

FARMING IN NATURE'S IMAGE

YOU CAN'T ARGUE WITH MOTHER NATURE



MY FARMING HISTORY

- 6TH GENERATION FARMING IN HUMBOLDT
- 1993 WAS MY 1ST YEAR FARMING (20+ YEARS NOW)
 - WORKING WITH NEIGHBOR
- TRANSITIONED TO NO-TILL/STRIP-TILL EARLY 2000'S
 - HAD MY OWN EQUIPMENT
- STARTED USING COVER CROPS THE FALL OF 2012
- USING COVER CROPS ON MOST OF MY ACRES NOW
 - 510 ACRES SEEDED LAST FALL (OUT OF 660 TOTAL)
 - ADDITIONAL 400 ACRES FARMED IN 50/50 PARTNERSHIP

“Your passion puts you where you are supposed to be”



Born & raised on the farm → Helping Dad → 4-H

ILCC Farm Mgt degree ← Working for neighbors ← FFA

Farm Bureau → NRCS → Today

I have always wanted to be a farmer. Through my life I have followed in my Dad and Grandpa's foot steps on the farm and in the community.

- 19 years actively farming (1993 to present)

IOWA FARM BUREAU
PEOPLE. PROGRESS. PRIDE.

WHY I CARE ABOUT SOIL HEALTH/QUALITY



- FUTURE GENERATIONS WILL NEED TO USE THE FEW REMAINING INCHES OF RICH TOPSOIL THAT WE HAVE TO FEED MORE PEOPLE THAN ARE ON THE PLANET TODAY.
- ARE WE USING OUR SOIL TO MAKE A PROFIT TODAY AND NOT THINKING ABOUT HOW WE ARE LEAVING THE SOIL RESOURCE FOR FUTURE GENERATIONS?

CAN YOU BUILD A HOME IN A WEEK? NEITHER CAN YOUR SOIL BIOLOGY!



*Come on people, lets do this!
Cover crops provide many
benefits, soil health improves,
better water infiltration, weed
control and nutrient recycling!*



HEALTHY SOIL: WILL RESIST EROSION, COMPACTION, & WILL BE MORE EFFICIENT WITH NUTRIENTS

- HOW TO IMPROVE SOIL HEALTH
- IMPROVE SOIL STRUCTURE
 - TILLAGE DESTROYS SOIL STRUCTURE
 - SOIL STRUCTURE RESISTS COMPACTION
- INCREASE INFILTRATION
 - REDUCE RUNOFF/NUTRIENT LOSS/SOIL LOSS
 - WATER AVAILABILITY IN DRY PERIODS
- PLANT DIVERSE CROPS
 - CROP ROTATION OR COVER CROPS SPECIES
- SOIL TEST (NUTRIENTS & SOIL HEALTH)
 - SLAKE TEST (JAR TEST) OR NRCS SOIL HEALTH BUCKET
 - HANEY SOIL HEALTH TEST (CAN BE TAKEN WITH SOIL SAMPLES)



JAR SLAKE TEST

- EASY WAY TO SHOW HOW SOIL STRUCTURE RESISTS EROSION

CONVENTIONAL TILL

STRIP-TILL/NO-TILL

BROME GRASS IN GROVE



MY GOALS FOR IMPROVED SOIL STRUCTURE

- FASTER WATER INFILTRATION
 - LESS RUNOFF
- WATER AVAILABILITY IN DRY PERIODS
- EQUIPMENT CARRYING CAPACITY
 - LESS COMPACTION
- RESIDUE DECOMPOSITION
 - HEALTHY SOIL REDUCES RESIDUE
- MORE STABLE YIELDS



COVER CROPS IN NORTH CENTRAL IOWA

TERMINATE EARLY IF THIS
IS WHAT YOU WANT



TERMINATE LATER IF THIS
IS WHAT YOU WANT



REPEAT ANNUALLY FOR
IMPROVED SOIL HEALTH



COVER CROPS ON MY FARM

- I PLANTED CEREAL RYE AFTER SOYBEAN HARVEST IN 2012.
- I WANTED TO SEE WHAT A COVER CROP COULD OFFER
- BEST WAY TO LEARN HOW TO MANAGE IT IS TO TRY IT.
- IF YOU DON'T DO IT NOW, YOU WILL HAVE TO WAIT ANOTHER YEAR. PLAN AHEAD, BE READY.
- YOU WILL LEARN SOMETHING THE FIRST YEAR SO YOU CAN MAKE IT BETTER IN THE SECOND YEAR.
- WHAT I LEARNED THE FIRST YEAR
 - I SHOULD HAVE SEEDED IMMEDIATELY AFTER HARVEST, MISSED RAIN AND EARLY GROWTH
 - GOOD GROWING DAYS WERE LOST LINING UP SEED AND COST SHARE
 - USE CAUTION WHEN SPRAYING 32% N WITH YOUR BURNDOWN HERBICIDE IN THE SPRING
 - SHOULD HAVE INCREASED SEEDING RATE, TO GET MORE BENEFIT FROM LATE SEEDING

