Doubling of Farmers’ Income – Horticulture Sector

Need for integration of the Multipronged Approaches

“Doubling the Farmers’ Income” is the buzz word across the country -- ever since the Prime Minister coined this slogan. Since then, any one or every one connected with Agriculture at different forums have been coming out with their own contributions to make it happen. The Governments both at Center and the States are announcing various schemes to facilitate this.

But, the question is –“Is it possible to double the farmers’ income? If yes, are we doing every thing that is required to achieve it?. With over a decade of experience in agriculture, my humble answer is – “While it may be difficult to double the income of the farmers, it is certainly possible to double the profitability of the farming”. However, if that has to materialize, all of us should do more than what is being done.

Given the fact that Agriculture is a vast subject, I would like to confine myself to Horticulture – fruits, vegetables and spices. Before, we move further to discuss the actions to be taken to achieve this objective, it is imperative that we analyze the current situation to understand the ground realities, evaluate the outcomes of the past actions, the weaknesses of existing schemes, so that a more practical solutions can be looked into by all concerned.

For this, let’s first identify the various components of the horticulture sector from the farmers’ point of view, understand the issues, actions taken to overcome the problems and the outcome so far. The end product, viz. the fruit or vegetable or spice reach our hands after passing through different phases and for the sake of comprehensiveness, let us group them as

1. Production Phase
2. Post Harvest Phase
3. Marketing Phase

The value chain encompasses all these phases in which the farmer and other stake holders undertake various activities to reach the produce to the end consumer.

**Production Phase**

This phase is under the purview of the respective Horticulture Departments of the State Governments, who provide the subsidies for seeds, soil health cards, weather information, agro advisories and insurance. They also control the supply of fertilizers and seeds to the farmers. Agri Production Credit is given by the banks only to an extent of 20 to 25%, thus, leaving the majority of the farmers under the clutches of the money lenders, who exploit this vulnerability of the farmers to the hilt.

In spite of many initiatives by the stakeholders, the following problems continue unabated.

1. Farmers decide the crop to be cultivated for the ensuing season, without consideration of the soil health, weather forecast, water availability and without sufficient knowledge on the package of practices to manage the pest attacks, nutrient deficiencies and virus attacks. The extension offices are unable to meet the needs of the farmers, as they themselves are inadequately armed with information.
2. More importantly the demand for the produce. Farmers blindly decide on the crop to the grown without considering the supply and demand scenario for the crop in the coming season. While Classic examples are Tomato, Potato and Onion, the latest to join this distress sales bandwagon are Red Chilies, Cotton and Turmeric. There is a greater need to advice the farmers on market situation much before the beginning of the season and alternate crops, which are suitable for the agro climatic conditions of the crop area and have market demand. Governments need to be more pro-active and research oriented, and back up with appropriate action plans. The steps announced by the Govt. of Telengana with “Crop Colonies” is a right step in this direction. But we need to wait and see the outcome of this experiment.
3. Quality of the produce is the major issue when the global markets are opening up for India. Quality produce still ensure good returns to farmers,. Even this year, in Chilies, where distress sales in AP and Telengana are witnessed, quality Chilies fetched higher and remunerative prices of farmers.

*This is what Shri Janardhan, Best Farmer award winner says:*

 *“I always cultivated quality produce and got good returns. Quality Sells Fast and Quality sells. We should raise crops as per our environment, ensure quality products and not just focus on money by spraying all kinds of pesticides and synthetic steroids to boost production.”*

