

RURAL CONSERVATION CLUBS PROGRAM
CHARING CROSS CONSERVATION CORPORATION
 "Manure Management in High Residue Applications"

FINAL REPORT

CHARING CROSS CONSERVATION CORPORATION

FINAL REPORT
MARCH 31, 1996.

Grower: Rob Smyth
Project: Pre-tillage in Wheat Stubble

This trial was set up in the fall of 1994. As reported in previous interim reports, it was finally abandoned on June 1, 1995. The direction of this trial will change. Since the crop could not be planted on time, the risk to a grower on a commercial basis is too high, especially if the intended crop is a specialty crop. Once this practice fails, it is time to make modifications to the system. As a result, there is no data from this trial.

CHARING CROSS CONSERVATION CORPORATION
Manure Management in High Residue Applications

Date: March 31, 1996.
 Grower: Jeff Wilson
 Crop: Commercial Corn
 Planting Date: May 5
 Hybrid: Hyland LG 2531
 Manure: 3 rates - zero, 4 ton/ac., 8 ton/ac.

Treatment	Yield		Harvest Moisture (%)	Stalk Breakage (%)	Plant Population * (plants/acre)
	ton/ac	bu/ac			
1	8	114.9 b	24.6	29.7	27,400
2	4	113.3 b	23.4	38.4	29,200
3	0	161.7 a	23.3	29.4	32,200
4	Conv. Tilled	178.0 a	23.7	18.0	32,100

Treatment 1 and 2 are significantly different from Treatment 3 and 4.
 * - measured at seven leaf stage

As the data shows, in 1995, any manured plots did not respond to the zone tillage as well as those that did not receive manure. Cold soils, that warm up slower after manure is applied is probably to blame for this.

Charing Cross Conservation Club
Manure Management - No-Till
FINAL REPORT

Test Plot Operator: Walter Charbonneau
Crop: Seed Corn
Planting Date: Male - May 17 Female - May 22

Layout: Plot was laid out in 6 repetitions with each repetition having a manure application strip and no manure strip. Manure rates were 11 tons/acre in plots A & B. 7 tons/acre in plots C & D, and 3.5 tons/acre in plots E & F. Male corn was planted to lay out plot then manure was applied 5 days later. Female planting was scheduled.

Observations:

Planting was under way with cool, moist conditions (12 mm rain fell the day before female was planted). The following portion of May and early June continued with excess rainfall and cool temperatures. Emergence was good with minimal losses of young seedlings although noticeably delayed between tile drainage.

The plot matured at a consistent rate along with the rest of the field. Pollination in the plot occurred 3-5 days later than the surrounding field. Plant height was only noticeably shorter between the subsurface tile drainage. The summer weather moved in a consistent pattern of above normal temperature combined with below normal rainfall (on average 50% of normal). This had the effect of maturing the crop approximately 2 weeks ahead of normal.

Plot yields were harvested by hand because the seed corn harvest is done with contracted custom harvesters working on a strict schedule.

Weed Control:

Early in the season weed control was virtually identical between manure/no manure. Both were excellent up until late in August when a few broadleaf weeds began to show in manured plots, likely seeding from the manure itself. These weeds never grew to enough size to compete with mature crop due to the shading effect.

Yield Results:

As is evident from the plotted results on Graph #1, the manured plots yielded less than no manure as could be expected. The reverse of this definite trend on Plot F could not be explained in field. On average the yield loss from manure was 2 bushels of corn per acre. Yield fluctuation ranged from a high of about 9 bushels less for manure to 11 bushels more.

As was noticed in growth patterns of the plot, the tile runs in the field showed better growth in the latter part of the season. So it was decided to make separate yield checks from tilled to untilled. No manure tilled had a 7.45 bushel advantage. Manure tilled had a 6.68 bushel advantage.