2014 COVER CROP MIXES

WINTER TERMINATED — OATS, RADISH,
CRIMSON CLOVER



WINTER HARDY- CEREAL RYE

MAY 4TH 2015 (WARM SPRING)



WHAT IF IT RAINS AND I DON'T TERMINATE EARLY AS ORIGINALLY PLANNED?

MAY 21ST, ABOUT 3' TALL



JUNE 2ND, ABOUT 5' TALL



Rye will keep growing.....and growing....

ROLLED RYE AFTER PLANTING CREATING THICK MULCH

EXCELLENT SEED BED



EXCELLENT STAND AND SOIL CONDITIONS



JULY 21ST MULCH HOLDING WEEDS-NO HERBICIDE POST-EMERGE



THE END RESULT : 2015 YIELD 58.6 BU/AC

OCTOBER 7TH FIELD STILL CLEAN



NOVEMBER 8TH STRIP-TILLING
INTO RYE & BEAN STRAW



2015 CEREAL RYE AND RADISH AERIALY SEEDED BEFORE HARVEST



SPRING 2016 COVER CROPS

ROLLED RYE AFTER PLANTING WHEN BEANS
HAD FIRST TRIFOLIATE. GOAL WAS TO
INCREASE RESIDUE ON SURFACE TO
COMBAT WEEDS LIKE WATERHEMP



AHEAD OF
CORN

MOST
CEREAL RYE
TERMINATED
EARLY, WAS
6-8" TALL

NOW VERY
LITTLE
CEREAL RYE
RESIDUE
REMAINS



2016 FALL COVER CROP SEEDING

AUGUST 27 SEEDED WITH A HAGIE SPRAYER SET UP FOR INTERSEEDING COVER CROPS



MIXING IT UP WITH DIFFERENT SEEDING METHODS

- AUGUST 27 INTERSEEDED GROUND APPLIED
 - 1.5 BU CEREAL RYE
 - 2# RAPE & 2# HAIRY VETCH
- SEPTEMBER 30 AERIALY SEEDED
 - 1.5 BU ON CORNSTALKS GOING TO BEANS
 - 1 BU ON SOYBEANS GOING TO CORN
 - RADISH OR RAPE INCLUDED ON ALL MIXES

WHAT A DIFFERENCE A WARM SPRING CAN MAKE

MAY 2, 2015 VS MAY 13, 2013



TERMINATION: OFTEN FEARED NEED TO UNDERSTAND DETAILS

1. SPRAY WHEN WARM
(ACTIVELY GROWING NOT
LATE IN DAY)
2. USE CAUTION IF USING
32% NITROGEN VS WATER
3. AS WEATHER WARMS,
GLYPHOSATE RATES CAN
STAY THE SAME VS
EARLY/COLD/SMALL RYE



90' BOOM = LONG HOSES
STILL HOLD PREVIOUS SPRAY MIX



RESULTS NOT ALWAYS AS GOOD AS YOU EXPECT

HARVEST TIMING/CORN MATURITY



The earlier you harvest the more sun the cover crop receives = better growth

SPOTTY AERIAL SEEDING???



TILLING YOUR COVER CROPS IS LIKE BEING MARRIED AND STILL HAVING A GIRLFRIEND, TO GET BENEFITS YOU CAN'T HAVE IT BOTH WAYS



- NEED TO DISCUSS GOALS WITH PRODUCER
 - IF SOIL HEALTH, TILLAGE DOESN'T ACCOMPLISH GOALS
- WHAT IS THEIR CROP ROTATION
- “GREEN MANURE” OR “PLOW DOWN”
 - SHORT TERM GAIN-LONG TERM LOSS?
- IS TILLAGE THE PLANNED METHOD OF TERMINATION?

