North Dakota State University * Dickinson Research Extension Center
1133 State Avenue, Dickinson, ND 58601 Voice: (701) 483-2348 FAX: (701) 483-2005

FERMA-LIZER TRIALS - 1975

Cooperating Branch Stations
Carrington Irrigation Station - H.M. Olson, Supt.
Langdon Branch Station - Robert Nowatzki, Supt.
Dickinson Experiment Station - T.J. Conlon
North Central Experiment Station - B.K.Hoag, Supt.
Prepared By: Howard M. Olson

Field trials utilizing Ferma-Lizer as a seed treatment, as foliar spray and as a combination of the two on plantings of hard red spring wheat, durum and barley at Carrington, Langdon and Dickinson and on hard wheat only at Minot were evaluated during the 1975 growing season on dryland. This report summarizes results obtained.

Introduction: FERMA-LIZER is a product of the Ferma-Gro Corporation, Storm Lake, Iowa. In a mimeographed handout distributed by representatives of the corporation at a product information meeting in Carrington on February 5, 1975 the product is described as follows:

"FERMA-LIZER is an organic, non-toxic solution for use on all types of ornamental plants and agricultural crops. It is intended for use in seed treating, as a foliar application or as a root dip in transplanting. FERMA-LIZER is produced by a patented process. This process utilizes the bacterium Lactobacillus acidophilus which is grown in fermentation culture on nutrient base whey and an extract of Norwegian Kelp. The product from culturing of these bacteria on the whey and kelp provides a benefit to the plant that is not yet fully understood."

"When FERMA-LIZER is applied as recommended, farmers have observed increased root development, increased drought tolerance, earlier and stronger emergence of seedlings, better stands and increased yields. Some users have suggested that the greater root development accounts for the improved drought tolerance, and may also allow

open in browser PRO version Are you a developer? Try out the HTML to PDF API pdfcrowd.com

better utilization of fertilizer found in lower areas of the root zone. Other users have reported that they are going to reduce seeding rates because of the improvement in emergence and better stands which result from seed treatment. However, Ferma-Gro does not recommend reduction of seeding rates until you have had an opportunity to observe FERMA-LIZER'S performance in your normal cropping operation."

At the February 5, 1975 meeting a number of local farmers were present who had used the product on field plantings of cereal crops. Though they were in general agreement with the claims made for the product they were uncertain about yield response. For this reason they requested the Carrington Station initiate field trials to measure yield response. Representatives of the Ferma-Gro Corporation were also interested in having the trials conducted. As a result a cooperative agreement, dated April 20, 1975, was entered into between Ferma-Gro Corporation and the North Dakota Agricultural Experiment Station to conduct the trials here-in described.

Objective:
To measure yield response to the application of Ferma-Lizer as a seed treatment, as a foliar applicant and as a combination of seed treatment and foliar applicant on one variety each of durum, hard red spring wheat and barley planted on dryland non-fallow at several locations.

Procedure:
Seed from the same source prepared at Carrington including Ward durum, Olaf wheat and Beacon barley was used at all locations in replicated drill strip plantings. Seeding rates: durum - 75 lbs/ac; wheat - 60 lbs/ac; barley - 72 lbs/ac.

Fertilizer was applied to all treatments as per NDSU soils laboratory recommendations.

Typical cultural practices consistent with those common to each location were employed for seed bed preparation, planting, weed control and harvest at each location.

Treatments:
1. Check.
2. Seed treated with Ferma-Lizer at the rate of 1-pint Ferma-Lizer diluted with 20 pints of water on 900 lbs. of seed.

open in browser PRO version Are you a developer? Try out the HTML to PDF API pdfcrowd.com

3. ½- pint Ferma-Lizer/Acre in a dilution of 40 parts water applied in early tillering stage.
4. Combination of treatments 2 and 3.
Treatments were randomized within each of four replicates.

Results and Observations: A brief summary of the data and observations from all locations are offered here. Data and notes obtained from each location are in the appendix.

Precipitation and temperatures have a most profound effect on the production of any crop in this area. Hence, the effect of any treatment imposed whether to the soil, the seed or the growing crop is likewise affected. In 1975 precipitation deviated from long time averages. April was very wet--two times the average precipitation at most locations. This delayed the start of spring planting from two to four weeks. Normal precipitation and good drying weather following the first week in May allowed spring planting to progress without interruption and be essentially completed by June1. But, then it started to rain again with totals much above average for June. At Carrington rainfall totalled 8.34 inches as compared to an average of 3.96. Conditions were near ideal for small grain growth and development. Yield potentials were well above normal at this point. Many small grain fields were headed and just starting to blossom at the end of June.

Much below normal precipitation accompanied by high temperatures during the month of July did much to reduce the "bumper" crop potential as late tillers sloughed off and heads failed to fill as they might normally have. August, to, was dry but temperatures were generally cool which allowed for more normal maturing and kernel development particularly the later plantings and those on soils with good water holding capacity.

Barley harvest began in early August at most locations with wheat and durum following at mid-month. Small grain yields were variable throughout the state, but they generally were at or near the long time averages. Yields from the Ferma-Lizer trials are rather typical of those reported in respective areas except for the Minot location. At Minot the Ferma-Lizer plot site, though normally very adequate, suffered this year from too much water during part of the growing season.

