Cropland management

A case study from Oklahoma

Emmons Farm – Dewey Co., OK

A very traditional western Oklahoma farming operation

- Cow/calf herd – Grazing rangeland and wheat pasture
- Winter wheat
- Alfalfa hay
- Canola – added to the rotation within the last 10 years
- Cropland – fallow after wheat or canola harvest
- Owned cropland is No-till while some rented cropland is conventionally tilled.

Cropland soil health identified as the primary concern initially

- Low soil organic matter
- Little residue on soil surface
- Compaction from years of tillage leading to poor water infiltration, excess runoff, erosion
- High evaporation rates
- Loss of potential production
- High input costs (fertilizers and weed control)

Where did we begin?

Summer 2013 – Multi-species cover crops used to address:

Lack of residue

Compaction issues

High evaporative losses

Low soil organic matter

Lack of biodiversity

Low nutrient cycling

Summer 2014 following canola harvest:

Multi-species cover crops used again.

Canola leaves little residue after harvest.

Livestock introduced into the system.

Short-term rotational grazing with the goal of using 25% of forage produced by covers.

Fall 2014 – Wheat

Wheat crop planted in September 2014 used for winter grazing and will have grain harvested in June.

Winter 2014-15

Livestock grazed through winter until early March.

High energy forage from wheat and roughage from covers provided a good diet for the livestock.

Cattle got through winter with no feed or hay being provided.

Wheat was assessed using Greenseeker technology to determine nitrogen needs to complete the crop.

No additional nitrogen fertilizer needed!

The Future?

More diversity in cover crops

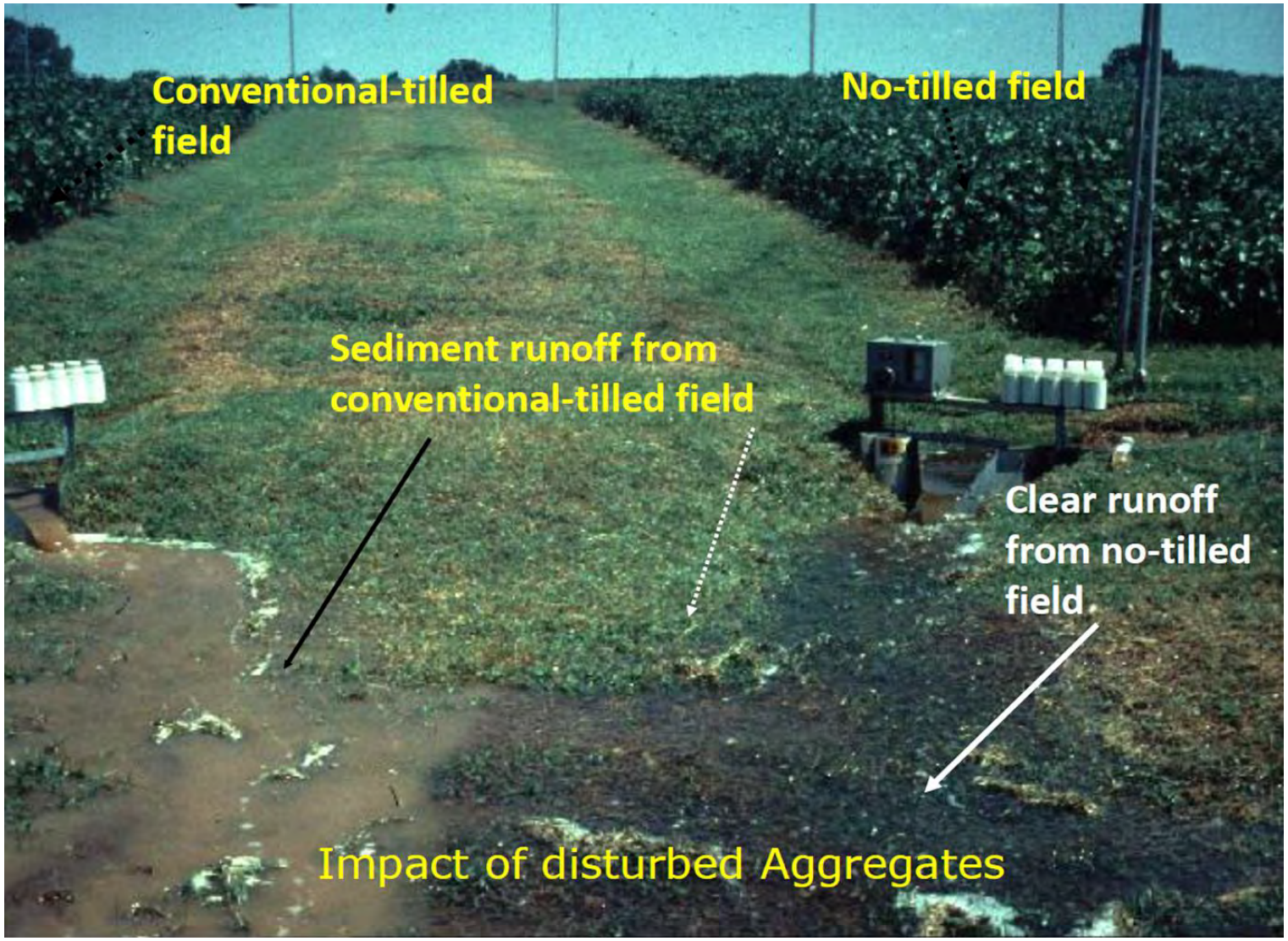
Additional crops put into the crop rotation. (Soybeans being added in 2015)

