

TAMIL NADU PRECISION FARMING PROJECT (TNPFP) AN ASSESSMENT

1.BACKGROUND:

The performance of the agricultural sector at the National as well as at the state level had been and continues to be worrisome. A slippage in the annual growth rate over a long term and a decelerating trend witnessed in the more recent years in glaring contrast to the sterling performance of the other sectors in the economy is a disturbing phenomenon. This paradoxical trend has started attracting the attention of all those who are genuinely concerned with the welfare of the rural people. The organic growth relationship between agriculture on the one hand and the overall economy on the other is well established. Continued neglect of this prime sector will only be the peril of the over all growth. Therefore, the need for reviving/rejuvenating agriculture and placing it on a high growth trajectory during the Eleventh Plan is keenly felt-rather it is preemptory. Besides, there are other important factors, not to be lost sight of, like food security, import dependence, deteriorating livelihood pattern of the people in villages and the continuous decline in the aggregate demand which all the along has been the GDP growth driver. The nature and intensity of the problem of the lagging agriculture sector are well articulated. However, a clearly defined agriculture development strategy as such for the XI plan is yet to emerge. This is understandable because of the complex nature of the problem caused by innumerable and wide ranging set of factors – diverse agro climatic conditions, soil differences, crop diversity, differing irrigation potential, levels of technology advocated and adopted; differing marketing facilities and infrastructure; farmers response levels; extent of mechanisation; differ in operational size holdings and the price factors not to be felt out. Many more could be added to the galaxy.

However, the core advice coming from knowledgeable quarters is that the time has come for switching from the past conventional production approach to a new dynamics of technology and market driven agricultural production. The underlying assumption, perhaps, is that the production and productivity should be adequately taken care of by the new technology to be released for adoption while, the incentive of increment in incomes (making through cultivation thus a profitable proportion) is to be ensured through reorganization of the whole rang of marketing facilities and better realization of prices for the farmers.

This view, if accepted, should provide the basis (or) perhaps the solid criteria for selection and inclusion of individual development projects in the XI plan irrespective of whether they are in the ambit of agriculture, horticulture, floriculture, livestock and diary, Fishery, Irrigation and water management. The state intervention policy for the XI plan has to be evolved against this backdrop.

The soundness or otherwise of TNPFP should also be tested on this basis.

Keeping these broad guidelines in mind, a team comprising Prof. G. Chidambaram, Member, SPC, Dr. (Mrs.) P.G. Lavanya, HOD (APP), Thiru R.K. Haroon, Planning Officer (APP) and Thiru S.Subbu, T.A.(APP) undertook a quick study on the operational efficiency of the Tamil Nadu Precision Farming Project and its replicability to wider areas in the state.

II. FOCUS:

TNPFP propagate a novel method of farming that takes adequate care of technology upgradation and marketing support. TNPFP tailors inputs – water, fertilizer and pesticides – in a measured form to match verifying growth stage of each crop on the field. TNPFP adopts a location specific, field specific and crop specific approach. The objective is optimisation of inputs use to facilitate optimal output resulting in saving of valuable resources like water and energy. It is expected to result in cost cutting and qualitative enhancement in the final produce. Minimal application of fertilizers and pesticides is expected to result in avoidance of soil degradation. Direct marketing and price negotiations are enabled through group formation among farmers and branding of the produce.

III. SALIENT FEATURES OF TNPFP:

Following are the salient features of TNPFP:

- i. **SELECTION FARMERS:** Adequate care is taken in the selection of the participant farmers. Norms used are (a) willingness to participate; (b) availability of water and energisation conforming to a minimum standard (c) prior experience with chosen horticultural crop and (d) acceptance to conform to the norms to be stipulated by the project authority:
- ii. **PROJECT PERIODS AND PHASING:** The project life is 3 years with a lapering financial support to be terminated at the end of the 3rd year.
- iii. **AREA SELECTION:** Specific areas with potential for horticulture crops and which lend themselves for cluster formation are selected. The districts of Dharmapuri and Krishnagri have been selected in the first phase.
- iv. **COVERAGE:** Totally 400 hectares with as many number of farmers distributed in seven clusters spread over Krishnagiri and Dharmapuri districts were selected.
- v. **PROJECT INTERVENTION:**

