This wild variety of Malabar does not fully conform to any of the descriptions of the 30 types of sesame given by Kashi Ram. The seed only resembles that of type 24 and the plant has the habit of type 25, but the corolla is different. Type 18 of Kashi Ram has the lowest oil content viz., 37.88% while the Malabar wild gingelly has the record of low percentage of 32 (ether extraction).

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Some Lessons of the Bhagavadi Demonstration Farm

By

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The Bhagavadi Demonstration farm represents a unique effort of the department and it is perhaps the only one of its kind, Its objective is not the straight one of modernising agriculture by translating the results of research to the ryots' stock of knowledge and practices; but merely to find out, in the words of the original, the reaction of the ryot to tested measures of improvement; and the methods adopted are not obtrusive, but are directed to a close observation from behind the screen, of the path of these improved methods and means of cultivation in the lands of a chosen population of ryots. This is obviously a technique seldom adopted for propaganda and although the farm is euphemistically named a demonstration farm, there is the least attempt to demonstrate. It should not be surprising that, for that very reason. the results are more revealing and the insight closer; for as is often said, none knows when the acorns giving rise to huge forest trees are sown in a forest, while, when a tree falls, the whole forest reverberates with the noise.

The Bhagavadi farm is an adjunct of the Agricultural Research Station located in the village of the same name and at a distance of about 5 miles from the present station. It consists of a compact area of about 170 acres in close neighbourhood of the village consisting of about 37 survey numbers and owned by thirtyone pattadars but cultivated by smaller number of ryots.

Method: The method adopted was simple and consisted of an oral or gentleman's agreement by which the ryots agreed to raise the ordinary *mungari* and *hingari* crops using irrigation water and following the practices adopted on the parent station at Siruguppa. In lieu thereof, Government undertook to supply irrigation water free of cess in the earlier years of the experiment. A small agricultural staff consisting of one demonstrator and a fieldman acted primarily as a liaison between the ryots and the Public Works Department for arranging on request for supply of irrigation water at required intervals and intensities and secondly as an adviser on irrigation, methods of agriculture and as an observer of the progress of operations and crop-growth on the farm. Records were maintained of every agricultural operation done on each field and the final yields obtained under irrigation enquired into and recorded.

Guidance was given in methods of irrigation of the deep black soils in respect of the following:—

(a) Preparation of the land for irrigation by levelling and terracing to a slope not exceeding 1 in 100.

(b) Summer ploughing for keeping down weeds immediately after the harvest of the crops.

(c) A more extended use of implements like buckscrapers, and bundformers.

(d) More intensive manuring of the lands by raising green manures.

(e) Use of improved strains tested for suitability under irrigation,

(f) Controlled and limited irrigation of dry crops at 2 inches in 14 days.

Duration: The work of the scheme on the above lines had been in progress since 1944 and the results of trials of four seasons are taken for the conclusions of this paper.

Results: The popularity and success in the irrigation of these dry lands can be gauged from the following statements.

STATEMENT I.

Year	Area under Irrigation for Mungari crops	Hingari crops	Garden land
1. 1944–45	81·72	9·0	31·5
2. 1945–46	52·90	87·2	31·5
3. 1946–47	162·90	81·2	31·5
4. 1947–48	5·40	57·9	31·5

NOTE: The optimum irrigation of either *Munguri* or *Hingari* crops of the Demonstration Farm should bring an area of 360 acres per season.

It will be seen that irrigation is not very popular and that the particular sample of ryot population has put in only about 25% effort for obtaining maximum results of the use of water on their lands. The results of the four seasons, experiments may also be looked at from another angle and this is presented in statement II.

STATEMENT II.

	Name of crop				
	Cotton	Jonna — Korra		Wheat	Groundnut
1. No. of ryots using for one season only	7·0	6·0		5·0	2·0
,, two do.	6·0	7·0		3·0	1·0
,, three do.	nil	nil		nil	nil
,, four do.	nil	2·0		nil	nil
2. Yield with per acre-Mean	437	692	427	539	886
Maximum	887	1453	807	1320	1359
Minimum	84	77	82	64	509

It will be seen that only two of the 52 ryots used water consistently for all the seasons and that only for the *mnugari* jonna crop and that once in alternate years, the ryot is not likely to use irrigation water. But in the generality of cases where irrigation water had been used, the increase in yields was appreciable. This is reflected in the further observation made on the farm, that the cost of leasing land has increased four or five-fold since the advent of irrigation.

