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Report of the Experimental

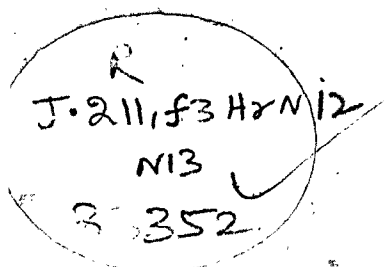
Work of the Hagari

Agricultural Station

1912-13

by

G. R. Hilson



Department of Agriculture, Madison.

REPORT
OF THE
EXPERIMENTAL WORK
OF THE
HAGARE AGRICULTURAL STATION

FOR
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Deputy Director of Agriculture, Northern Division.

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REPORT OF THE EXPERIMENTAL WORK OF THE
HAGARI AGRICULTURAL STATION
FOR 1912-13.

Season.—The rainfall was above the average and in excess of requirements. Sowings took place at the normal time and until November good crops were expected all round; the rains received then however affected both cotton and sorghum, the former badly, the latter to a less extent.

TABLE I.
Statement of Rainfall.

Months.	Portnight.	1908-12.	1909-10.	1910-11.	1911-12.	1912-13.	Average.
April	First ... Second ...	0.24 0.15	0.08 0.10	0.00 0.00	0.00 0.00	0.04 0.04	0.05
May	First ... Second ...	1.00 0.00	2.57 0.07	3.63 0.10	2.18 0.10	2.78 1.67	2.25
June	First ... Second ...	1.13 0.01	0.18 0.00	0.00 0.04	1.88 0.05	0.80 0.04	0.75
July	First ... Second ...	0.48 0.53	0.58 0.33	0.71 3.79	1.03 0.60	0.23 1.27	0.77
August	First ... Second ...	0.26 0.42	0.14 2.33	0.00 9.32	0.15 2.74	0.43 2.44	1.02
September	First ... Second ...	0.63 0.60	0.00 2.01	1.15 3.13	0.12 2.01	0.05 2.86	0.75
October	First ... Second ...	0.00 0.79	0.00 0.00	0.00 0.00	0.00 0.13	1.08 0.00	0.35
Nov	First ... Second ...	0.00 0.00	0.00 0.00	2.51 0.00	0.00 0.10	0.10 2.07	0.55
Dec	First ... Second ...	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00
Jan	First ... Second ...	0.13 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.03
February	First ... Second ...	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00
March	First ... Second ...	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00
Total		12.63	14.75	27.57	13.79	22.21	19.19

2. *Cotton (a) Selections.*—The Hagari selections which are being tested for yield as well as those brought from Bellary were sown in triplicate plots in Field No. 2.

The yields are shown below:—

TABLE II.

				Kappas lbs. per acre.		
				127	133	95
Hagari—No. 1	..	..	..	127	133	95
" 2	..	..	..	169	156	150
" 21	..	..	..	110	80	86
" 23	..	..	..	129	103	108
" 25	..	..	..	209	178	198
" 43	..	..	..	165	122	138
" 44	..	..	..	136	122	120
Bellary—No. 3	..	..	..	125	122	119
" 5	..	..	..	151	131	150
" 9	..	..	..	97	106	83
" 10	..	..	..	98	113	88
" 11	..	..	..	78	83	98
" 21	..	..	..	105	126	116
" 41	..	..	..	131	138	178
" 44	..	..	..	105	113	119

In addition to these, comparative plots of selections Nos. 61, 64, 65, and clean-seeded cotton were laid down in the same field and Nos. 81 to 86 inclusive selected last year were sown in lines.

The yields of the former are as follows:—

No.	Kappas lbs. per acre.		
61	..	..	90
63	..	..	95
65	..	..	89
Clean seeded	..	..	94

(b) *Comparison of farm and local cottons.*—Owing to a mistake in picking, figures for this experiment are not available this year.

3. *Sorghum.*—Selections Nos. 1, 2, 12, 13 and 14 were sown in triplicate plots in field No. 2.

The yields are shown below:—

TABLE III.

