FARMING IN NATURES IMAGE

YOU CAN'T ARGUE WITH MOTHER NATURE
MY FARMING HISTORY

- 6\textsuperscript{th} GENERATION FARMING IN HUMBOLDT
- 1993 WAS MY 1\textsuperscript{st} 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
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, let's 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

CONVENTIONAL TILL

STRIP-TILL/NO-TILL

BROME GRASS IN GROVE

• EASY WAY TO SHOW HOW SOIL STRUCTURE RESISTS EROSION
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
OCTOBER 7\textsuperscript{TH} FIELD STILL CLEAN

NOVEMBER 8\textsuperscript{TH} STRIP-TILLING INTO RYE & BEAN STRAW

THE END RESULT: 2015 YIELD 58.6 BU/AC
2015 CEREAL RYE AND RADISH AERIALLY 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 AERIALLYSEEDED
  - 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 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
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
Reducing Herbicides
With Cover Crops

Wade Dooley
6th Generation
Albion, IA
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 1\textsuperscript{st} try over-seeding with 3-point broadcaster

2009 1\textsuperscript{st} try at over-seeding w/ high-boy

2010 1\textsuperscript{st} time aerial seeding with plane
Cover crops:
Better erosion control than tillage!
Oats & Turnips
Late-summer seeding

Scavenge available fertility, don’t let it wash away

Residual Nitrogen scavenged by Oats
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