Additional livestock integration into the cropping system.

Soil health management on the the native range?

Sharing what we learn (field days)

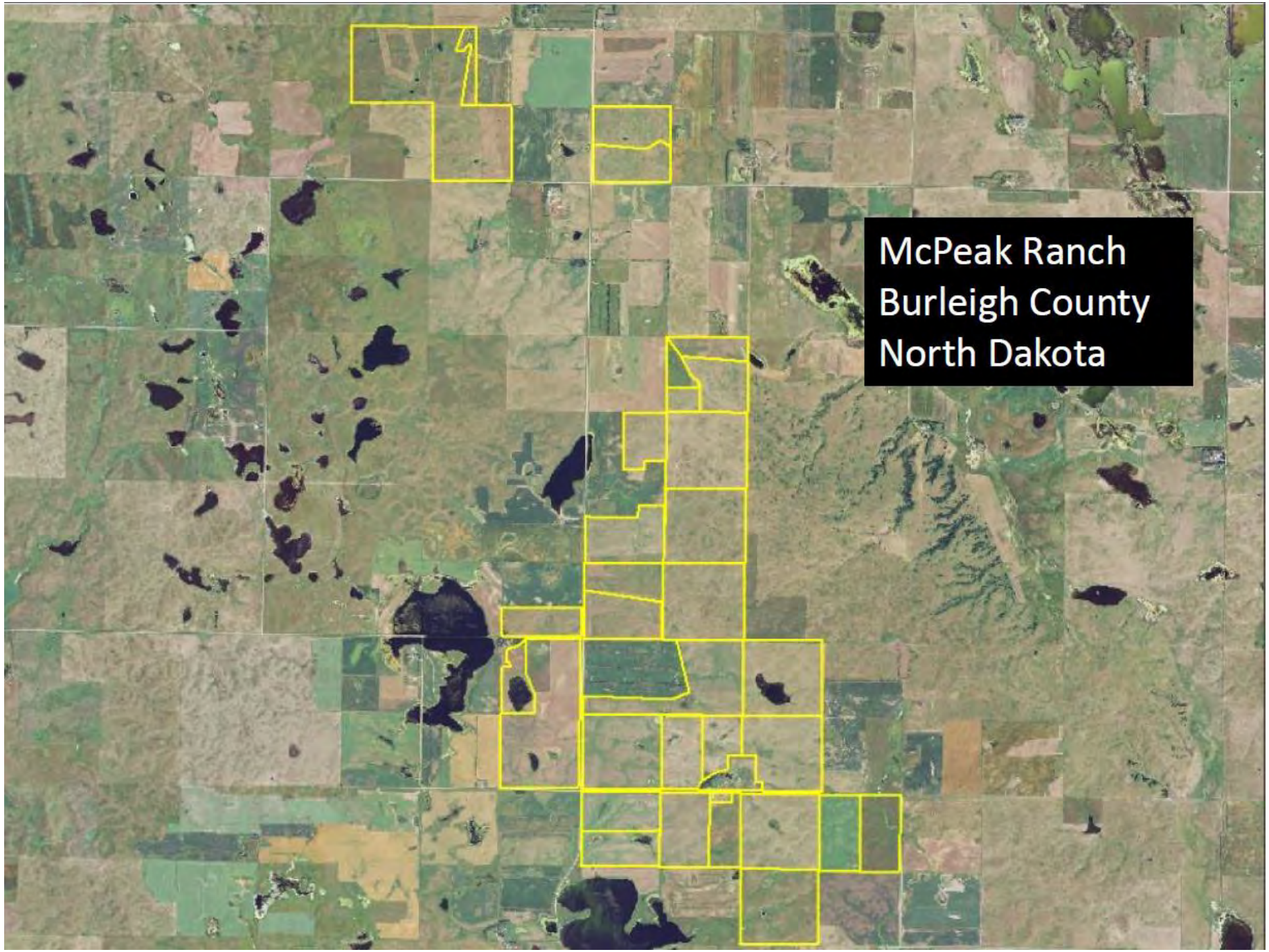
Our Mission for Oklahoma



Grazing management

A case study from North Dakota