USING COVER CROPS TO REDUCE HERBICIDES (THINGS I HAVE LEARNED)



WEEDS ARE OPPORTUNISTIC

WATERHEMP GROWING
IN OPEN AREAS



PRE-EMERGE HERBICIDE APPLIED



CHEMICAL TEST

BURNDOWN ONLY



BURNDOWN AND PRE-EMERGE



CEREAL RYE RESIDUE TO HELP REDUCE HERBICIDE USE

BEST IF YOU HAVE AN EVEN
STAND OF RYE TO PLANT INTO



TALLER RYE PROVIDES MORE
RESIDUE WHICH LASTS LONGER



ROLLING RYE

- 1) TO GET SUNLIGHT TO CROP
- 2) INCREASES RESIDUE COVERING THE SOIL

ROLLING GREEN RYE AFTER
PLANTING SOYBEANS MAY 25



ROLLING RYE AFTER SOYBEANS
1ST TRIFOLIET JUNE 7, 2016



**TALLER RYE = MORE RESIDUE =
MORE WEED CONTROLLING MULCH**

3 FOOT TALL HIGH RYE



5 FOOT TALL RYE



SEASON LONG WEED CONTROL



COVER CROP ECONOMICS

COVER CROP INVESTMENT

- 2012 RYE W/ FERTILIZER \$26.50
- 2013 RYE/RADISH FLY ON \$32.16
- 2014 RYE/RADISH FLY ON \$41.30
- 2014 OAT/RADISH/CLOVER FLY ON \$38.25
- 2015 RYE/RADISH W/ FERTILIZER \$29.01
- 2015 RYE/RADISH FLY ON \$38.05
- AVERAGE \$34.21/ACRE

TYPICAL TILLAGE PROGRAM

- ISU CUSTOM RATES
- CHOPPING CORNSTALKS \$11.90
- SUBSOILING \$20.10
- FIELD CULTIVATOR \$14.05
- TOTAL \$46.05/ACRE

- COSTS+\$11.84/ACRE MORE TO USE THIS TILLAGE PROGRAM

TIMES HAVE CHANGED MAYBE IT'S TIME YOU DO TOO?

- PHOTO FROM 1950'S
- LONG TERM CROP ROTATION WITH HAY
- PROBABLY INCLUDED MANURE
- MIGHT BE THE SAME FIELD, BUT EVERYTHING ELSE HAS CHANGED
 - "IT'S THE WAY WE HAVE ALWAYS DONE IT"
 - DOING THE SAME THING AND EXPECTING DIFFERENT RESULTS = INSANITY



500+ HP

330 GALLONS FUEL

26.7 GAL/HR

PULLING A SOIL STRUCTURE DESTROYER
MIXING AIR AND RESIDUE INTO THE SOIL
CREATING THE PERFECT FLUFFY GARDEN SEEDBED



Having to repeat the process every year to remove ruts created due to lack of soil structure

SAMPLING TO FINE TUNE NITROGEN RATES

IF YOU DON'T SAMPLE HOW CAN YOU TELL HOW YOU ARE DOING FOR YOUR CROP OR ENVIRONMENT

FALL CORN STALK
TEST FOR NITRATES



ADDITIONAL TESTS

- LATE SPRING SOIL NITRATE TEST
 - 6-12" CORN BEFORE SIDE DRESSING
- LEAF TISSUE TESTING
- TILE WATER
 - CATCH AT OUTLET OR PUMP UP INTAKE TO COLLECT SAMPLE
 - RUN SAMPLES ON SOIL SCAN 360

NITROGEN MANAGEMENT NO EASY ANSWERS

SPRING TEST

- BEFORE SIDE DRESS CHECKED TILE WATER
 - 18 PPM NITRATES IN WATER
 - SOYBEAN STUBBLE FALL STRIP TILL 27#N
 - CEREAL RYE COVER CROP
- LSNT TO DETERMINE SIDE DRESS RATES
 - 6 PPM NITRATES IN SOIL
 - 25-28 PPM NEEDED TO GROW CORN
- LATE SEASON NITROGEN
 - Y-DROP APPLICATION WHEN CORN IS TASSELING

FALL TEST

- END OF SEASON CORNSTALK TEST
 - 15-8" STALK SAMPLE, 6" ABOVE GROUND
 - LOW LESS THAN 250 PPM N
 - MOST SAMPLES IN 40-450 RANGE
 - MARGINAL 250-700 PPM N
 - OPTIMAL 700-2000 PPM N
 - EXCESS OVER 2000 PPM N

