

the chief Farm Manager or the District Agricultural Officer, whose headquarters may also be at the same place; and both to be under the control of the Regional Deputy Director.

In conclusion, it is well to bear in mind that propaganda when not well fed by results of research can be just a flop, if not a tragedy. Even so, the methods of extension work can cut no ice if they are not shaped to suit the calibre, prejudices and socio-economic habits of our people. For securing utmost efficiency with economy, the extension work shall have to be integrated with research, and it is suggested that Model State Farms in each district and taluk with propaganda personnel drawn from every village or groups of villages from amidst practical agriculturists and who should themselves be maintaining model forms, offers the only feasible plan of action. The demonstrator of to-day and the common ryot are two apparently incompatible entities, and so are the former and the scientifically / progressive specialised producer of crops like fruits, vegetables, spices, plantation crops, etc. It is time we evolve a plan in which the results of research are transplanted to different classes of ryots by persons of different calibre and training. State Model Taluk Farms dealing with all crops of importance to the taluk will provide just that reliable ocular demonstration which all can accept without question. Such farms with their skilled and practically experienced staff can find just that meeting ground with the progressive section of our ryots, which is sorely lacking to-day. To the rest of the ryots, the unofficial model farm maintained by the part-time village propagandist who are themselves practical farmers, will afford a perpetual object lesson, providing at the same time a most economic and efficient medium for the spread of all scientific agricultural improvements.

*Crop planning for the Thungabhadra Project ayacut**

By

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The Thungabhadra Project, as now finally proposed, is intended for the benefit of the stretch of country along the course of the river of the same name and lying in a 10 or 20 mile depth southwards in the districts of Bellary and Kurnool. Started at first almost wholly as a protective scheme for the famine stricken areas of the two districts, it is now being planned as a developmental programme aiming at increasing the general standards of living of the people of the area through improved agriculture and industrial ventures of assured profits.

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The parts of the province actually coming under the project, have in fact several of the requisites for operating successfully programmes of development. They are,

(i) the area will soon come to possess facilities for power and water for irrigation. There will be great scope for varied types of economic development with intensive and choice agriculture as the background.

(ii) It has, like other tracts where developmental programmes were worked with success, a geographical unity over a wide enough landscape and enjoys a considerable measure of unified and administrative control and has a homogenous population.

(iii) the tract is characterised by only two types of soils mainly the red and the black almost wholly uninterrupted by intrazonal spreads, which makes for easy and efficient planning of cultivation systems.

(iv) being subject for ages to an arid but not desert type of climate and derived mainly from lime-rich parent materials, there is, over its greater part, considerable depth of fertile soil material of high productive capacity. Adequately manured, it is possible to obtain ordinarily a five to six fold increase of cereal yields and three to four fold increase of economic crops like cotton and groundnut. It is further possible to raise a variety of crops of industrial and agricultural value. There is thus great scope for planning for profits, but the one main factor that stood, for long, in the way of development, was its uncertain and precarious rainfall; the advent of the project opens up the prospect of launching, with surity of success, developmental schemes to all of which the agriculture of the tract is basic. However, certain peculiar features, of the tract as a whole demand primary consideration and efficient and ordered handling; planned production and perhaps, production of even specified kinds, appears needed if the success envisaged should be realised.

Lack of adequate capital: Irrigation agriculture offers certain difficulties in its immediate practice on the undulating terrain of the area and the lands require a minimum of improvement in the shape of levelling and terracing before water can be used on them; and this has been estimated as likely to cost considerable sums. The average ryot may find it either too high for his means or may lack the strength of sufficient faith in the need for the improvement. Even more important than the above is the consideration of "men and means". The tract has an average population density of only 200 per million and a cattle wealth which admits of only one pair for every 30 acres of cultivable land. It has thus too few men and fewer cattle for the high level of cultivation required under irrigation agriculture. With the natural tendency of the ordinary ryots to grab at more land than he can effectively handle or

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manage, unprofitable systems of development may come to be practiced, for long enough period leading to deterioration of the land and decreasing levels of crop production. Crop planning and if necessary even its enforcement may therefore have to be given high priority in the scheme of things that will make for the assured development of the area.