Figure 1. Yield Results. All Subtreatments (tiled/untilled) inclusive

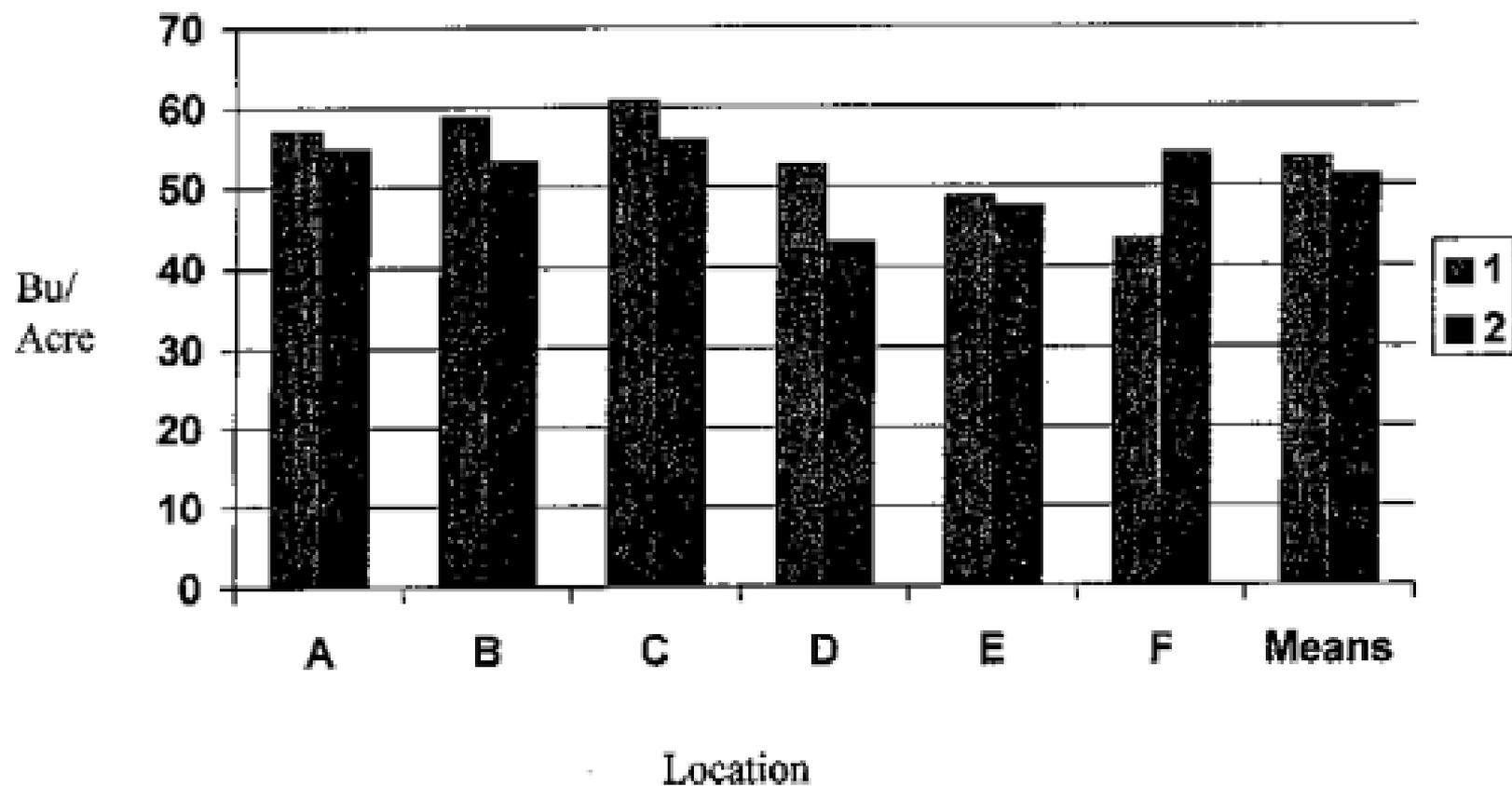
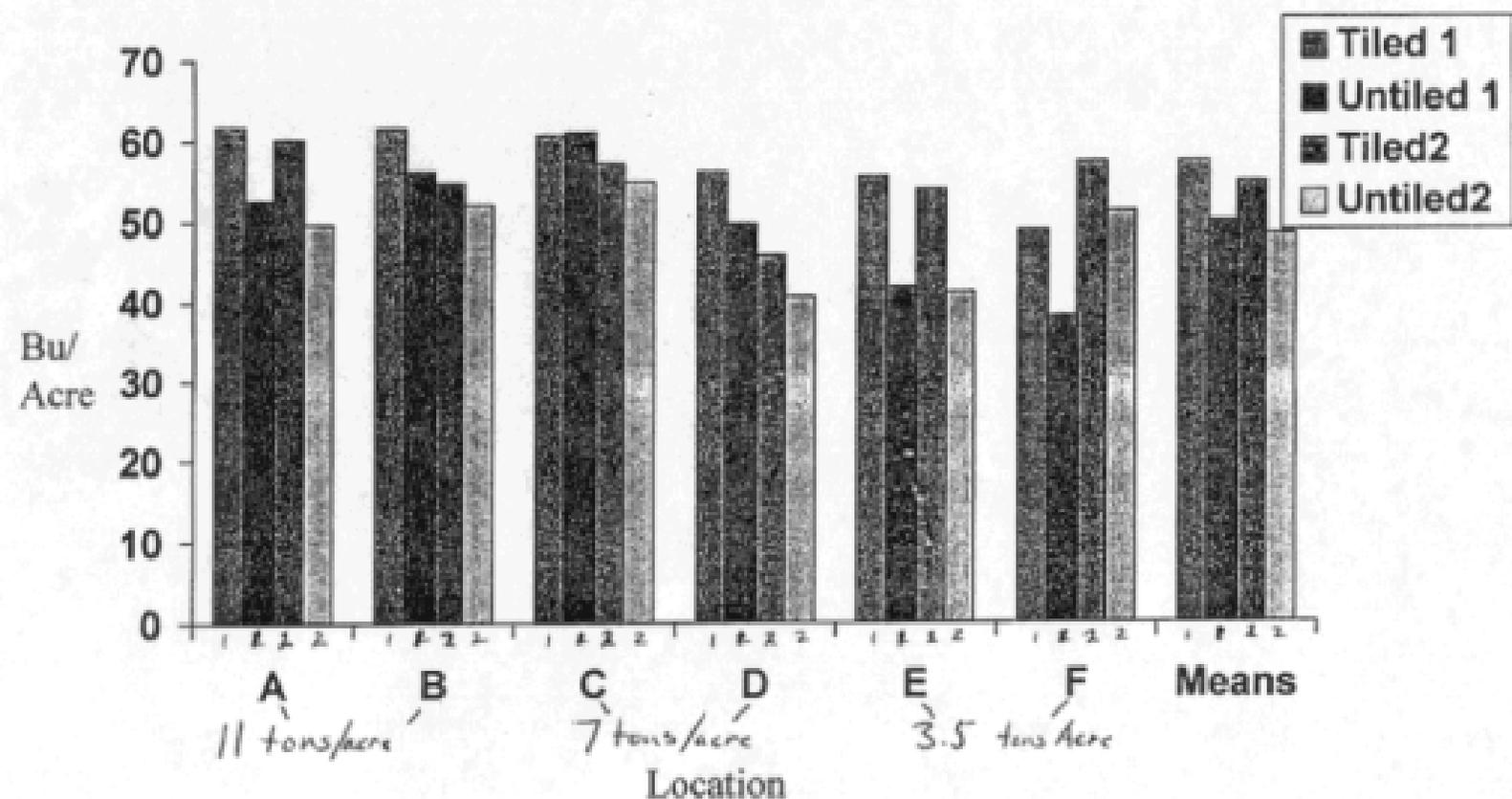