 Higher levels of Pesticide Residues in horticulture and spice crops are the major issues that need urgent action from all fronts. This not only a deterrent to increase exports, it is also a major health hazard to Indian consumers. Organic Farming is a solution only to a limited extent. What needs to be done is to educate and promote Integrated Pest Management (IPM) and Non Pesticide Management (NPM) which are proven effective in reducing the cost of cultivation, increasing the quality (value) without major reduction in the yields. The farmers get better prices for IPM/NPM produces. Just giving meager subsides to limited number of farmers or conducting awareness programmes are not enough. Horticulture Departments and Spices Board need to work together (to begin with – there is lot of duplication of efforts in the field) and have a definitive and concentrated action plan to promote IPM/NPM package of practices. The myth to be demolished among farmers is that IPM / NPM package of practices does not reduce the yield and motivate them with better price as carrot. The Markets as well as Commexes should start indicating separate prices of IPM/NPM produce. Also super markets should have a separate counters for IPM / NPM fruits and vegetables and promote them.

1. While promoting IPM/NPM package of practices is a major step to be taken, the gaps in the chemical input supply stream to be re-looked by the governments – it is surprising that many of the banned chemicals are still openly sold in the market.
2. Another major hurdle for the farmers at Production Phase is credit facilities from organized sector. In spite of best efforts by Governments, the share of credit for agriculture production to farmers is around 20% to 25% only. This is largely due to the fact that 80% of the Indian Farmers are tenant farmers and they cannot provide the necessary documents of lease to avail the finances. The land owners are apprehensive of executing any agreement with the tenant farmers fearing land ownership issues in future. Government should initiate new processes to over come this problem. Otherwise the small farmers will continue to be exploited by the local money lenders. A right approach with simplified processes to enable tenant farmers to avail organized sector agri credit is the need of the hour. The farmers who had committed suicide are generally in this category.
3. The proliferation of Bio-fertilizers and bio-pesticides is another issue to be tackled immediately. It’s high time that the Governments come out with licensing and marketing legislations for this segment, otherwise, many of these fly by night operators would destroy the benefits of bio inputs. Urgent steps need to be taken to check the quality of bio inputs imported, especially from China.
4. The risks for the farmers at this phase are weather, seed failure and pest attacks. An innovative Insurance Scheme to mitigate these risks individually and comprehensively need to be designed. Some pilot models have proved successful, specially in horticulture. GOI as part of Pradhan Mantri Fasal Bima Yojana (PMFBYS) (Prime Minister’s agri Insurance scheme) make it more broad based on above lines. Marketing of the insurance scheme among non loanee farmers is an immediate requirement as many of them are neither aware of the scheme or unable to avail the same due to lack of avenues to buy the policies at village level.

Another major issue with the PMFBYS is settlement of claims. Though village has been declared as a Unit for weather monitoring and settlement, there are instances of Mandal / Taluka being taken as unit, for reasons better known to the insurers. It is not out of place to mention the efforts of Govt. of Telengana to have their own insurance scheme to be launched soon.

Given the fact that Information Technology has reached the village levels, considering the farm as a Unit is no more difficult and insurance schemes should be tailor made for each farms. The settlement process should also be free from delay and ambiguity.

*(Janani is in discussions with ICICI Lombard and Weather Risk Management Services Ltd for a pilot project in this direction for Chlies farmers of AP and Telengana)*

1. Unfortunately the Rural Employment Scheme (MGNREGS) proved to be a major source of cost escalation for the agriculture. This has resulted in shortage of farm labourers during the season and higher labour costs. The small holding nature of the farms does not provide for any major mechanization activities. The solution therefore, is to link the MGNREGS with agriculture to get the benefits of employment and agriculture productivity.
2. One of the major successes in the production phase of Horticulture sector is the Micro irrigation schemes. They have, no doubt, improved the productivity and reduced water consumption. However, more focus is given to increase the number of farmers to go in for micro irrigation in their farms, but, no concrete action or process is in place to replace the existing defunct micro irrigation infrastructure in the farms which were installed years ago. Farmers are facing problems in maintenance and replacement. Incentives to be given for replacement of equipments for the older ones, after a specific period of time.

