Desert Security Farms Fertilizer Trials On Selected Alfalfa Fields

1991

Seven fields were selected that were first year or second year hay. Five fields were selected to compare phosphoric acid, 10-34-0, and Huma Gro 9-32-0. Two other fields were selected to compare the above listed fertilizers plus 11-52-0. In addition to the fertilizers, a soil ammendment was applied to certain fields. Need for fertiliztion was determined by analysing soil samples for phosphate phosphorous, using the sodium bicarbonate extraction process.

Objectives of the fertilizer trials.

1. To compare and evaluate the cost effectiveness of different fertilizers and soil ammendments in hay production. See Table I

2. Evaluate the persistance or availability of different phosphate fertilizers in the soil. Evaluate the efficacy of soil analysis in determining when to fertilize alfalfa and the amount of fertilizer to apply.

Conclusions from the fertilizer test plots, which were conducted on the following fields:

Field	
N5, N12, 15, 16	No phosphate fertilizer applied. The soil sample tests indicated adequate levels: 13-15 ppm of phosphate-P or greater.
22, 62, 63	Fertilizer applications were based on soil phosphate levels as determined by laboratory analysis.

1. Soil analysis for determining fertilizer requirements on alfalfa is very cost effective.

Four fields out of seven did not require phosphate fertilization. Of the fields that did require phosphate, the soil tests indicated only one or two

applications were required during the test period, May 1st through December, 1991.

The highest producing test field was 63 So.-2, which received one application of 10-34-0 + catalyst, 5/3/91, at a cost of $25.20/Ac., and produced 8.85 tons/ac. during the test period (6 cuttings). Following the fertilizer application, subsequent soil analysis tests showed adequate levels of available phosphate.

2. The fertilizer that produced the hightest yields and at the lowest fertilizer cost/acre was 10-34-0. See Table I.

These field tests further corroberated other past soil studies, which I have done, that 10-34-0 fertilizer will not "tie up in the soil" or convert to unavailable types of phosphorous as rapidly as phosphoric acid or 11-52-0 fertilizers. See the lab data sheets for fields 22, 62, and 63. Also, and very importantly, five gallons (60 lbs.) of 10-34-0 fertilizer is equivalent to 100 lbs. of 11-52-0 or fifty units of phosphoric acid. The fact: Much less actual units of phosphorus, in the form of 10-34-0, can be used than other types of phosphorous fertilizers. The type of soil must be known in order to make an adequate and economical fertilizer recommendation. Soil types can be identified by soil analysis.

3. The catalyst used on the various fields was not cost effective. In 1990, production on fields 62 and 63 was almost equal: Field 62, 11.57 tons/ac. and field 63, 11.72 tons/ac. During the test period, May through Dec., field 62 produced 7.85 tons/ac. and field 63, with the catalyst, produced 8.04 tons/ac., .19 tons more/ac. At a cost of $20.00/Ac. , the catalyst would not be economically beneficial.

In field 22E and 22W there has not been any difference in production that can be attributed to the catalyst.

In fields 15 and 16, both received applications of the catalyst in 1991.

The drop in production from first year to second year hay averages about 6%-8% less the second year. See Table II. Field 15 was 6% less in 1991 than 1990, when catalyst was not used. Field 16 was off 19% in 1991; however, I attribute this unusual drop in production to the rather extensive infection of the field with Texas root rot. In my opinion, the catalyst had no effect on hay production.

4. Consider the tremendous difference in fertilizer costs of our test fields utilizing sound soil science methods and experience, with proven products, as compared to several test fields conducted by fertilizer sales people. See Table III and Table IV.

There was no significant difference in production (9.96 tons vs. 10.28 tons) but tremendous difference in fertilizer costs, ammendments and foliar spray costs. ($12.35/Ac. Av. fertilizer cost plus 11.25/Ac. Average catalyst cost vs. 72.71/Ac. fertilizer, catalyst, etc. plus 3 to 8 foliar applications/Ac., cost unknown).

Sam T. Stanworth

Table I

Fertilizer Costs/Ac. vs. Production, Tons/Ac.

Field	Cost/Ac Phos Acid	Tons/ac	Cost/Ac 11-52-0	Tons/Ac	Cost/Ac 10-34-0	Tons/ac	Cost/Ac 9-32-0	Tons/Ac
22E	$23.50	5.85			$19.04	6.89	$24.19	6.26
22W	$19.75	6.32			$12.24	6.29	$13.34	6.42
62	$24.25	7.62	$21.00	7.86	$22.78	7.90	$25.52	8.02
63	$27.00	7.42	$36.76	8.12	$10.20	8.85	$25.52	7.80
Avg./Ac.	$23.62	6.80	$28.88	7.99	$16.06	7.48	$22.14	7.12
Avg. 62-63	$25.62	7.52	$28.88	7.99	$16.49	8.37	$25.52	7.91

N5
N12
15
16

No Phosphate applied because of adequate soil levels. Nitrogen was water run on fields #N5 and #15 about Sept. 1. Production was not increased by this application.