Figure 2. Yield Results by Subtreatment



CHARING CROSS CONSERVATION TILLAGE CLUB
MANURE MANAGEMENT TEST PLOT

Grower: Ken Chittim
Location: Lot 23 Ninth Line, Raleigh
Test Plot Size: 5 Acres
Test Crop: Commercial Corn
Variety: Pioneer 3515
Crop Last Year: Soya Beans

OBSERVATIONS:

The test plot was sprayed early on May 1st, with Roundup, as a burndown. Fertilizer was applied ahead of planting on May 8th --urea at a rate of 300 lb./acre and muriate of potash at a rate of 150 lb./acre. A further application of 200 lb. of 10-50-0 and 3 lb. of zinc sulfate per acre was done ahead of planting.

Manure was applied on May 23, in four strips, on the field at a rate of 10 ton/acre. PIONEER 3515 Corn was planted in the test plot using a coulter cart and JD maximerg planter on MAY 27.

Soil tests were taken in April, May (just prior to planting), and in August. One more will be done at the time of harvest, in order to determine the usage of the manure by the crop.

The test plot was done with 4 reps of manure and no manure strips and will be compared to the conventionally tilled corn in the same field. The soil type in the field is sandy loam. Moisture conditions were good at the time of planting. Emergence was equal in the strips of manure and non-manure areas. Growth was somewhat quicker in the manure strips. Now that pollination is done (in early August) the corn in these strips is about one foot taller.

Rainfall totals were taken from May 1 /95 to October 31 /95 which was 14.07 in. The total from May 27 the planting date to October 18 the harvest date was 9.89 in. Photos were taken at the time of planting and will be included with the report. These will show how the manure was applied in strips, the Till-Tech courter cart in action, and the ground conditions at the time of planting.