Changes to grazing and haying systems resulting in improved soil health

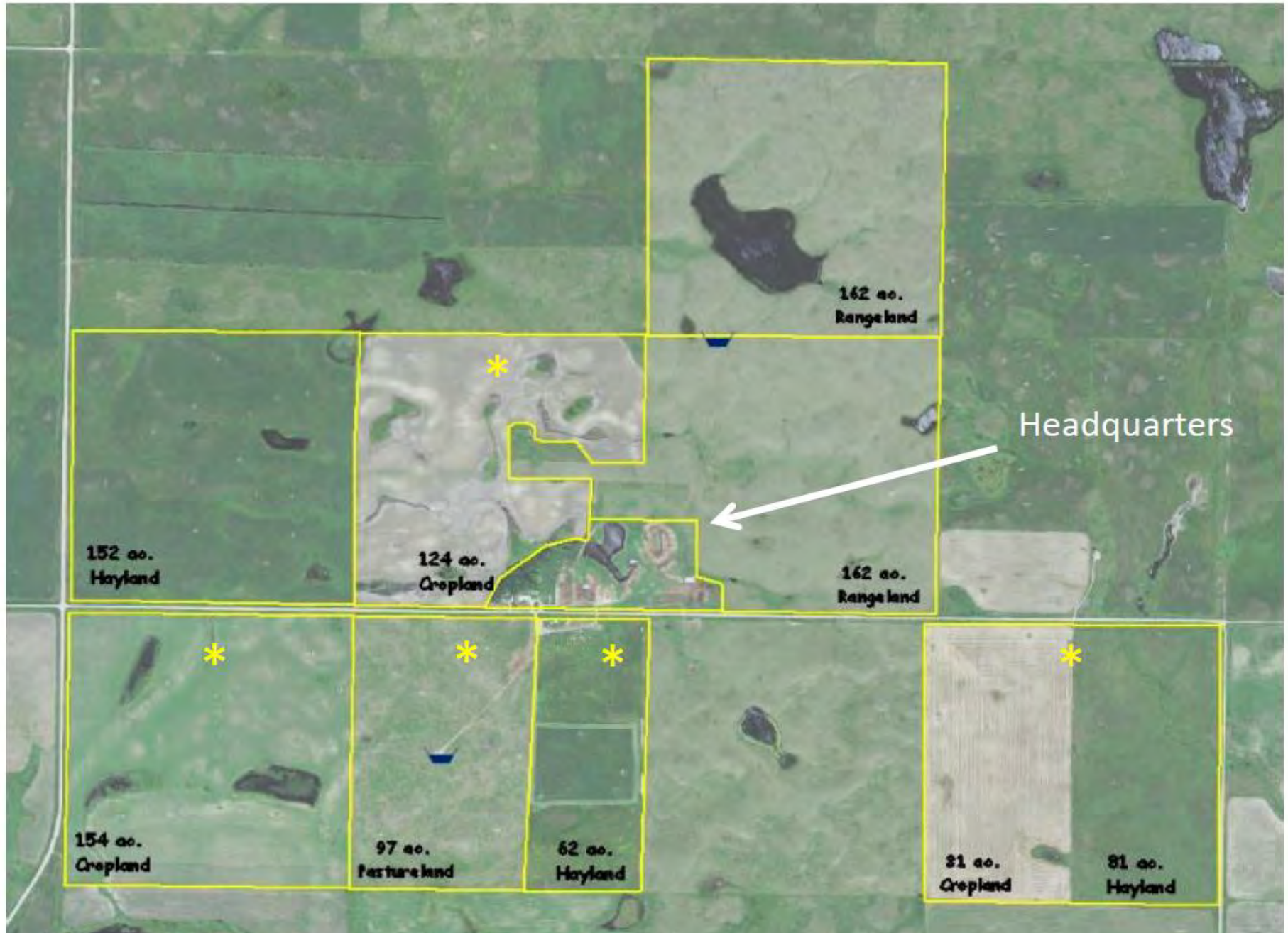

McPeak Ranch
Burleigh County
North Dakota

A very traditional system was in place where cows were in drylot near the headquarters for calving in January