While the above analysis gives an estimate of the positive side of the effort at Bhagavadi, there is a great deal more that is of vital and far-reaching consequence that has not been achieved; in fact certain features of the recommendations have made practically no impression at all. The position in these respects during 1946–47 is typical of almost all seasons and is reproduced below:

Blocks	Total area of the blocks	Preparatory cultivation			Manuring	
		Deep ploughing in acres	Light ploughing in acres	Harrowing in acres	Cattle manure in acres	Sheep penning in acres
Mungari (Mungari-Hingari rotation block)	59·49	18·61	40·88	59·49	12·08	9·35
Hingari (Hingari-Mungari rotation blocks)	88·82	55·96	11·47	81·82	3·00	11·20
Garden-land block	32·04	23·42	8·28	31·70	12·21	16·24

It will be seen that the important experience and results of research on the agricultural research station are not incorporated in the ryots' practices at Bhagavadi. For example, the individual fields are still of the same size and their topography little changed after four years of working. The slope of the land is in places too steep for irrigation practies; nor has he adopted the tested practice of throwing the field into conveniently long and narrow beds.

(2) Manuring is still done at the low level of dry land regions only. The consequences of this has been of a serious character; the land becomes poorer with cropping due to exhaustion and loses its structure due to loss of its organic matter.

(3) The individual units of farming on the station is still as large as before there is thus no adequate appreciation of the primary needs of irrigation farming in respect of the labour and cattlewealth that may become necessary.

In short, the cultivation on the demonstration farm is still being done without a full appreciation of the change-over from dry to irrigation agriculture. The effects of this type of water utilisation would prove disastrous in a not very long period of time. Within half a dozen years of cropping, the unmanured areas of the Agricultural Research Station have given evidence of the exhaustion and loss of cropping power. Further, efficiency of irrigation under the uncontrolled conditions on dryland farming is bound to be low and with the limited quantity of water that is available, it will be found insufficient for the entire ayacuts estimated and localised in the earlier years and with increasing deterioration of the land, irrigation itself may become unpopular.

The position to which the Bhagavadi experiments lead us may be summed up as under.

(i) The use of irrigation water is generally believed in and welcomed (ii) its efficient use is unknown and the need for so doing is not

appreciated. (iii) The reaction of the ryot is apparantly favourable but is anything other than what is needed by the newer conditions to come, in the wake of the present conditions.

Discussion: It should be interesting and instructive to speculate on the causes of the failure or the limited success in this effort. It will be necessary to have an idea of the background viz. the characteristics of the physical environment and of the population of the tract. The more important of these may be detailed.

The region is agriculturally an old country with a very ancient system of cultivation fairly well-settled practices and rigid ideas of seasons and crops.

2. A tract of precarious and uncertain rainfall, famines occurring once in five years and deficency in alternate years.

3. Thinly populated, with more of cultivable land per head than other similar regions, with predominantly dry systems of cultivation.

4. In normal seasons, the area is self-sufficient in respect of the major cereals and is protected against starvation during famine years by a system of famine relief. It is thus manned by a population that is ordinarily on famine doles. It is to such a region that water is made available. The question may be asked at this stage — at what level would it be best to give? and over what area? Whether 'protectively' in amounts just enough to ward off failure of crops in rainless or rain deficient years or "productively" with a view to develop the area and make the project remunerative.

These questions cannot be answered by demonstration farms or propaganda but only by a close integration of the characteristics of population and area concerned.

SUMMARY.

The Bhagavadi demonstration farm represents a unique effort of the department (i. e.) only one of its kind. Its object is to find out the reaction of the ryot when tested improvements of research were placed at his disposal and no kind of persuasive or compelling influence is brought to bear on him. Its lessons are therefore of interest in any enquiry into the difficulties of transferring research to practice.

The paper records the major experiences and results of the farm and it is pointed out that a close intergation of sociological studies of the ryot populations with the methods of advocacy is likely to produce better results.