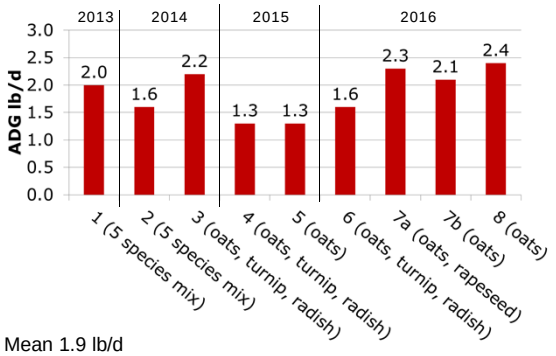



Ulmer et al., 2017 Nebraska Beef Report

## Fall grazing trials

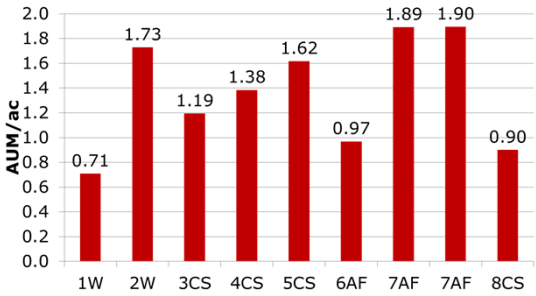
| Cover crop planted | Year | Yield, ton DM/ac | Grass, % | Brassica, % | Stocking rate calf/ac | Days of grazing |
|---|---|---|---|---|---|---|
| 5 species mix | 2013 | 1.1 | ND | ND | 1.0 | 48 |
| 5 species mix | 2014 | 1.8 | 26 | 74 | 1.7 | 53 |
| Oats, turnip, radish | 2014 | 1.7 | 54 | 46 | 0.9 | 64 |
| Oats, turnip, radish | 2015 | 2.1 | 59 | 41 | 1.0 | 66 |
| Oats | 2015 | 1.4 | 100 | 0 | 1.7 | 62 |
| Oats, turnip, radish | 2016 | 2.7 | 72 | 28 | 1.0 | 62 |
| Oats, rape | 2016 | 1.9 | 80 | 20 | 1.0 | 99 |
| Oats | 2016 | 1.9 | 100 | 0 | 1.0 | 99 |
| Oats | 2016 | 1.1 | 100 | 0 | 1.3 | 42 |
| Mean | | 1.7 | | | 1.2 | 66 |

