2012 Iowa Report

Tom Kaspar and Andy Lenssen

Midwest Cover Crops Council - Cover Crop Decision Tool

Iowa: Story County Seeding Dates

Location Information | Cash Crop Information | Soil Information | Attribute Information

Location Information: Iowa / Story

Cash Crop: None or Prevented Planting Plant Date: Harvest Date:

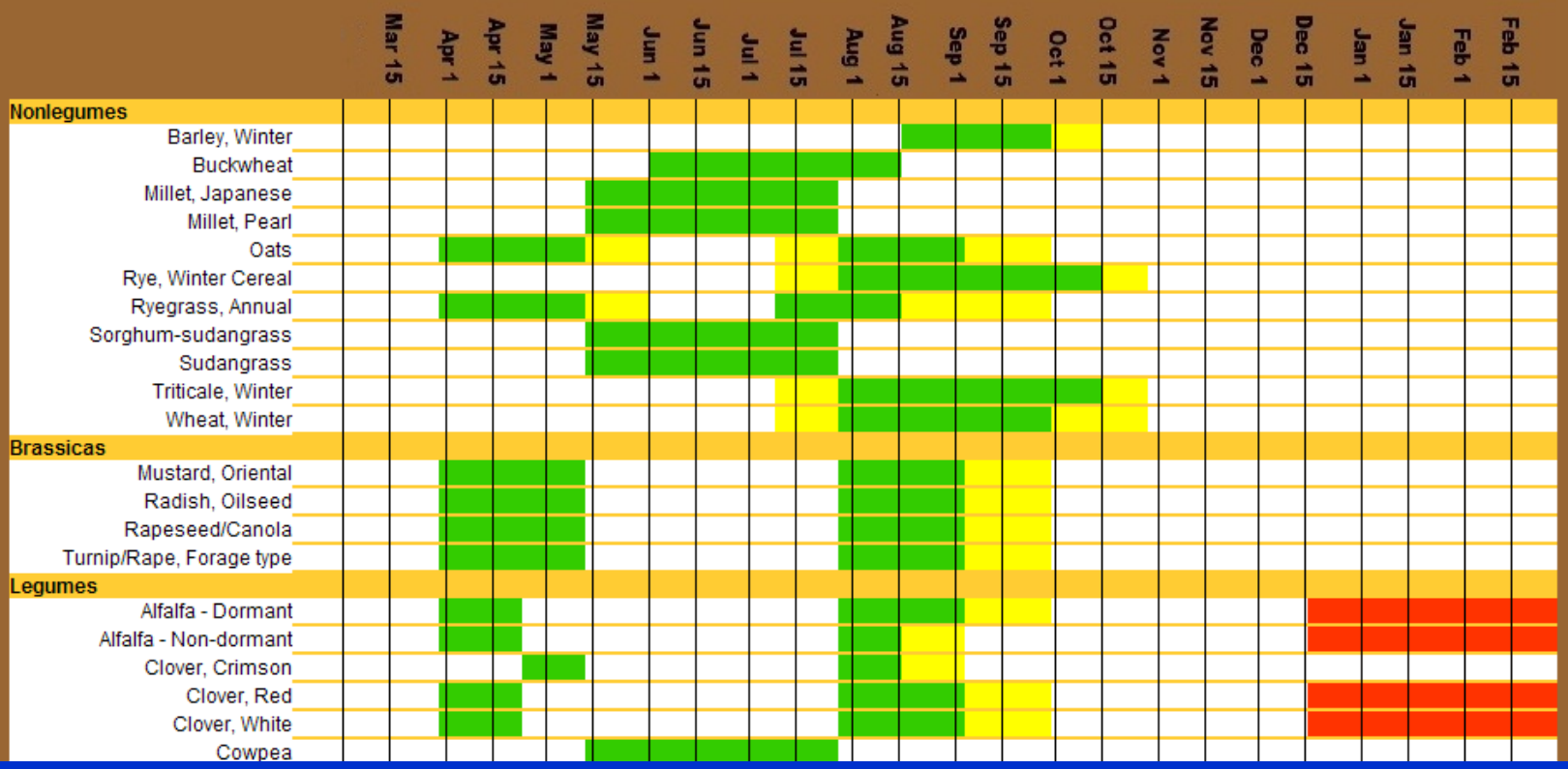
Drainage Information: Select a Drainage Class Flooding: No