No.	Grain in lbs. per acre.						Straw in lbs. per acre.					
	1910-11.	1911-12.	1912-13.				1910-11.	1911-12.	1912-13.			
			1	2	3	Average.			1	2	3	Average.
1	461	...	504	477	470	490	625	...	650	781	767	728
2	451	Crops.	550	511	283	445	749	Crops.	1,031	962	687	893
12	227	Failed.	154	554	389	345	509	Failed.	717	1,536	493	932
13	355	...	380	403	405	393	573	...	812	1,052	681	849
14	346	...	443	652	470	522	637	...	688	1,476	846	907

N.B.—Area per plot 70 cents.

In addition to these, selection Nos. 21 to 27 inclusive were sown in lines.

4. *Italian Millet (Setaria Italica)* (a) *Selections.*—The four types were again sown this year in comparative plots in field No. 7. It was found however that the plots had become mixed and fresh single plant selections have been made.

TABLE IV.

Variety.	Grain lb. per acre.				Straw lb. per acre.			
	1912-13.	1911-12.	1910-11.	1909-10.	1912-13.	1911-12.	1910-11.	1909-10.
Yellow awned ...	487	86	358	323	523	163	316	375
" awless ...	480	131	411	350	720	158	485	368
Red awned ...	686	118	391	254	756	280	383	346
" awless ...	502	89	298	308	492	207	354	356

(b) *Continuous cropping experiment.*—The plot was sown again this year and an acre-yield of 692 lb. grain and 592 lb. straw was obtained.

5. *Manurial experiment.*—(a) *Magnesium sulphate.*—The plots this year were cropped with cotton, the same dressing of magnesium sulphate being given.

The yields were as follows:—

TABLE V.

Treatment.	Kappas lb. per acre.
Manured 40 lbs. Magnesium sulphate per acre.	136
Unmanured ..	113

(b) *Sheep-manure.*—This experiment was continued, the plot was, however, divided and only one-half received manure. The object of this is to test the effect of the manure applied directly to cotton as compared with its effect when applied indirectly through a sorghum crop; one plot will therefore receive manure every year and the other every other year when the plots will be under sorghum.

The yields were as shown below:—

Treatment.	Kappas lb. per acre.
Manured every year ..	181
" every other year ..	144
No manure ..	66

(c) *Cattle-manure.*—A similar experiment to the above but with cattle-manure has been started in field No. 4.

The yields were as follows:—

Treatment.	Kappas lb. per acre.
(1) Manured every year ..	185
(2) " every other year ..	211

Only the first plot received manure this year at the rate of 10,000 lb. per acre.

6. *Rotation plots.*—The rotation most commonly adopted in the black-soil tracts of Bellary district is: first year, sorghum mixed with

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bengalgram (*Cicer arietinum*), one line in every six being a mixture of the two crops and the others pure sorghum; and second year, cotton and Italian millet mixed, one line of cotton alternating with two lines of millet.

In the first mixture the proportion of gram is small and the yields obtained are very small, also any advantage due to the crop being a leguminous one must be very small.

As regards the second mixture, if the rainfall is an average one both crops give fair yields, but as a rule less than if they were grown as pure crops; if it is short both crops suffer and give considerably less than if grown pure; if however the rainfall is good, as in the year under report, it is an advantage to have these crops mixed as the cotton does not then suffer to such an extent from the excessive rainfall as when grown pure.

The chief defects of the rotation appear to be, the lack of a leguminous crop and the continuous demand made on the upper layer of the soil by a steady succession of shallow-rooted grain crops. The following plots have therefore been laid down to test the effects of the various constituents of the rotation on one another.

TABLE VI.

