

Fall-Sown Rye for Fall and Spring Grazing and Green Manure

Final Report for FNC92-017

Project Type: Farmer/Rancher

Funds awarded in 1992: \$2,315.00

Projected End Date: 12/31/1994

Matching Non-Federal Funds: \$11,572.00

Region: North Central

State: Kansas

Project Coordinator:

[Lee Quaintance](#)

Project Information

Summary:

PROJECT BACKGROUND

I have a diversified grain and livestock operation consisting of wheat, soybeans, milo, corn, red clover, oats and brome. Livestock includes a cow/calf herd, pigs, chickens and goats. For the past five years I have been using red clover for a green manure plow down for nitrogen.

Cletus Grosdidier, a neighboring farmer with extensive knowledge using rye as a cover crop and grain, gave me quite a bit of production information and tips on how to fit try into a crop rotation. D.L. Darylrumple, form the Nobel Foundation, gave me assistance with grazing management and raising rye for grain. Jerry Jost, from the Kansas Rural Center, gave production information and contacts for seed sources. Rick Miller, local county agent in Johnson County, provided assistance with production information, seed source contacts, designing and implementing the rye variety trial.

PROJECT DESCRIPTION AND RESULTS

1. The barriers to implementation centered around the lack of knowledge of rye production characteristics. The availability of seed was also a problem. Another barrier is the current farmer biases against using rye because it can be a weed problem in small grains. Rye can also present management challenges to conserve soil moisture.
2. The reason why I chose to put rye in my red clover to corn rotation was to provide a winter cover crop to protect against erosion and nitrate leaching. The rye also provided supplement economic incentive through grazing. The rye also added organic matter to the soil and added in weed suppression in the following corn crop. The previous crop was a second year crop of red clover. I took off one cutting of red clover with about 3 tons of hay per acre harvested in July 1993. it was of such a low quality due to being mature because high rainfall delayed harvest. The stand later died out after the first cutting due to saturated soils. Balboa rye was broadcast seeded at 2 bushels per acre in late August 1993. Due to the cool, wet fall of 1993,

there was insufficient growth for fall pasture. It was grazed beginning April 8, 1994 with 20 calves weighing 419 pounds on the five acre experimental field.

FIELD OPERATION \$/ACRE

Plow 10.15

2 field cultivations 12.30

Planting 6.44

2 rotary hoe operations 6.25

2 row crop cultivations 10.00

Fertilizer 45.85

Harvest 21.45

Hauling/storage 10.71

Interest 7.71

Total variable costs 146.86

Gross returns @ 2.21/bu corn 229.84

Returns over variable costs 82.98

I tried four varieties of rye that were compared with each other in a farm trial in which I collaborated with Rick Miller of Johnson County Extension. All three certified varieties were a week earlier in heading over the Balboa. I wonder if their origin in Oklahoma adapted them to earlier heading.

I tried the following methods of rye establishment: 1) no till drilled into sorghum stubble 2) disk and drilled into second year clover stubble and 3) broadcast seeding of rye into sorghum stubble. I found the broadcast seeding was superior because there is less fuel and heavy metal involved and it requires less labor. The broadcast method also gave me a better stand. The first two treatments I had to replant because of poor stands contributed by high rainfall and cool fall weather. Later broadcasting dates, especially in November, reduces the chances of establishment due to cooler weather and shallower rooting.

When I interseeded red clover into rye, I had trouble getting it established. I believe it is because the rye is too dense and shades out the clover and keeps it from establishing. Another possibility is that the alleopathic effect of the rye slows the growth of the red clover.

I have found rye to be a good indicator of soil fertility. I had an experience that the rye grew better in the sorghum row that had received side dress fertilizer than between the rows where there was no fertilizer directly applied. Also I could trace one green lush area of rye that the only variation from the adjacent field was that it had been in alfalfa three years earlier.

One of my concerns after rye harvest is getting the rye stubble broken down sufficiently to allow the soil to dry out sufficiently to permit normal field operations. A living legume in the rye stubble will hopefully wick the excess soil moisture out for field operations.

My future plans are to get a legume to follow in my rye rotation. I will try no till drilling red clover and hairy vetch into the rye stubble after rye grain harvest. Another trial will be to graze down the rye stubble and then drill in the legume after grain harvest.

The calves were pulled off May 6. It was grazed in a four paddock field. The calves were moved approximately every day,

The beginning weight of the 20 calves was 8,380 pounds or 419 pounds per calf. The ending weight of the 20 calves on May 6, 1994 was 9,420 pounds or a final weight of 471 pounds per calf. The total gain for the 20 head was 1,040 pounds or 52 pounds per calf over 29 days or 1.79 pounds per day per calf. There was 208 pounds of gain per acre over the 29 days. The calves were sold on May 6 for \$87.11

per hundred weight. The gross return was \$905.94 for the five acres. The gross return per acre was \$181.18. The gross return per calf was \$45.30. There was a shrink of 28.5 pounds per calf from Edgerton to the Manhattan sale barn, a distance of 115 miles.

EXPENSES AND RETURNS

\$/ACRE \$/HEAD

Fertilizer 18.20 4.55

Spreader rate 00.62 0.16

Seed (rye) 12.93 3.23

Fence 12.00 3.00

Interest cost (@ 8%) 9.28 2.32

Grain cost 20.88 5.22

Mineral cost 6.00 1.50

Shrinkage 5.33 1.33

Water

Total operating costs 85.24 21.31

Gross return 181.18 45.30

Return over operating costs 95.94 23.99

I think the stock density was adequate for the quick rotation of every four days since I had four paddocks. The rest period in a quick four day rotation was not long enough. An advantage in rotational grazing was to reduce repeated tracking during the rainy wet weather by moving the calves every day to a different paddock. So there was some benefit of rotational grazing of spring rye but it didn't offset the extra labor for cross fencing the small field. I consider this grazing rotation was not that beneficial during the rapid spring growth on an annual small grain on such small acreage since there was enough tender growth to keep everything evenly grazed.

Water was standing in the field when the calves were pulled off. In May 12 and 13 the field was moldboard plowed and field cultivated twice and planted to corn with a 36 hour period. The day after it was planted there was a 2" rain in a half hour. Due to crusting and difficult seed emergence, I rotary hoed the field two times about 4 and 7 days following planting. I cultivated the corn twice, 2 weeks after planting and again when it was 2' tall. I applied 200 pounds per acre of 10-26-5-4 (sulfur)-1(zinc)-1(boron). An additional 34 pounds of nitrogen was broadcasted applied and incorporated at the second cultivation. The corn yield was 104 bushels per acre. The return over variable costs was \$82.98 per acre.

OUTREACH

I plan to talk about this SARE producer grant in a workshop at the upcoming Heartland Network Roundup in Manhattan February 18, 1996

PS - the above referenced workshop went very well. The presentation generated a lot of interest about rye, the grant, and rye's part in sustainable agriculture.

Research

Participation Summary

Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the view of the U.S. Department of Agriculture or SARE.



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