Goal #1: Select an attribute Goal #2: Select an attribute Goal #3: Select an attribute

Select cover crop to create information sheet: 50% HV/50% WC Rye Submit

Reliable Establishment | Freeze Risk to Establishment | Frost Seeding

Cash Crop Growing Period: Requires Aerial Seeding or Interseeding of Cover Crop



Rye Cover Crop Effect on Soil Quality in a Corn Silage System

- **10% more total soil organic matter (SOM) in the top 4 inches or ½% change in SOM**
- **Very rough estimates would say a ½% change in SOM would result in an additional ½ inch of available water and 10 lbs/acre of mineralized soil N.**
- **48% greater Potential N mineralization**
- **Rough estimates would say 8-10 lbs/acre of mineralized soil N. So this matches the other calculations.**

Diseased corn radicle following rye cover crop

Treatment	Number of emerged plants/pot	Leaf stage	Plant height (cm)	Radicle Length (cm)	% of plants/pot with diseased radicle	Number of nodal roots	% of plants/pot with diseased mesocotyl	Shoot dry weight per plant (g)
No Rye	4.3	2.2	21.3	9.5	4.5	5.6	0.0	0.25
Rye	3.9	2.2	17.5	2.6	83.0	5.3	9.5	0.16

S. Gailans & M. Wiedenhoeft

- Corn-spring canola-winter wheat/red clover
- Corn-spring wheat-winter canola/red clover
- Red clover is frost seeded