## Gain of calves grazing in Nov. and Dec.



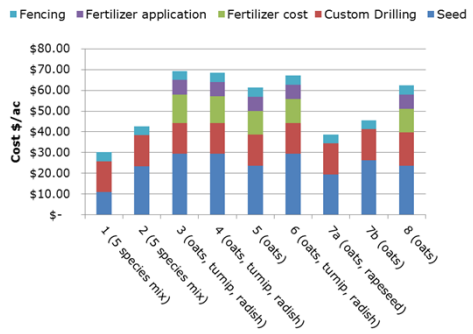

Mean 1.9 lb/d

## Grazed Animal Unit Months (AUM/ac)

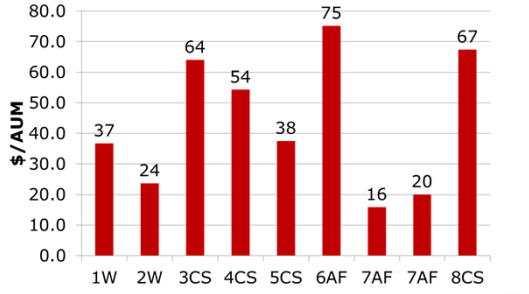



Mean 1.37 AUM/ac

## Cover crop establishment costs

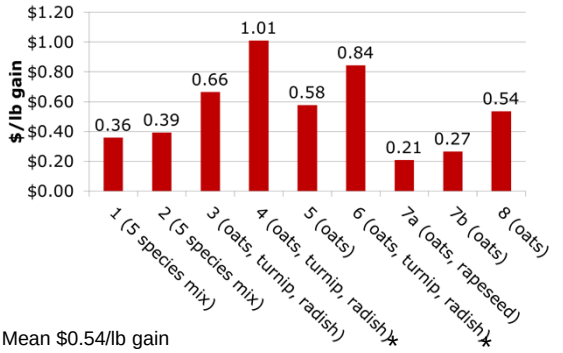



## Cost per grazed AUM



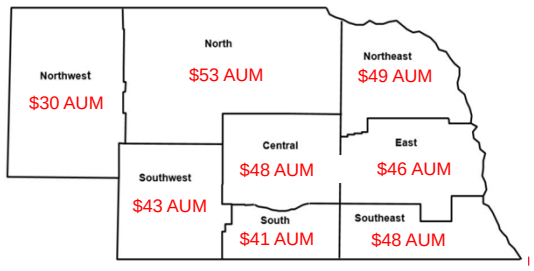

Mean $39/AUM

## Cost of gain is variable



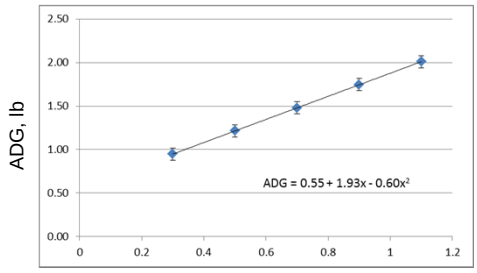

Mean $0.54/lb gain

## Competitive with pasture rental?




Nebraska Farm Real Estate Report 2016

## DDG supplementation of steers on grazed corn residue



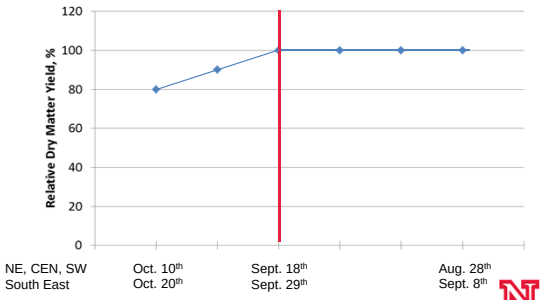

Welchons 2017 UNL Beef Report p 34

## Fall planting for spring growth

## DGS supplementation for 600 lb steers grazing corn residue

| ADG lbs/d | Lbs of DM | Lbs DDGS | Lbs MDGS | % BW |
|---|---|---|---|---|
| 1.08 | 1.8 | 2.0 | 3.6 | 0.3 |
| 1.23 | 2.4 | 2.7 | 4.8 | 0.4 |
| 1.37 | 3.0 | 3.3 | 6.0 | 0.5 |
| 1.49 | 3.6 | 4.0 | 7.2 | 0.6 |
| 1.61 | 4.2 | 4.7 | 8.4 | 0.7 |
| 1.71 | 4.8 | 5.3 | 9.6 | 0.8 |
| 1.88 | 6.0 | 6.7 | 12.0 | 1.0 |
| 1.95 | 6.6 | 7.3 | 13.2 | 1.1 |

## Effect of fall planting date on spring growth of winter hardy small cereals




Gibson et al., 2007; Agron. J. 99:49-58

## DGS and corn residue hard to beat

| | Fall cover crop | Residue/DDGS |
|---|---|---|
| Stocking rate, # hd/ ac | 1.2 | 1.3 |
| ADG, lb/hd/day | 1.9 | 1.9 |
| Days | 66 | 66 |
| Feed Costs, $/hd | | |
| Seed plus seeding | 31.87 | |
| N fertilizer and appl | 11.98 | |
| Residue | | 11.54 |
| DDGS | | 26.53 |
| Total feed cost/hd | 43.85 | 38.07 |
| Cost per lb gain, $/lb | 0.35 | 0.30 |

$6.27/hd *1.2 hd/ac = $5.23/ac for conservation

## Yield and quality of winter cereals in spring

| | lb DM/ac | CP, % | TDN,% |
|---|---|---|---|
| Elbon Rye | 4393 | 20.2 | 70.4 |
| VNS Rye | 3132 | 21.5 | 71.5 |
| Winter Barley | 2449 | 20.5 | 74.0 |
| Winter Triticale | 3841 | 21.8 | 70.8 |

April 8th 2016 near Fall City NE; Planted Late September

## Spring grazing in corn/bean systems


- Usual planting dates
  - Corn May 3 to May 19
    - Terminate at least 1 week prior to planting?
  - Soybeans May 18 to Jun 4
    - Cover crops can be terminated as little as one day before soybean planting without impacting soybean yield

## Summary

- Cover crops can be used to background calves
  - Late summer planted oats or other spring small cereal grasses can provide fall grazing
  - Late fall planted rye or triticale can provide spring grazing
  - Quality high enough to provide 1.3 to 3.0 lb/d gains without supplementation
    - Weather huge factor with rate of gain in winter
    - Grazing management big impact on gain in spring

## Grazing Rye in Spring

- Elbon Rye planted Nov. 1, 2016
  - 70 lbs/ac rye
  - 40 lb N/ac
- Steer calves – 700 lb
  - 2 hd/ac
- 22 days of grazing (April 2-April 24)
  - 1 AUM/ac
  - 3.2 lb/d gain
  - Cost of gain $0.45/lb

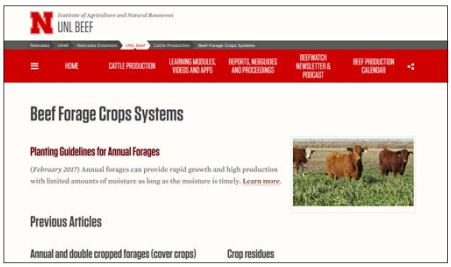
## Final thoughts

- Corn residue grazing still low hanging fruit
- Grazing cover crops can be a way to offset some of the costs while retaining soil benefits
  - Especially on corn silage ground
  - Maintaining soil cover is important

## Acute bovine pulmonary edema and emphysema (ABPE)

- Ruminal formation of 3-methylindole (3MI) from L-tryptophan.
- If cattle are receiving a high quality diet (moderate protein levels) before turnout no issues would be expected.
  - true ruminally degradable protein not urea
- Feed ionophore
  - Monensin 100 or 200 mg/hd/d (day before turn out)
  - Lasalocid at 200 mg/hd/d (6 days prior)

## Thanks




**Beef.unl.edu/cropland**