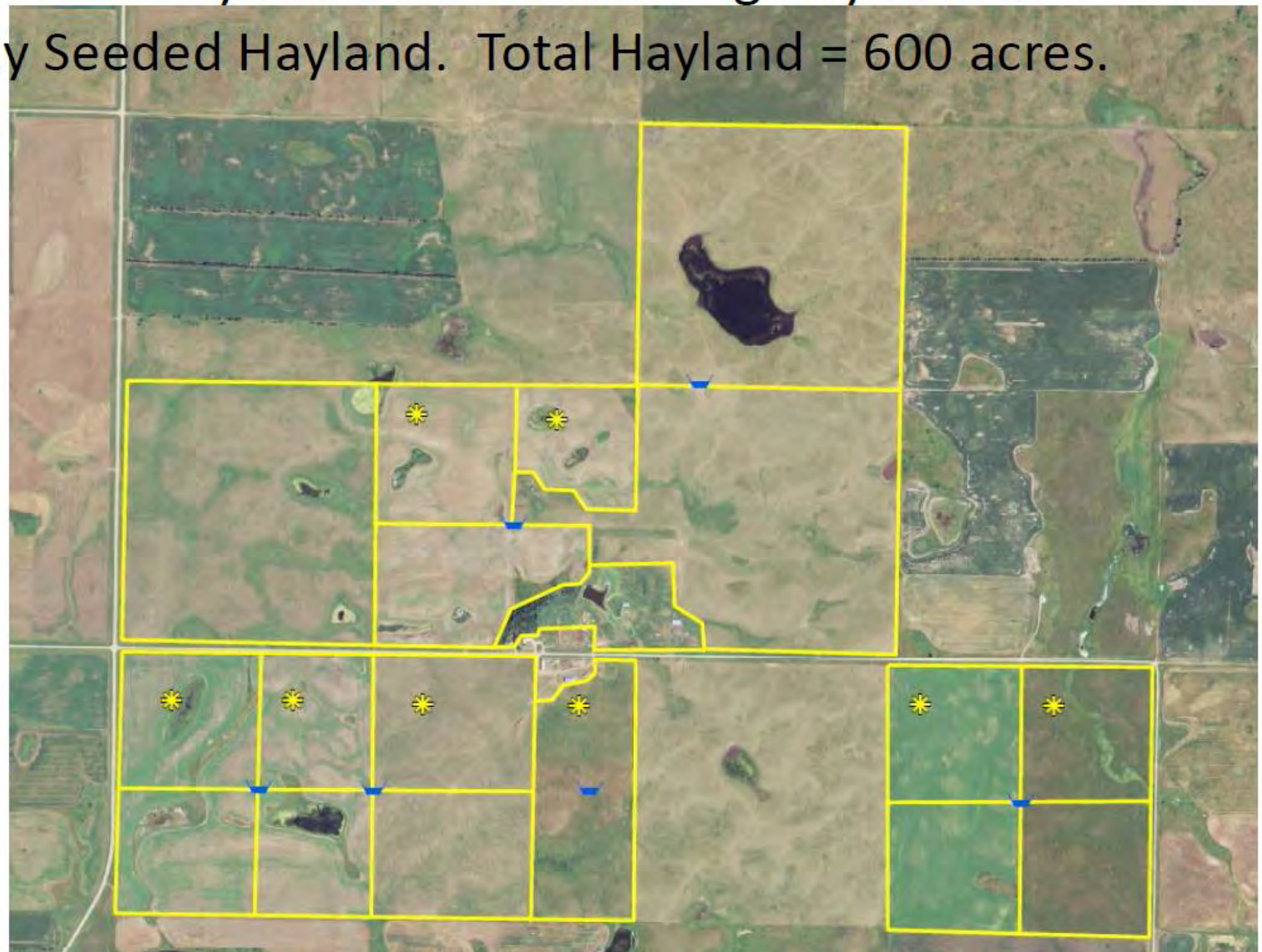
Grazing System

- 15 pasture system
- Primarily once over with some pastures grazed twice
- Recovery Time 80 – 90 Days
- Pasture size ranges from 80 acres to 160 acres

Before:


162 ac.
Rangeland
Headquarters
152 ac.
Hayland
124 ac.
Cropland
162 ac.
Rangeland
154 ac.
Cropland
97 ac.
Pastureland
62 ac.
Hayland
81 ac.
Cropland
81 ac.
Hayland

After: 14 Hayland Fields of Existing Hayland & Newly Seeded Hayland. Total Hayland = 600 acres.



Cover Crops were used to Prepare a Seedbed for the new Seeding's.

No Exporting on Hayland Policy

- The Cattle are no longer wintered at the Headquarters.
- All Hay is Stacked and Fed on the Hayland Fields.
- Before: Zero Animal Impact Days vs After: 7 Months of Animal Impact.
- Serves as the Drought Plan for the Grazing System too.


Hay is stacked in a new location each year
avoiding excess manure and urine.


Winter Feeding on Hayland
Feeding Cattle and Soil

Feeding A Different Location Everyday For Even Distribution Of Urine, Manure, and Armor


Results after feeding on hayland for three winters
07/23/2014


Hayland Production after three winters.
80 Acre Field
2011 = 155 bales (very little grass heading out)
2012 = 211 bales
2013 = 218 bales (1/3 field hailed out)
2014 = 265 bales

October 23, 2014

- Total Biology 1671 ng/g
- Solvita 50 ppm
- Organic Carbon 186 ppm
- Inorganic N 3.0 lbs
- Organic N 26.2 lbs
- pH 7.2

No Winter Feeding.

- Total Biology 2502 ng/g
- Solvita 134 ppm
- Organic Carbon 257 ppm
- Inorganic N 3.6 lbs
- Organic N 47.9 lbs
- pH 6.9

3 Years Winter Feeding

Carbon is Food for the Soil Biology