28 March 2012

Planted 8 Sept 2011

Planted 1 Oct 2011

28 March 2012

Planted 8 Sept 2011

Planted 1 Oct 2011

June 2012

Underseeded 9 March 2012

November 2012

Underseeded 9 March 2012

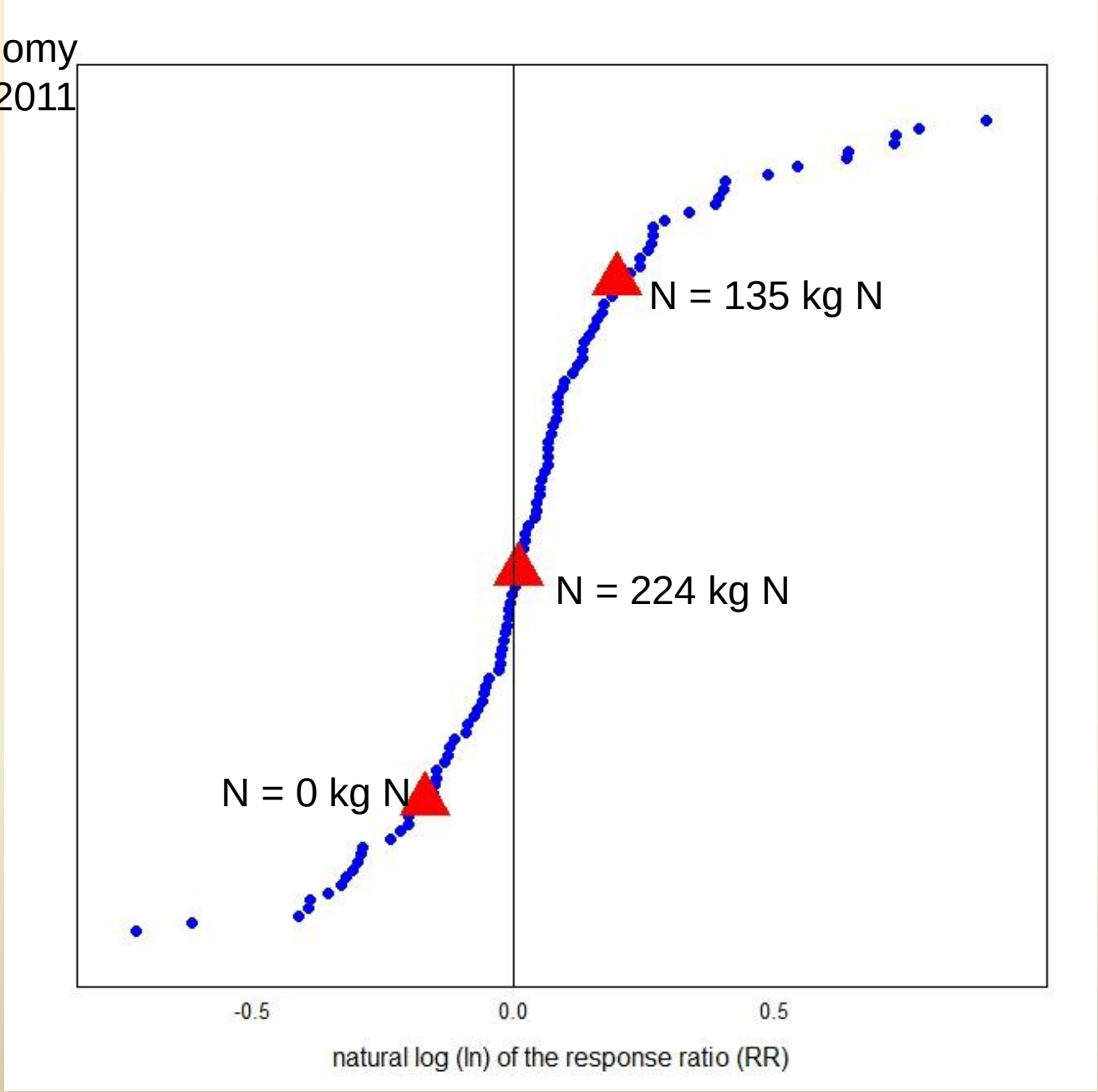
Andrea Basche and Fernando Miguez

- Meta-analysis of N2O flux from cover crops
- Predicting long term effects on soil quality using APSIM

Do cover crops increase or decrease nitrous oxide emissions? A meta-analysis

- Meta-analysis is a quantitative research approach in which many studies are analyzed together for treatment effects and variability
- This allows for answering hypotheses which would not be possible with a single study, such as understanding a more generalized trend of cover crops and their influence on nitrous oxide emissions in agroecosystems
- This study will place CSCAP field site results in context of prior literature – ie: what results might be observed given site-specific environmental and management variables?