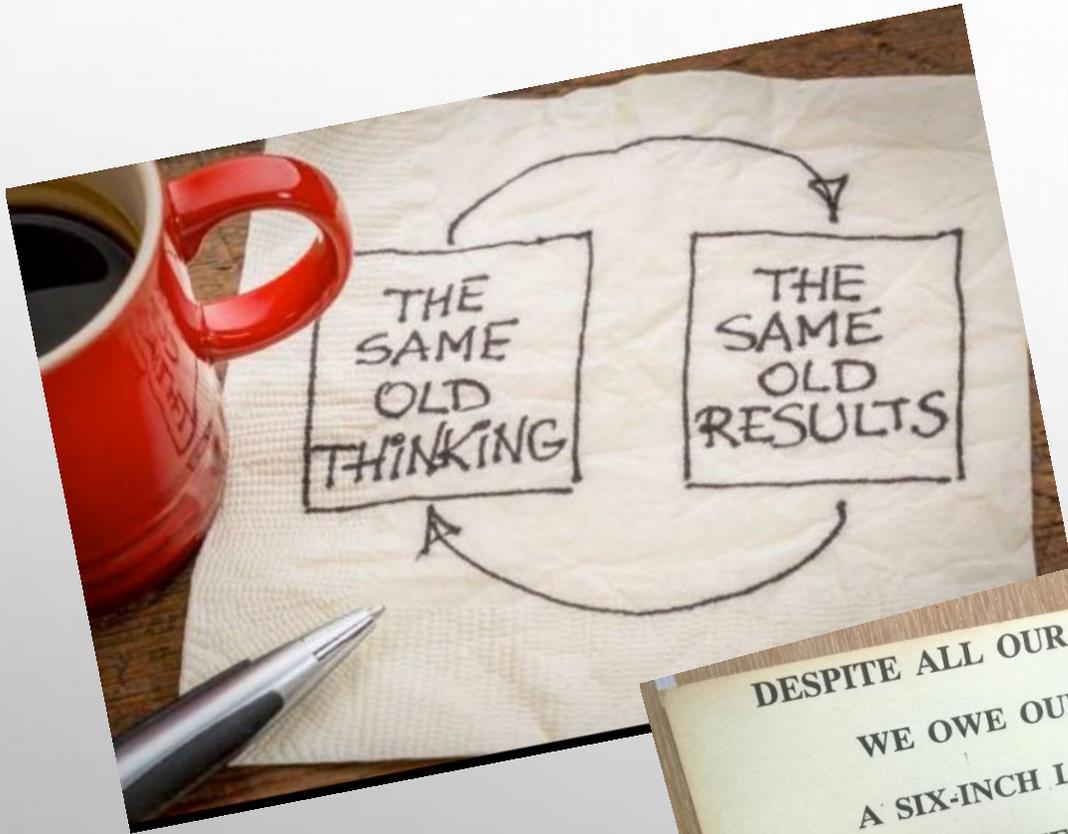
WHAT I'VE LEARNED

- COMPLICATED ISSUE
- NEED TO SAMPLE TO MEASURE WHERE YOU ARE AT FOR YOUR NUTRIENT PROGRAM
- WEATHER EFFECTS TRUMP YOUR PLAN
- HAVE MULTIPLE OPTIONS
 - NUTRIENT TIMING AND RATES
 - COVER CROP SPECIES AND SEEDING METHODS
 - SOIL, LEAF, STALK TISSUE TESTING
- TAKE ACTION NOW
- TRY SOMETHING NEW
 - TILLAGE
 - COVER CROPS
 - NUTRIENT RATES, PRODUCTS, TIMING
 - SAMPLE SOIL, LEAF AND STALK TISSUE
- KEEP TRYING

WHAT WILL YOU DO?

TO MAKE THE NUTRIENT
REDUCTION STRATEGY
WORK, EVERYONE NEEDS
TO MAKE SOME
IMPROVEMENT TO THEIR
CURRENT FARMING
SYSTEM.

THE TIME IS NOW



FOLLOW ME ON TWITTER @FARMERDOUG93





Doug Adams
@farmerdoug93

I farm in Iowa I raise corn and soybeans on the family farm. Ask me about farming, ethanol, food, NRCS, or how I raise crops with strip-till to conserve soil.

North Central Iowa

545 FOLLOWING 1,597 FOLLOWERS

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 **Doug Adams** @farmerdoug93 1d
Lockable pesticide storage unit for those opened jugs we didn't empty this year. Keeping out of reach of little han...
twitter.com/i/web/status/8...

Reducing Herbicides

With

Cover Crops



Wade Dooley

6th Generation

Albion, IA



N

Home Farm

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Google Earth



Cattle

Small Grains



Row-crops

Hay



- 1st used cover crop (rye) in 1997
- Seeded following silage harvest
- Grazed Fall/Winter every year, for 10 years
- Began experimenting w/ different practices in 2008