Plot.	Crop.	Yield in lb. per acre.		
		Grain.	Straw.	Seed cotton or gram.
1	Cotton and Italian millet	752	1,020	107
2	Sorghum and gram	597	1,760	28
3	Sorghum	604	1,624	...
4	Cotton and Italian millet	718	840	145
5	Cotton and Italian millet	634	908	156
6	Bengal-gram	...	...	596
7	Cotton	...	...	195
8	Sorghum and gram	646	1,780	14
9	Sorghum and gram	584	1,060	7
10	Italian millet	664	624	...
11	Bengal-gram	...	...	692
12	Sorghum	654	1,652	...
13	Italian millet	692	672	...
14	Bengal-gram	...	...	563
15	Cotton	...	...	330
16	Bengal-gram	...	...	612
17	Sorghum	626	1,860	...
18	Italian millet	624	704	...
19	Cotton	...	...	207
20	Sorghum	598	1,300	...
21	Cotton	...	...	165
22	Italian millet	844	924	...

In plots 1 and 2 the ordinary rotation is adopted, in 3 and 4 the single constituent sorghum is alternated with those constituents of the rotations which would ordinarily be the case were it grown mixed, and so with each crop in turn up to plots 9 and 10. In the remaining plots each crop is grown pure and rotated in turn with each of the other crops in the rotation.

7. *Garden crops—Ragi (Eleusine coracana)* (a) *Cultivation experiments.*—The local method of cultivating this crop is to sow the seed fairly thickly (12½ lb. per acre of seed-bed) and transplant in beds. The seedlings towards the middle of the beds usually get too much water, and are in consequence stunted. An experiment has therefore been started to try and improve upon this method. The seed-beds are sown more thinly (5 lb. per acre of bed) and the seedlings are planted on ridges.

TABLE VII.

Method.	Area planted by one cent. of seed-bed.	Yield per acre.	
		Grain.	Straw.
Local	centa.	lb.	lb.
Thin seed beds—(a) Ridges	29	2,500	4,600
Do. (b) Beds	11	2,763	4,460
Do. (b) Beds	7	3,158	5,170

N.B.—Area per plot 10 cents.

The ridge plot was evidently planted too thinly.

(b) *Selections.*—Nine single plant selections made in 1911-12 were sown in small plots of about half a cent each and gave the following yields per acre:—

No.	Grain.	Straw.
	lb.	lb.
1	2,450	4,000
2	2,269	5,395
3	3,269	3,846
4	3,385	5,692
5	2,654	5,846
6	2,731	7,077
7	3,385	4,692
8	3,042	3,883
9	3,313	7,500

Onions.—A similar experiment to the ragi experiment is being tried with this crop. The local seed-rate is 380 lb. per acre of seed-beds and the seedlings are transplanted in beds. In the comparative plots half this rate was used and the seedlings planted out on beds and ridges.

Method.	Area planted by one cent of seed-bed.	Yield per acre.
	Cents.	lb.
Local	37	15,950
Thin seed-beds—(a) Ridges	40	13,640
Do. (b) Beds	20	15,240

The seedlings planted on the ridge were obviously too thin, but they gave the best bulbs.

Sweet potato (Ipomœa Batatas).—In this crop as grown locally three different varieties were found, one with entire leaves yielding red tubers, one with lobed leaves yielding red tubers, and one with lobed leaves yielding white tubers. A beginning was made with their separation and testing this year.

The yields were as follows:—

	lb.
Lobed leaves, red tubers	9,840
Do. white tubers	7,190
Entire leaves, red tubers	7,638

The two red varieties were ready for harvest first. The white variety was attacked by weevil before harvesting was completed and the yield is therefore probably less than it ought to have been.

8. *Sheep.*—The local sheep appear to consist of three distinct breeds:—(1) red brown hairy sheep, (2) black woolly sheep, (3) white woolly sheep with black faces; and mixtures of these. The white sheep are the most satisfactory from the point of view of improving the sheep of the district and a beginning was made last hot weather in the establishment of a flock. Eighteen animals, 11 ewes and 7 ewe lambs over six months' old were purchased. One of the ewes shortly after being brought to the farm dropped a ram lamb and two of the ewes died during the year. A ram was purchased later and allowed to run with the ewes. Ten lambs have been born, of which two are black all over and one partly black and partly red-brown, the others are white with black markings on the face.

BELLARY,
3rd May 1913.

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