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Short Communication

Climatic orientation in the planning and running of agro based industries

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The regional differences in unit area yields of irrigated crops, like Wheat and Sugarcane, in India can be reconciled when the same is expressed as a product of its field-life duration and Yield per day, YPD (Swaminathan, 1968). Field- life duration of all cultivars is affected by the temperature factor (Ritchie and Ne Smith, 1991)- day, night or mean temperatures depending on the crop-family (Went, 1957). Significant differences in unit area yields of cultivars of Rice, Groundnut and Maize raised in Kharif, Mild-Winter and Summer seasons are noticed with maximal yield per day in the Rabi Season. The higher YPD in Rabi season of above crops is due to lesser respiratory depletion of photosynthates on account of relatively cooler night temperatures.

The above-mentioned features relate to single crop entities. The weather requirements for optimal growth, development and yield of a crop are different and under each of the above three heads the weather requirements vary significantly amongst crops and less significantly with varieties of the same crop and with growth stages of the same variety. Adverse weather can (i) physically damage crops and (ii) directly *or* indirectly influence outbreaks of pests and diseases. The weather parameters show diurnal, temporal, spatial and in-situ year-to year-variations with differing degrees of intensity of variations amongst the parameters. Thus, for a given crop cultivar maximum unit area yield is realizable in specific areas and periods (i) where the temporal march of the weather factors meet the phasic weather requirements of the crop for optimal growth, development and yield and (ii) which are (a) not endemic to its pests and diseases and (b) free from hazardous weather. Thus areas and/or periods less suited to a particular crop may be more productive when replaced by other crops or varieties based on cultivar-wise climatic zonations (Sastry, 1976).

In view of the above, the obvious strategy should be to go in for specialized, regionalized and economical production of specific crop species or even varieties. The practice of growing agro-industrial crops ubiquitously irrespective of the climatic suitability of the areas for the crops can bring in undesirable problems, as at present faced by the sugar industry (Venkataraman, 2005), on account of the following.

Depending on their installed

capacity, the factories processing industrial crop produces need to operate for an optimum number of days with assured amounts of daily feed of the raw material to be profitable. In all the regions the plantings/sowings of a crop have to be staggered to ensure steady daily feed of raw material to the mills/factories. The staggered plantings/sowings invariably mean differences in unit area yields of the crop and profits amongst farmers. For an agro-industrial crop its unit area yield will be low and the cost of cultivation per unit of produce high in regions climatically ill suited to it. However, the pricing has to be such so as to ensure profitability to the farmers with the lowest unit area yields. Such a one and same pricing will widen the disparities in income amongst of farmers in various regions and even in the same region amongst farmers supplying, as per a time-schedule, their produce to the factories. One way to minimize the disparities in income of farmers supplying their produce to the factory, as per given time schedules is to rotate amongst farmers the times of supply to the factories. The other is to offer suitable weightage in pricing for staggered supplies. However, such a system is nowhere in vogue and seems non-implementable.

In view of the above and with respect to all agro-industrial crops the time seems now ripe for the Ministry of Agriculture, Govt. of India, National Chamber of Commerce and Confederation of Indian Industries to get together to set up crop-wise working groups to:

(i) Assess current and projected national requirements of crop produce

(ii) Collate data/information relating to weather requirements for optimal growth and development and maximal crop yield

(iii) Based on (ii) above demarcate homogenous crop-climate zones with indications in each zone of optimal and possible growing periods and likely crop yields for each growing period

(iv) Based on (iii) above examine feasibility of achieving the envisaged requirements as at (i) above by specialized crop production involving irrigation and minimal use of land in climatically favourable areas

(v) Suggest alternate cropping strategy for areas at present raising the crop as rainfed

(vi) Formulate (a) industrial strategy including location and capacities of factories, their period of operation and extent of their captive areas for obtaining the daily feed material and (b) agronomic practices such as staggered periods of sowing and harvest of the crop in captive areas of the factories

(vii) Outline a market-driven pricing mechanism, which will be fair to the farmers, industrialists and the

consumers.

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