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Farming and the Scientist

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So long as man must eat the production of food will be the most basic of all occupations. So long as populations continue to increase more and more food will have to be produced. Since the area of land suitable for food production is limited the continuing aim will have to be ever increasing yields on the limited land available. The Agronomic scientist will be judged not by the fundamental problems he succeeds in unravelling or the pure scientific truths he discovers but by the success of his efforts in increasing yields on the land. Work that is essentially academic can quickly lose its agricultural significance if new principles are not (or cannot) be related in *simple effective economic* terms to the farmer. In agronomic enquiry the farmer should be associated with the scientist for such work can lose much of its value if not immediately and persistently associated with farming practice itself. Since our scientists know little or nothing of farming practice or farming problems nor care to associate farmers with their enquiry, research in this country tends to remain purely academic. This is where research in the U. S. A. or Australia scores over research in this country.

What is the remedy for this state of affairs? The remedy is to speak less about "science for the farmer" and think about the need of a knowledge of farming for the scientist. Only when our scientist learns something about farming can he teach some useful science to the farmer. And out of this association will develop a new philosophy of land use, a philosophy of maximum profitable crop production per acre of land with a minimum of soil deterioration. Before the scientist can teach the farmer how to use the land fully but wisely the scientist should learn how to use the land at all and what prevents the farmer from using all his land fully and wisely. First of all the scientist should cease to believe that the farmer is stupid or ignorant, and conservative. If our kisans had been anything like this they would have ceased to survive; but there is the fact that he has survived two world wars and the strains and stresses produced by them which have spelt innumerable bankruptcies among businessmen supposedly less ignorant and more intelligent.

They may be managing things better at the I. A. R. I., I have no means of knowing. But what is taking place around me makes me doubt whether our experts know their own science thoroughly. Let me cite only one instance to show that my criticism is not due to blind prejudice against agronomic scientists.

Though little or nothing has been done in this country twards the study of the defects and managements of red laterite soils these have been studied thoroughly by soil men and agronomists of the U.S.A. and West Indies. What they tell us should be the starting point of research on these soils in India. The ignorant farmers of the West Coast of South Kanara and Malabar are so well aware of the great need for potash in this soil and the response given by ash that a man would burn his hut if there was no other means of obtaining ash. Yet our experts have been and still are saying that potash is not necessary. Lakhs of rupees worth of nitrogenous and phosphatic fertilisers were stocked by Community Project authorities but not a pound of potassic fertiliser though ash is scarce and of poor and doubtful quality because it is obtained by burning vegetation grown on a soil extremely low in potassium. As if this was not enough a liming experiment on paddy was initiated where doses of 2000 and 3000 lbs. of lime — lime mind you not chalk — were prescribed per acre. Apparently the chemist forgot all about theories and effects of such excessive liming on intake of potassium and other essential metallic ions on soils already highly deficient in potassium, about constant ion effects, antagonism and competition between the metallic ions and such like things which make a world of difference between the results of experiments *in vitro* and *in vivo* in the soil. The conclusion drawn from these experiments was that addition of heavy doses of lime (3000 lbs.) gave a slight increase in the yield of paddy. If after learning this a farmer does not take to liming at this rate he would be dubbed ignorant and stupid forgetting the vital fact that the farmer has to make a living out of the soil.

For myself I have learnt that it is better to depend on myself than on such experts. My study of advances in agricultural science has convinced me that already in various parts of the world enough fundamental and applied research has been done to enable the progressive farmer to increase production many fold. A dozen years ago I started farming on pure sand so barren that it was not growing even weeds to prevent it from blowing away. By putting a low lying plot under a grass and legume mixture (*Brachiaria mutica* and *Sesbania speciosa)* for two years I have been able to raise my yield

of paddy from nothing to 3000 lbs. per acre. Ten years ago even with heavy doses of F. Y. M. my sweet potato crop using a local variety of vine gave me tubers no larger than my little finger. By using a complete N. P. K. mixture and an American variety (T. S. T. white) my yield in the last two years were ¾ lb. per foot of row. This year by making my own mixture with a little copper sulphate and magnesium sulphate my yield of tubers averaged 1·66 lbs. per foot of row.

What little increase in production has been attained in the last three years has been entirely due to the efforts of progressive farmers, amateurs like those of Kora Kendra, favourable monsoons, and increased facilities for supplemental irrigation. If this rate of increase in production is to be sustained in the future - and sustained it must be to provide for population increase – our scientists must change their attitude and come out of the splendid isolation of their laboratories and associate with at least progressive farmers to learn from them what are their problems, what prevents them from increasing yields, what are their cultural practices, etc.

Such association of the farmer with the scientist will make the latter realise that breeding of improved strains and varieties alone can effect no increase in production unless they are used along with improved cultural and manurial practices. More importaut it will make the scientist realise the great need for reorientation of ideas of farming in general and enable them to convince the politician that his present muddled ideas of land reforms will not lead to the desired goal of ever increasing production.

I am fully alive to the need for increase in fundamental knowledge. But for food production which will keep in step with the requirements of ever expanding populations what is urgently needed is increase in that type of fundamental knowledge that helps to determine the best practices for a given set of conditions. Cultural improvement of any crop is entirely dependent on advances in cultural practices. The utilization of these advances depends on improvement in implements and equipment. So long as we small farmers have to depend entirely on the wooden plough and the mamooti so long will we be unable to employ knowledge of cultural improvements.

What changes, then, will be necessary in the organisational set up of agricultural research and education if there is to be developed an increase in that type of fundamental knowledge that

helps to determine the best practice for a given set of conditions? Upon this will depend the future of agriculture in this Country. Let me state, for what they are worth, my ideas about the necessary changes.

Firstly, what may be called an "Experimental Husbandry Farm" should be set up on every special soil (the laterite for instance) to act as a sub-station to the existing research stations to provide facilities for experiments by the advisory service. This experimental husbandry farm should be under a Committee of which the farm and the Station Superintendents as also the head of the District Advisory Service will be members in addition to representatives of local Farmers' Forums and other farmers' organisations especially chosen because they are progressive farmers.

Secondly, in future, attention should be given to farm-management studies both in teaching and advisory work, so that the future agricultural advisory service staff may consist of men trained to advise on problems of sound farm management and soil management which will be necessary if farming is to be raised from being a means of subsistence to an industry.