**Post Harvest Phase**

This is the phase which involves proper harvesting, washing, sorting, drying, packing and storage. Often this is the phase where more talking is done and least action is taken from farmer onwards to every one else involved. All of us know that the post harvest losses in fruits and vegetables is staggering One Lakh Crores of rupees every year, but, still this phase is not given the required support by all stake holders. Least resource is allocated by the Departments and many times, the budget is unspent. The research is more focused on production phase requirements than in post harvest management technology.

1. Farmers are not well trained on the right time and right way of harvesting. While the production phase is largely self managed by the farmer himself, the harvesting requires the services of labourers, who are not been trained at all. The result, being either unriped or over-riped produce is picked by the labourers.
2. While usage of fertilizers, pesticides, weather and right package of practices determine the quality at Production Phase -- shape, colour and moisture contents determine the quality at post harvest phase. Therefore even a quality crop produced, can become bad if it is not harvested and processed at farm level. Most of the damage is done when it is transported from the farm to the nearest purchase center due to bad handling. Though plastic crates are given to farmers at subsidized rates by the Departments, (which any case does not reach all farmers), even those who bought the crates generally use gunny bags.
3. Another major impediment to sustain quality is absence of washing, crating and pre-cooling facilities near the farms. Small farmers cannot afford to create this infrastructure on their own. Farmer Groups or Farmer Producer Organizations should be formed in each village (which is dominated by horticulture and spice produce) so that this basic infrastructure is created and operated commercially. In my opinion minimum 25% loss can be prevented at this stage, which is a straight profit for the farmers.
4. Above Micro post harvest management infrastructure near farms need to be extended at next macro Levels (Mandal/Taluka) by establishing higher capacities of pack houses, pre-cooling, cold storages.
5. At District Level where the produce generally get sold to the major buyers, the need is to have modern preservation infrastructure. General Cold Storages that are prevalent now need to be made multi purpose – example Controlled Atmospheric (CA) Storage - to take care of storage requirements of different fruits, vegetables and spices. Much has been talked about expanding the cold chains across the country. But the phase at which this sector is growing is no where near what is needed to preserve the produce of the farmers. Case in point, is the in-adequate cold storage facilities for dry red chilies in AP and Telengana, the States which do have more cold storage facilities than others. A review need to be done again with focus on crops, geographies and production levels. Less talking about cold logistics chain is better, as it is pittance to the requirement.

Following table gives the supply demand gap in the post harvest management infrastructure:

|  |  |  |  |
| --- | --- | --- | --- |
| S.No. | Components | Existing (No./Capacity) | Approximate Requirement (No./Capacity) |
| 1 | Pack House | 250 | 70000 |
| 3 | Reefer vehicle | <10000 | 62000 |
| 4 | Cold Storage | 32 million MT | 35 million MT |
| 5 | Ripening Chamber | 800 | 9000 |

1. While creating this infrastructure is a challenge in itself, sustaining them commercially is a major concern. Encouraging private sector with better incentives and more importantly easy processing of their needs (ease of doing business) would go a long way to facilitate this major change. Given the scale and speed required to make this happen, encouraging more FPO/FPCs in horticulture/spice sector is prime importance.
2. Speaking of the Farmer Producer Organizations (FPOs) and Farmer Producer Companies (FPCs) – a review shows that most of them are dormant and remain on paper, while many of them folded long ago. The reason for this is lack of business models and management support. The NGOs who promoted these FPOs leave them after 2 to 3 years to fend by themselves. Given the divisions within farmer groups and lack of vision and management abilities, they are unable to sustain the business model originally proposed at the time of formation. Best way is to allow private sector stake holders to promote and sustain the FPOs/FPCs with technical and marketing support. Allowing the private sector to take a small stake in these FPOs/FPCs (which is not allowed at present) would help a long way to forge a longstanding association between them.
3. Encouraging customized vehicles for inter transport requirements from farm to Mandal/Taluka to District with cold facilities is a must. Today this logistics infrastructure at rural level is next to nil.