2008 1st try over-seeding with 3-point broadcaster



2010 1st time aerial seeding with plane



2009 1st try at over-seeding w/ high-boy



**Cover crops:
Better erosion control than tillage!**



Scavenge available fertility, don't let it wash away

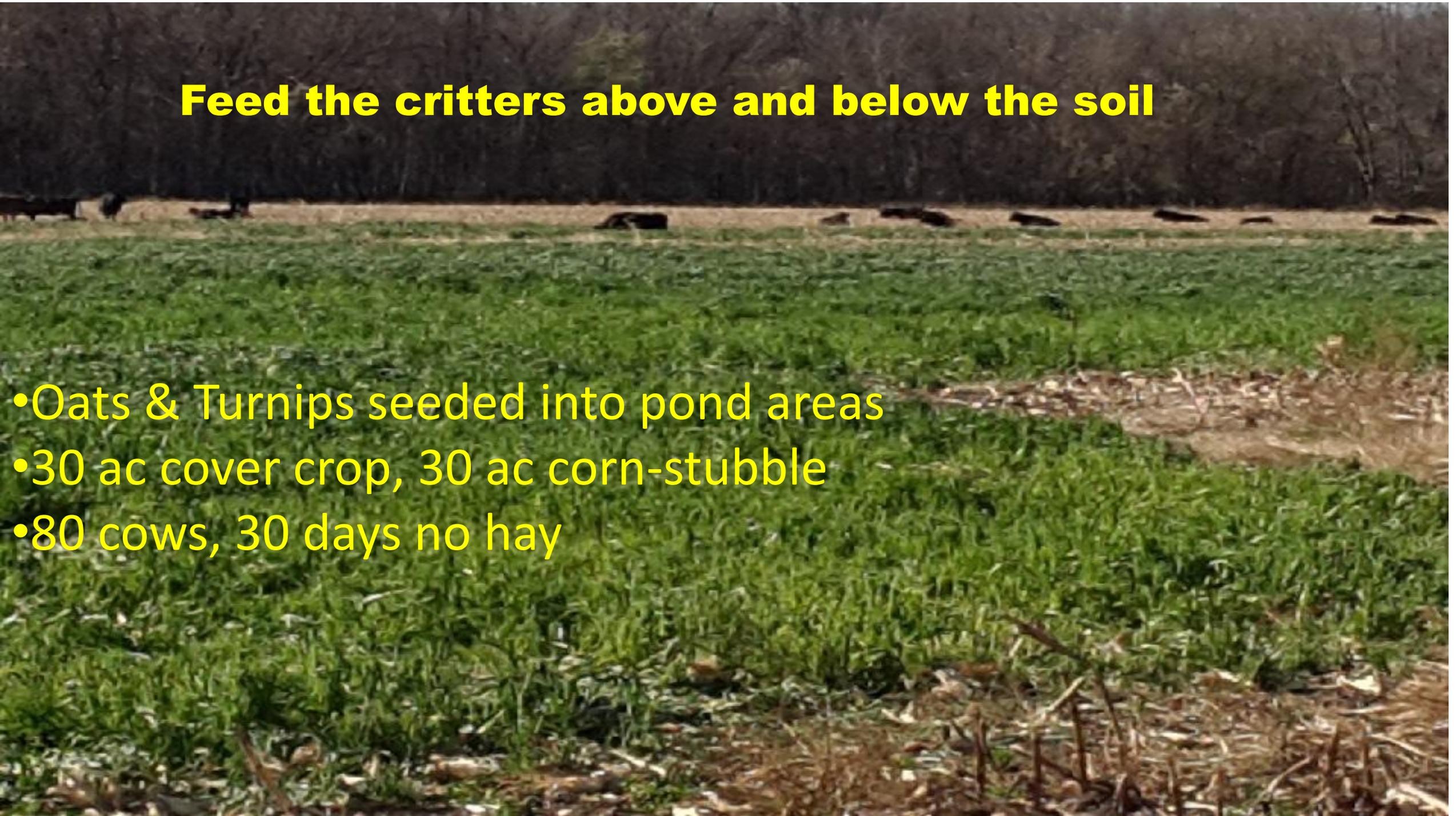


Residual Nitrogen scavenged by Oats

Oats & Turnips
Late-summer seeding

Feed the critters above and below the soil

- Oats & Turnips seeded into pond areas
- 30 ac cover crop, 30 ac corn-stubble
- 80 cows, 30 days no hay



Weed control means different things to different people

Using cover crops to fill flooded-out spots during the growing season can greatly reduce weed pressure for next year!

Oats & Radish



Cover crops seeded before harvest compete with winter annual weeds, reducing their ability to cause problems in the Spring.



Oats & Rape



6-way mix



Planting “Green” can provide early, mid, and some late-season weed control

Winter Wheat & Rape



**Mid-season after
planting “green”**



Just before harvest, after planting “green”





Not all cover crops do the same job!

Rapeseed



Glenwood
CENTURY FARM