- a. Assessment of soil characteristics is done through remote sensing. Soil analysis with reference to NPK is attempted for each field.
- b. Chisel ploughing and land leveling to facilitate proper retention of moisture and air.
- c. Supply of certified seeds and seedling raised in controlled conditions is made to ensure high percentages of survival and uniform plant growth.
- d. Fertigation is a very special component of TNPFPP which guarantees optimal irrigation through Drip system and fertigation using soluble right mix of nutrients.
- e. Extension work is to be carried out by two junior scientists for each cluster and two senior scientists operating at the district level with high-tech know-how to be provided at the apex level.
- f. Monitoring is closely done through maintenance of prescribed records detailing cultivation operations, inputs used and output realized (in volume and value terms)
- g. Marketing support is given by encouraging the farmers to farm associations among themselves and initiating associations in proper marketing their produce.
- h. Training is imparted to all the farmers individually and collectively on all the cultural operation contemplated in the project and marketing methods.
- i. Financial support comprise a package for three years in a tapering manner of 100 per cent subsidy as capital and recurring costs in the first year, 90 per cent on the second year and 80 per cent on the third year. Capital costs are to be incurred for raising the first crop only. The financial and physical targets of TNPFPP are given below

Sl.No	PARTICULARS	1 ST YEAR	2 ND YEAR	3 RD YEAR	TOTAL
1.	Area (in ha)	100	200	100	400
2.	Financial outlay (Rs. In Cores)				
	Cultivation	0.40	0.80	0.40	1.60
	Drip and fertigation	0.75	1.50	0.75	3.00
	Others including consultancy Establishment	0.94	0.86	0.80	2.60
	Total	2.09	3.16	1.96	7.20
3.	Subsidy component to the farmers (restricted to 1.15 lakhs)	100%	90%	80%	

- vi. **METHOD OF ASSESSMENT:** The assessment was carried out in two days i.e 6th and 7th June, but the actual time devoted for TNPFPP was only one day. Methods

used were (i) visit to the farmers' fields to assess the health of the standing crop (ii) Group discussions with the participant farmers. Non-participating farmers-fewer in number- were also interviewed. Discussions were held with the project officials. Dr.E.Vadivel, Director of Extension Education, TNAU also in charge of TNPFPP made himself available for rendering all help needed for the conduct of the study (iii) Records maintained by the farmers were also scrutinized (vi) Increase in productivity was ascertained orally from the farmers and also from the register maintained. In all about 100 farmers including non-participating farmers were met some individually in their respective fields and other collectively in groups. The clusters visited were: Somanahalli, Morappur, Pappiredipatti, Molayannur and Dhasarahalli in Dharmapuri District. Two seed farms were inspected. It was possible to make a comparative study of some standing crops both under the project and under non-project conditions.

vii. FINDINGS:

(A) GENERAL: The overall assessment of TNPFPP is excellent on the basis of: Productivity increase; quality improvement in the produce; income increase; marketing efficiency; negotiating and bargaining power; cost of cultivation; retention of soil fertility; water saving; energy conservation; farmers confidence level, farmers' proficiency in cultivational practices and related activities; seeds and seedlings usage; duration of crops and familiarity with the project officials. It should be said to the credit of the project consultant viz. Tamil Nadu Agricultural University that TNPFPP has been very imaginatively designed. A well conceived project should also do well on ground. The project life and phasing are clearly spelt out. Projects cost and benefits are well defined, in measurable terms. Organisation is well structured, Delivery system is clearly defined and linkages-backward and forward- are very well established. The project is doing extremely well and is proceeding on chartered lines. No mid – term course correction was necessitated. Incidence of failures and drop outs is negligible. The success story of TNPFPP as in implementation in Dharmapuri and Krishnagiri Districts can be safely commended to be used as a case study in training programme intended for young agricultural officers.

(B) SPECIFICS:

i) A wide range of vegetables, flowers and sugarcane have been tried in the project area. Aggregate production is stated to have increased considerably through of varying degrees depending upon the crop.

ii) Productivity increase is voiced by all the farmers. Doubling the yield has been reported by many. No case of crop failure or deterioration in yield was reported by any farmer.

iii) Irrigation through drip system is conferring two advantages (a). optimal application of water resulting in production increases and (b). saving of water in water stressed areas helping the farmer to setup area under irrigated crop.

iv) Drip irrigation reduces considerably the time taken for wetting a crop strain on the motor and the pump is less. Energy saving is significant which confers a distinct social benefit.

v) Quality improvement is clearly visible. The sign, colour, weight and succulence of the tomatoes harvested (other crops could not be covered) are attractive. The keeping quality of pesticides is also stated to be very good.

vi) Difference in the quality of vegetables before and after the project is distinct benefit. When graded the reject rate has considerably come down and grade 1 is found to be vastly improved.

vii) Closely related to quality improvement are the benefits realized by the farmers in the ease with the produce could be marketed and better placed that could be realized.

viii) The produce from the TNPFP clusters receives a preferential treatment and commands better price in the wholesale market of Bangalore, Chennai, Coimbatore, Pollachi and even Cochin. The farmers resort to direct marketing which avoids leakages caused by intermediaries.

ix) The bargaining power of the farmers when they effect bulk sale of superior quality is very much enhanced. Distress sale at the farm gate is avoided.