At the time of harvest five yield tests were taken two as checks, two on the manured strips, and one on the conventionally tilled field next to the test plot. The tests were harvested with a two row corn head so that a yield could be taken in the center of the manure strip. Yields were done by a Pioneer weigh wagon, operated by John Young Sr. The plot was harvested on October 18 195 .

Yields are as follows:

Check #1:	> 173.5 bu/acre	26.3% moisture
Manure #2:	> 176 bu./ac.	26 % moisture
Check #3:	> 163.7 bu./ac.	25.5% moisture
Manure #4:	> 168.4 bu./ac.	25.4% moisture

Conventional #5: > 163.6 bu./ac. 22.2% moisture

Soil tests have to be finalized and will be included with the final report along with conclusions from the data collected. In conclusion, the tests in manure strips #2 yielded 2.5 bu./ac. better than the check strip #1. The tests in manure strips #4 yielded 4.7 bu./ac. better than the check strip #3. Both of the check strips using no till with the "Till-Tech" coultter cart had higher yields, and even greater yields when manure was applied before planting. The amount of nutrient, and fertilizer carry over will be seen in this year's soybean crop . Plant growth will be recorded during the season and yield tests will be taken in the fall of the 1996 season.

The "Till-Tech" system was beneficial in the test plot this year, but it is still uncertain whether the yield increase would warrant the cost of the courter cart in my farming situation.

It has been a pleasure doing the test this year.
Kenneth E. Chittim

Pre-Till Project 95

Charing Cross Conservation Club

Mike Buis

March 25 1996

Crop : Corn (Pioneer 3515)

Population : 29,800

Plot Size : Five acres

Planting Date : May 23 1995

Harvest Date: Sept. 25 1995

Manure :

Fall applied 30 tons / acre. Solid and semisolid material spread with conventional two beater rear unload spreader .

Fertilizer :

No starter fertilizer was applied. The plot was side dressed with 28 % N at a rate to deliver 180 lb actual beside the row using a no-till applicator with one coulter in front of each knife .

Weed Control:

Quack grass in the plot was spot sprayed with Roundup early May. Just prior to planting an overall application of one liter of Roundup was applied to burn off existing weeds. Following planting Primextra was applied. Several weed escapes were noticed so an application of Partner was needed when the corn reached the six leaf stage.

Emergence:

A very heavy rain followed planting but no crusting occurred and emergence was excellent. Final plant population of 29,000 plants/acre.

Harvest:

This plot was harvested as corn silage as was the adjoining area of the same field . The entire field experienced some very hot, dry weather during the growing season as well as an early frost. As a result, the corn dried down very fast and the silage was drier than normal at harvest time . The plot however seemed to retain moisture better through the season and as a result was in better shape at harvest time. Yields in both the plot and the rest of the field (minimum till) were equal.

Comments:

Although manure was applied and not tilled in, no manure residue was evident

at harvest time. The manure left on the surface did not limit or interfere with normal field operations. This is a flat field with grass buffer strips and windbreaks surrounding it . There was no evidence of erosion of soil or manure at any time before or during the growing season . This is also a well - drained field with high numbers of earthworms which may account for the complete disappearance of residue by harvest time

Conclusion:

- 1) Pre-Tilling the plot seemed to help emergence but the extra horsepower required to pre-till may not be cost effective as the plot appeared to yield equal to the minimum tilled field. Areas in the plot that didn't receive any tillage (where the pre-till steps and planted row didn't match) were severely stunted and suffered yield loss. From this it was apparent that some tillage before planting is necessary.
- 2) Nitrogen loss (from the manure) on the no-till plot was not measured but extra nitrogen was applied to compensate for that possible loss.
- 3) Both the plot and the rest of the field required additional applications of herbicide to control escaped weeds. There was some concern that manure clumps on the surface of the soil would interfere with herbicide contact either with the soil or emerged weeds. Although this was a possibility it didn't seem to cause any problems. A good even spreading pattern of the manure however is required to prevent any problems.

As these results are based on limited observations they may not be conclusive and several more growing seasons may be required to have reliable data.

SUMMARY:

In summary, the club had 3 trials which showed no significant difference in management systems, 1 which showed a disadvantage towards the zone tillage system, and one complete failure (on wheat stubble). The corn after wheat rotation certainly remains the stumbling block in maintaining a complete "zone" tillage management system. We feel the wheat is important in the rotation, especially when the crop rotation only involves corn, sods and wheat because of nematode buildup in soils. However, there are other options available, such as discing, to incorporate some stubble, and still maintain a conservation system. Our group will try to implement these into the 1996 trials.