Current Science

Vol. XXII] JULY 1953 [No. 7

SOIL HUSBANDRY IN INDIA

SOIL husbandry in its widest sense includes not only measures to combat soil erosion which is assuming serious proportions in our country, but implies also a fundamental study of the various properties of the soil with a view ultimately to maintain its productivity at the highest possible level.

For soil husbandry to come into its own in our country, a two-pronged development would seem to be essential: the first is an assessment of the magnitude of the erosion problem based upon an All-India survey of soil and land utilisation; the second, an intensification of soil studies paying due attention to local conditions and potentialities and also to the urgency of the food situation in the country.

Data on soils and utilisation have been collected in the past by irrigation departments in the various States, by experimental stations in agriculture, by the Universities and other institutions. But such data have been confined to limited areas scattered in different parts of the country, and further, the techniques of classification used by the different agencies vary greatly. The need for an All-India Survey is therefore obvious, and such survey should be carried out by a Central Agency so that there is uniformity in regard to systems of classification, surveying and mapping techniques, and above all, scientific terminology, so that results from the different areas may admit of comparison and co-ordination. Programmes of soil survey and testing of soils, which are at present being carried on by the various agencies, should be co-ordinated with the work of such a survey.

Though adequate basic data are lacking, it is clear that the losses in acreage and production due to soil erosion are considerable. Throughout India, on all sloping grounds not covered by forests or shrubby vegetation, and on agricultural land not properly terraced and embanked, erosion of the soil is always going on. Soil erosion assumes several forms. Sheet erosion, which occurs on flat cultivated lands having no plant cover is responsible for greater loss than all the other forms of erosion put together. It has been calculated that in the black cotton soil of Sholapur, Bombay, 133 tons of soil per acre are lost per annum. The most striking example of soil erosion in India are to be found south of the Jamuna in Budelkhand, in Central India, in Bihar, and in parts of Bombay, Madras and the Punjab. River bank erosion and sand deposition are assuming menacing dimensions in Assam and

West Bengal, where the rainfall is heavy. Wind erosion has also been responsible for the loss of valuable top layers of the soil in many areas. Thus, in the Indus Valley, recent deforestation in the Thal has allowed the wind to blow the soil away.

The causes of erosion are generally destruction of forests, shifting cultivation, deterioration of village pastures, and faulty methods of cultivation. The cure naturally is the restoration of vegetation in such areas to protect the soil from the erosive action of wind and water. This is secured by the afforestation of the upper catchment areas of rivers; proper and sustained management and care of both the village and reserve forests; limitation of flocks and herds to the number which vegetation can support; improved agricultural practices, such as terracing, levelling and contour bunding and proper systems of drainage.

Legislation as provided for in the Five-Year Plan is no doubt necessary and must be given effect to, if the erosion problem is not to become even more serious than at present; but quite as much, if not more, can be achieved by educating the public in regard to the social aspects of soil husbandry. Erosion is after all the result of man's misuse of land. It is his needs of timber and fuel, fodder and food, which have led to the destruction of the soil. Infusing a spirit of enlightened self-interest among the cultivators would, therefore, seem to be an urgent necessity. The cultivator must not only be convinced of the need for dealing with soil erosion; the State must also secure through right propaganda, his willing co-operation in regard to various measures to be adopted for proper husbandry of the soil.

A perusal of the Final Report of the All-India Soil Survey Scheme recently issued indeed convinces that fundamental studies on soils have not been lacking in our country. The major lines along which such studies have proceeded so far are: soil studies in relation to content of plant nutrients, and assessment of soil fertility, improvement of soil fertility and productivity, soil studies in relation to irrigation, and soil classification, soil surveys and soil maps. But the authors of the Report have had to admit that the data so far obtained are rather scanty. Besides, even this very limited volume of work has been carried out mostly (with but a few rare exceptions relating to profile study) using old methods of approach. Most of the analytical data are confined usually to surface soils and in some cases only, to the sub-soils. Further, the sampling and analytical procedures are not always uniform. Excepting a few cases, the number of samples has been found to be too few for advisory work on matters of soil fertility.

The Report also recommends that in soil studies bearing on irrigation, more stress should be given to soil texture and soil profile, drainage, water requirements of crops moisture-holding and moisture-yielding capacity of soils. The information on the effect of micronutrient elements on crop yields and deficiency diseases of plants and animals can hardly be regarded as either adequate or satisfactory. It should form, as in other countries, a major line of investigation, because of the spectacular effect the micronutrients have shown on crop yield and curing of diseases of animals arising out of deficiencies in the fodder and food crops. Soil maps based on insufficient survey do not promise to be very helpful, although some useful attempts have been made in this direction by geologists and soil scientists.

Also, the effect of combination of fertilisers and their interaction requires to be studied more systematically. In view of the importance of the micronutrient elements, their effect should also be included in the manurial trials.

Considering that the basis of our national economy is agriculture, perhaps it is only fair to remark that the status of soil husbandry in our country is not what it should be at the present moment. But, there are indications—the formation of a Soil Conservation Society of India being one,—that a realistic approach is being made both by the scientists and the Government to face the issue and bring it to a successful conclusion.

SYMPOSIUM ON REINFORCED CONCRETE

A SYMPOSIUM on 'Reinforced Concrete in India To-day', is to be held at Roorke, under the auspices of the Central Building Research Institute, during November 11-13, 1953. The Organising Committee invites engineers, scientists, designers and contractors, to take part in the symposium. Those contributing papers are requested to send a summary of the same to the Director, Central Building Research Institute, before August 15th, 1953. The envelope should be marked clearly "SYMPOSIUM". A detailed list of subjects to be discussed at the symposium can be had on request.