Table II

Alfalfa Production: Tons/Ac.

* Fertilizer Trial Fields

Field	Aug/Sept '90	Total/yr '90	Aug/Sept '91	Total/yr '91	% Production Difference 1990-1991
* #62	9.208	11.57	8.981	10.7	-8%
* #63 (Catalyst)	9.336	11.72	9.746	11.1	-6%
* #61 talyst & Foliars)	7.512	9.44	8.54	9.7	+3%
* #15 (Catalyst)	9.003	10.923	9.274	10.3	-6%
* #16 (Catalyst)	9.697	11.680	8.627	9.5	-19%
					Production loss due to Texas root rot.
#17	New Field - Spring 1990		8.928	10.0	
#22 (Entire field)	New Field - Fall 1990		8.234	9.5	
* #22 East	New Field - Fall 1990			9.5	
* #22 West (Catalyst)	New Field - Fall 1990			9.53	
* #N5 (Catalyst)	New Field - Fall 1990		6.968	9.6	
* #N12 (Catalyst)	New Field - Fall 1990		7.681	9.5	

Table III

Fertilizer Company Recommended Program - 1991

Desert Sec. Fields

Variety	Field	Planted	1991 Production	1990 production	Fertilizer Costs (Jan. thru Sept.)
Maricopa	3	4/19/89	9.493	10.294	$85.48 + 6 App. Foliar spray
Mecca	8	2/27/89	9.969	10.821	103.07 + 6 App. " "
Cuff 101	11	9/20/90	10.878	ø	55.34 + 3 App. " "
Cuff 101	12	9/20/90	8.597	ø	55.35 + 3 App. " "
Cuff 101	39	10/26/88	11.297	13.683	60.05 + 5 App. " "
Meca	47	3/04/89	12.383	12.00	80.74 + 4 App. " "
Sundor	61	9/22/88	9.703	9.44	79.59 + 4 App. " "
		AV.	10.33 Tons	11.25 tons	$74.23/Ac. + foliar sprays
			- 8%		34 gal/Ac

37.50 from 9-32-0 @ 11.6 #/gal = 172.49 gal/Ac @ $2.18/gal

D.F.I. North

Field	Planted	Production	1990 production	Fertilizer Costs (Jan. thru Sept.)
N6	2/90	8.485	6.102	$69.13 + 7 App. Foliar spray
N7	2/90	8.282	5.938	74.98 + 8 App. " "
N13	2/90	11.469	8.548	70.93 + 8 App. " "
N22	2/90	12.635	8.318	66.67 + 8 App. " "
N27	10/90	10.28	ø	74.26 + 6 App. " "
		10.23 Tons	7.23 Tons	$71.19/Ac. + foliar sprays
				33 gal/Ac

6 cuttings

Table IV

Desert Security Farms - Test Fields by Stanworth Crop Consultants

1991 (May Through Dec.)

Field	Variety	Planted	1991 Production Tons/Ac.		Fertilizer Cost/Ac.	Catalyst Cost/Ac.
N5		10/90	9.589		$7.50 Nitrogen	$15.00
N12	Cuff 101	10/90	9.464	9.73		15.00
15	Maricopa	10/89	10.329		5.81 nitrogen	15.00
16	Maricopa	10/89	9.533			15.00
22E	Cuff 101	9/89	9.50		22.24	
22W	Cuff 101	9/89	9.53	10.21	15.11	15.00
62	Sunder	9/88	10.7		23.28	
63	Sunder	9/88	11.1		24.87	15.00
		TOTALS:	9.96 Tons/Ac.		$12.35/Ac.	$11.25/Ac.

Table I

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22W }	$19.75	6.32			$12.24	6.29	$13.34	6.42
62 77	$24.25	7.62	$21.00	7.86	$22.78	7.90	$25.52	8.02
63 70	$27.00	7.42	$36.76	8.12	$10.20	8.85	$25.52	7.80
Avg./Ac.	$23.62	6.80	$28.88	7.99	$16.06	7.48	$22.14	7.12
Avg. 62-63	$25.62	7.52	$28.88	7.99	$16.49	8.37	$25.52	7.91

74 N5
75 N12
55 15
57 16
} Cat

No Phosphate applied because of adequate soil levels. Nitrogen was water run on fields #N5 and #15 about Sept. 1. Production was not increased by this application.