ISU Agronomy field site- 2011 result



Tim Sklenar, T. Kaspar, M. Wiedenhoeft, A. Lenssen

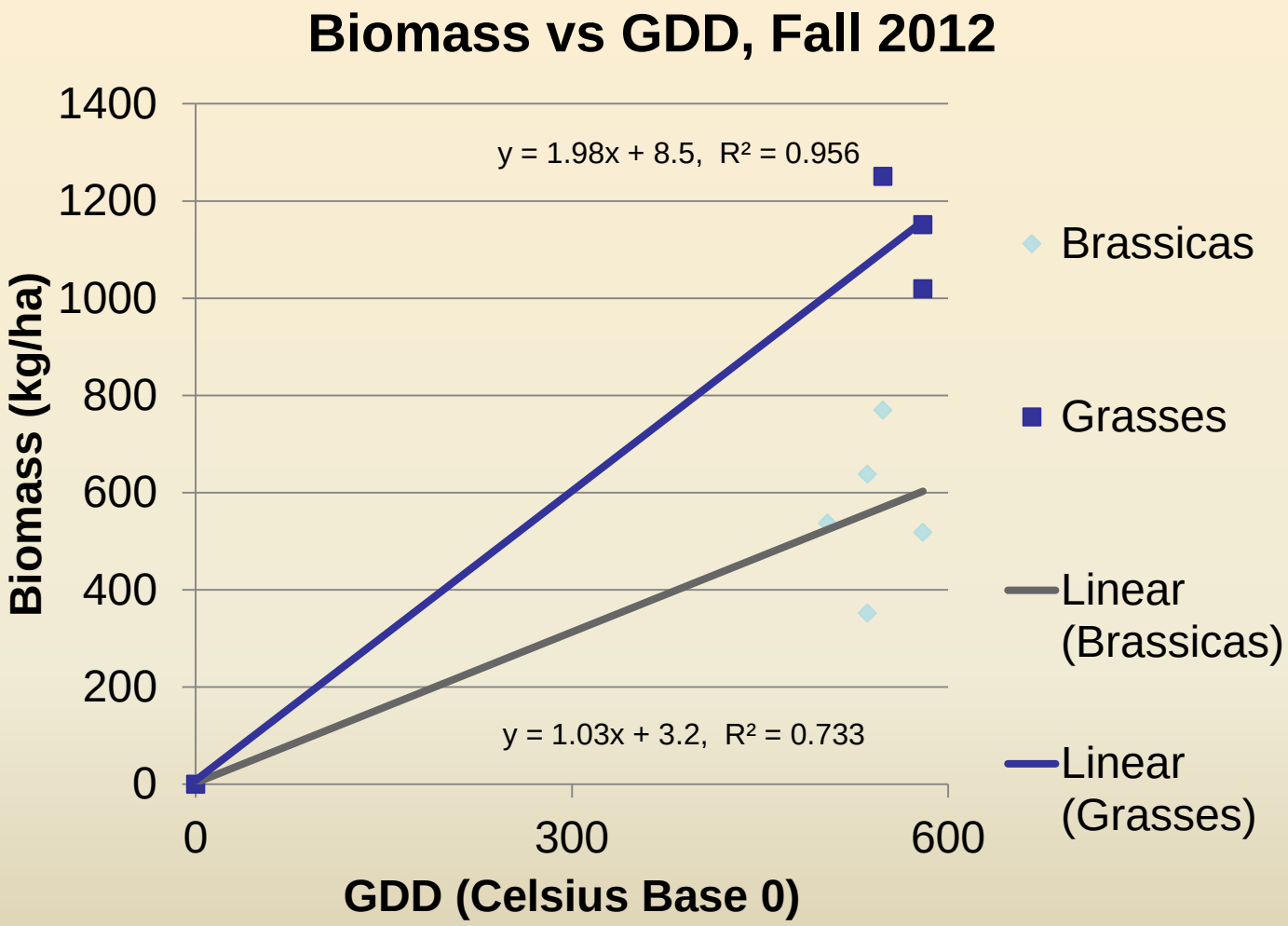
Cover Crop Study

- Winter rye ‘Spooner’
- B. napus ‘Sitro’
- B. rapa ‘Purple Top’
- C. sativa ‘Pronghorn’

Double Crop Study

- Winter rye ‘Spooner’
- Triticale ‘TriCal 102’
- B. napus ‘Claremore’
- B. napus ‘Sitro’
- B. rapa ‘Purple Top’
- C. sativa ‘Glacier’
- C. sativa ‘Yellowstone’

All followed by soybean


Biomass vs GDD, Fall 2012
1400
1200
1000
800
600
400
200
0
Biomass (kg/ha)
y = 1.98x + 8.5, R² = 0.956
y = 1.03x + 3.2, R² = 0.733
0
300
600
GDD (Celsius Base 0)
Brassicas
Grasses
Linear (Brassicas)
Linear (Grasses)

Ames, IA
28 Oct 2012

B. napus
B. rapa

Ames, IA
28 Oct 2012