x) The participating farmers are found to be a highly motivated lot. They have imaginatively designed a logo for their produce a triangle in green bhendis and red tomato in the centre. They have improvised on the method of packing dispensing with packing in gunny bags and packing the produce in plastic crates with windows on sides to make the quality transparent.

xi) Cost saving is yet another direct benefit realized by the farmers. Fertigation method in the process of optimizing water and fertilizer use considerably reduce the quantum of fertilizer used and thereby the cost. Pesticides application is also stated to be reduced. Weed growth is avoided through drip irrigation. All these while reducing considerably the cost of cultivation also reduction of labour input.

xii) Crop intensity is marginally increased by means of crop duration being reduced. This is clearly visible in the case of tapioca in which the tubers mature in

a shorter period of time thus, enabling the cultivator to go in for another short term crop like, coriander before the next planting session is arriving.

xiii) The gains realized in raising tapioca (a very common crop) are spectacular uprooting a plant from the project field and another from the non-project field – both more or less of the same duration – a farmer demonstrated the significant difference in the tubers underneath. The starch content in the participating farmers' fields are recorded by the sago factories is started to be considerably high and therefore fetches a better price.

xiv) The farmers' association formed in each cluster has empowered the members to gain better access to the market, collective bargaining has enabled the association to attract the attention of many corporates to come forward to sign trading contracts. This should be viewed as a break through in agricultural marketing system which was loaded heavily in favour of traders and commission agents.

xv) The price spread, which in the case of vegetables between the farm gate and final retail end was very wide, has been considerably narrowed down now in favour of the farmer producers.

xvi) It is heartening to note that the farmer producers have graduated themselves to the status of floating a public limited company. Members of the Farmers' Association (130 in number) have contributed a share of Rs.10, 000/- each float the company with subscribe capital of Rs.13 lakhs. Known as "Precision Farmers Agro-Service Ltd" and it presently undertakes distribution and sale of fertilizer and pesticides. Many manufacturers have come forward to offered distributorship to the company. The Dharmapuri Collector has offered a building at a reasonable rent. The company incorporated in February in 2007 is doing well with out resorting to debt financing. It is gratifying to note that the company has reached break even in a short period of 4 months since its inception.

VIII. CRITICAL INDICATORS

The success story of TNPFPP can also be judged on the basis of certain critical indicators.

- i). Drop out is negligible. Four farmers are stated to have dropped out accounting for less than 1% in the early stages project life.
- ii). Failure rate is practically nil. No farmer reported that productivity in his farm has lowered after participating in the project.

iii). There are farmers who are willing to be in the project without financial support but with technology support.

iv). Those who are in the terminal year of the project life are positive in continuing with the new found practices in cultivation as well as marketing.

v). Normally the incidence of casuality will be high when the project life is completed. There is no sign of this ailment affecting the participating farmers.

IX. Replicability of TNPFP:

The merit of any project lies in its replicability. TNPFP is presently implemented as demonstration project in pockets with good potential for horticulture crops in Dharmapuri and Krishnagiri Districts. That is very good scope for extending TNPFP to wider areas in Tamil Nadu. But care must be taken to ensure that certain conditions obtained in such areas.

i) Initial piloting has been found to be very successful. TNPFP is a unique project and therefore care must be thinly distributed over a wide area.

ii) Area selected must have good potential horticulture crops and sugarcane.

iii) It is water saving project and therefore response to the project will be good in areas where farmers appreciate the value of water.

iv) Farmers to be initiated should have prior experience in raising horticulture crops. TNPFP provides graduation process successfully.

v) Selected areas must lend themselves to cluster formation. A cluster offers good scope for organizing well knit association and association offer a new found bargaining and negotiating power to their members.

vi) TNPFP once stabilized offers great scope for catering to State and National markets, perhaps with certification facilities can even aim at global market.

vii) Extension work and delivery system occupy a crucial role in TNPFP. Therefore the ratio between project personnel and farmers has to be necessarily high. Close and frequent interaction between the farmers and project staff is an essential requisite to make the project successful.

viii) Coordination and guidance from the above should be on a continuous basis. The role can be played effectively by the Agricultural University, KVKs, Govt. Departments or even NGOs with proven competence.

ix) The inbuilt monitoring system to track individual farmers' performance should not be watered down.

x) Utmost care has to be taken in selection of areas and farmers and imparting training on a continuous basis on the improved technology and improved marketing which is a must.

xi) Views are expressed by a few that TNPFP is loaded with high subsidy element. There does not seem to be any strength in this argument. When farmers have to be weaned from long standing customary practices, subsidy finds justification. Social gains accruing from the project justify the subsidy.

It can be concluded that TNPFP offers very good scope for expansion of minimum rate of 400 hectares per District in the entire state will bring about perceptible change in horticulture farmers in a short span of two years. TNPFP and similar projects must find a right place in the XI plan.