Yields and test weights measured on the Ferma-Lizer experiments at Langdon, Dickinson and Carrington are summarized in the following table.

open in browser PRO version Are you a developer? Try out the HTML to PDF API pdfcrowd.com

Table 23 - Crop Yields and Test Weights by Ferma-Lizer Treatment and Location								
Treatment	Carrington		Dickinson		Langdon		Average	
	Yield Bus/Ac.	Test Wt. Lbs/Bu.	Yield Bus/Ac.	Test Wt. Lbs/Bu.	Yield Bus/Ac.	Test Wt. Lbs/Bu.	Yield Bus/Ac.	Test Wt. Lbs/Bu.
Beacon Barley								
Check	50.4	47	46.9	47.5	68.5	46.0	55.3	46.8
Seed Treatment	49.7	46	43.1	48.5	71.6	46.5	54.8	47.0
Foliar Treatment	52.2	45	43.8	48.0	72.4	47.1	56.1	46.7
Seed + Foliar Tmt.	51.7	46	43.6	47.0	70.8	47.7	55.4	46.9
Lsd @ 5%	2.0		4.0		11.7	.43		
C.V.	2.45%		5.61%		10.3%	.57%		
Ward Durum								
Check	33.9	61	35.2	60.5	40.1	58.8	36.4	60.1
Seed Treatment	32.3	60	28.8	59.5	38.8	58.5	33.3	59.3
Foliar Treatment	34.9	61	36.1	61.5	40.3	58.5	37.1	60.3
Seed + Foliar Tmt.	34.1	60	28.1	60.5	42.9	59.3	35.3	59.9
Lsd @ 5%	5.5		4.0		6.4	1.55		
C.V.	10.14%		7.88%		9.95%	1.65%		

open in browser PRO version Are you a developer? Try out the HTML to PDF API pdfcrowd.com

Olaf Wheat								
Check	39.1	59	36.5	62.0	49.6	57.3	41.7	59.4
Seed Treatment	36.2	60	33.1	60.0	44.1	565	37.8	58.8
Foliar Treatment	36.2	60	38.1	61.5	47.6	57.3	40.6	59.6
Seed + Foliar Tmt.	37.4	60	33.0	61.0	46.3	56.5	38.9	59.2
Lsd @ 5%	2.2		4.8		5.6	.8		
C.V.	3.8%		8.5%		7.5%	.9%		

In the above table there are differences in yield resulting from treatment, but few are significant at the 5% level. No attempt was made to combine the yields from all locations into a single statistical analysis, but the average yields by treatment for the three locations shows seed treatment markedly depressed the yields of all three crops. Further, this negative effect was apparent on each crop at each location excepting barley at Langdon. The foliar treatment tended to slightly increase yields and most consistently that of Ward durum. The combination seed and foliar treatments produced greater yields than those from seed treatment, but less than those from foliar treatment. But, they were below the check plot yields in nearly all instances.

Test weights responded to Ferma-Lizer treatments essentially as did yields. Seed treatment had a depressing effect and foliar application a slightly positive effect.

In addition to yield and test weight data from the Langdon station made measurements of plant weight, plant height, tillers per plant, heads per plant and kernels per head under the various treatments. Most differences were not statistically significant at the 5% level. The exception was Olaf wheat in which instance seed treatment caused a significant reduction in kernels per head and test weight.

Supplementary Planting: In early June, 1975, Dr. Mayeaux, Research Director for Ferma-Gro Corporation,

open in browser PRO version Are you a developer? Try out the HTML to PDF API pdfcrowd.com

requested the Carrington Station to make an evaluation of another product identified as Lacto-Base in comparison with Ferma-Lizer as a foliar applicant on wheat. He provided the material and it was applied as recommended to a plating of Olaf wheat in five, 5 x 100 foot strips paired with Ferma-Lizer. Two untreated strips were used for yield checks. Data obtained is given in the following table:

Yield Response to Foliar Treatments - Bus/Ac.			
Rep	Check	Ferma-Lizer	Lacto-Base
I	37.21	39.20	37.75
II		37.21	37.93
III		37.39	36.30
IV		36.84	39.20
V	37.21	39.22	36.84
Avg.	37.21	37.97	37.60

Yield response to the foliar treatment of both materials is positive, but slight. Differences in response to the two materials is minor.

Summary: In a year of abnormal precipitation ranging from too wet early in the growing season to too dry in late season the application of Ferma-Lizer as a seed treatment depressed the yields of barley, wheat and durum. Ferma-Lizer used only as a foliar treatment tended to increase yields slightly. A combination of seed and foliar treatments depressed yields. Though yield differences due to treatment in most instances was not statistically significant at the 5% level the trends were consistently evident.

Though it is recognized that this is only one year's results the consistency of response to treatment on each crop at all locations suggests that the product Ferma-Lizer in its present form, when used as directed on the label, is not

open in browser PRO version Are you a developer? Try out the HTML to PDF API pdfcrowd.com

likely to increase yield of wheat, durum or barley to produce an economic gain for the user.

The material Lacto-Base provided by Ferma-Gro Corporation was less effective than Ferma-Lizer in increasing the yield when both were applied as foliar treatment on companion strips of Olaf wheat.

Back to 1975 Research Reports Table of Contents
Back to Research Reports
Back to Dickinson Research Extension Center (http://www.ag.ndsu.nodak.edu/dickinso/)
Email: drec@ndsuext.nodak.edu

---

open in browser PRO version Are you a developer? Try out the HTML to PDF API pdfcrowd.com