Results of the Agricultural Research Station: Work has been going on under government auspices for over a decade and has now reached a stage when there are available a large number and variety of crops that can be raised at remunerative levels. We have in addition sufficient knowledge of the water and manure requirements and optimum periods of growth for fitting the crops on to the soils and seasons in any desired or planned manner. With the crops commonly cultivated in the tract, it may be computed that a net increased return ranging from Rs. 33 to 83 per acre can be expected under irrigation and ordered planning to fix these crops into suitable cropping schemes and to regulate their relative extents should prove of great value.

Information on such plans is, however scanty and the few lines that have been worked so far are of the nature of a simple introduction of the existing crops and schemes of cropping into the newer conditions. In the dry cultivated tracts of the area, crop planning is based on the same crops as above; jonna and groundnut being raised on red and shallow black soils, in the Mungari season; cotton being raised in the heavy black soils, in the Hingari season. Experience on the farm has led however to the conclusion that while adequate profits can be realised by irrigating these crops, the detailed plans of cropping the lands in Mungari and Hingari seasons require considerable modification before the water of the project can be made use of for irrigation. The conclusions arrived at were, (i) the adaptation of the existing dry land scheme to irrigated areas requires the segregation of the lands into Mungari and Hingari blocks and this would greatly disturb the agricultural economy of the ryot giving more food to the mungari ryot and more money to the Hingari ryot and (ii) the alternative plan of rotating the lands between the two schemes of Mungari and Hingari cultivation presents difficult problems of cultivation.

Indications of work during these earlier years on the farm work, on allied aspects of crops and seasons and cultivation open up the possibility of circumventing the above difficulties and of devising of different plan of cropping with the same background of finding for each ryot, some food to eat, sufficient fodder to feed his cattle on and as much money in addition as he can get for purchasing his other requirements. Under irrigation it has been found possible, in fact desirable, to grow the Hingari crops early in or even before the Hingari season, thus obliterating to a large extent the differential effects of the two seasons. This

enables a uniform cropping plan for both the seasons with all the advantages of irrigation agriculture. As instances of cropping plans of such general applicability may be cited the following which are now under study at the agricultural research station,

	Sown in	Harvested in	
Groundnut and Red gram	June — July	Sept. — Oct.	1st year.
Jonna	June	Sept. — Oct.	2nd year.
Green manure followed by wheat	June — Oct. — Nov.	August — February	3rd year.
Cotton	August	March	4th year.

Whatever may be the final outcome of these trials, the two schemes have much in common in both their immediate aims and methods used. Their aim has an essentially rural background more food, surer food and as much extra money as can be had. This is much unlike developmental schemes of compact areas in other parts of the world and if maximum benefit is to be derived from the use of the facilities of power and water, the aim of our planning may well be "adequate food if possible but at any rate adequate means to secure same".

It is worth while examining the formulating of the conditions that planned production should aim at satisfying. The objective of all schemes of agricultural development should either be a state of self-sufficiency in respect of food requirements which may be considered full in itself; or one of specialised development with an industrial outlook. The former is beyond doubt of paramount importance in the development of an administrative unit as a whole such as that of a province or a country but in trying as in the present case of developing a compact region of a major province, considerations of over all gain to the tract in question may take precedence over mere insistence on a self-sufficiency plan in respect of food. The objective set by the author of the special investigations of the condition of the project, Sri T. N. S. Raghavan, and on whose findings the work of the project is being defined and ordered, is rightly the latter one of an integrated development of the tract as a whole.

Against the above background, I have examined below the implication of a self-sufficiency programme to the future prosperity of the tract. It is well to emphasise even at the outset that, so long as the cropping plan for the tract aims at increased production of the same crops as the dry tract, programmes of self-sufficiency should be formulated for the entire area of which the developmental region forms a part. This is particularly the case in the present instance as most of the organised markets lie outside of the project area.

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