**Marketing Phase**

**If farmers’ income had to be doubled, the marketing is the weak link in the chain which need to be strengthened.**

1. It is well known fact that generally the farmers get less than 30% of what consumers pay. The produce change 7 to 12 hands before it reaches the consumer. This long and inefficient supply chain is the major reason for this chaotic situation. The long chain is again necessitated for want of well organized supply chain with modern infrastructure which can sustain the quality (read persihability) of the horticulture produce. Efforts to be made to cut this chain as short as possible.
2. While the producer or manufacturer of any other product determines his price, based on the cost of production, it is a pity that the farmer who produce the agri commodity has no role to play in fixing his price. Either the Government (MSP) or the buyers (read commission agents at Mandies) determine what the farmer would get. Again, if the weather god blesses with good rains, the production goes up, demand is stagnant, lack of storage facilities and the farmer resorts to distress sales. When the season faces drought and higher incidence of pest attacks, the cost of production goes up to get adequate irrigation of crops and usage of more dosages of pesticides, etc. Though the prices do go up in this scenario, low yields still leave the farmer with lesser profits in spite of higher prices. Governments have to intervene specially in the beginning of the glut season, advice the farmers to restrict the crop area and provide alternate crop rotation avenues. In my opinion, farmers are afraid of raising a new crop due to lack of knowledge and market access. If this is assured to farmers by foresight and proper planning, distress selling will be things of the past. The scientific community and market forces should come together to set this process rolling. Modeling and piloting alternate crops, during glut season, should begin at the earliest and commercial viability of crop rotation, for each of the crops, where distress sales is found frequently to be proved.
3. In the early days of independence, APMC Act was promulgated and Agri Committee Market Yards were created, to provide with an opportunity for the farmers to sell their produce near their villages. In my opinion, this process has lost its pre-eminence in today’s situation. As a matter of fact, the market yards are the stumbling blocks for failure of many initiatives of the Governments. While many State Governments have amended the APMC Act, some of them still to do it. High time they also fall in line. What is lacking in the Mandies is transparency and what is ruling the root is cartels formed by the vested interests. It is early days to pass comments on the functioning or success of eNAM (National Agriculture Market) initiative. But the during the limited period of operation itself, eNAM proves that the process is not implemented wholeheartedly and the benefits are not reaching the farmers. If eNAM has to succeed, it should have the element of “Logistics” built into it, otherwise, buyers from different/distant part of the country could never get the benefit. Also the price is determined based on the quality of the produce. In the absence of standardized information of the quality of the produce on sale by the farmers, the buyers, other than those physically present at the auction yard, cannot decide his bid. Adding the element of quality in price discovery is a must.
4. Invariably the trade decides the price of the produce at the purchase centers based on the certain physical parameters. Unfortunately, this process is not standardized leaving the judgment to the traders to decide the price. For example, Dry Red Chilies is traded as “ Gold, Deluxe, Best, Medium and Poor” quality. This is more qualitative from the point of view of the traders and no quantitative standards exist. The Agmark standards prescribed does not have these sub-quality parameters. Streamlining this process also can fetch at least 15% to 20% more price to farmers.
5. Organized marketing avenues like Future Markets and Spot Markets exist through NCDEX, MCX etc. for quite some time now, but, they have not reached the farmers. It is predominantly used by the traders and speculators. These organizations should be made to reach the farmers by proper marketing and revising the rules, as well as processes, which are not conducive for participation of the small farmers at this juncture. Advent of Options Market, should help the price discovery models. But unless all these are available to the farmers either individually or collectively, the purpose will not be served.
6. The fragmentation of the Indian farming community (80% of the small farmers own less than 1 Ha of land) is the major cause for many of the current problems. While the buyers (Viz. Traders, Exporters and Processors) need volumes, the individual farmer’s output is very small. This alone has resulted in higher cost of marketing and loss in the supply chain. The Market yards become necessary evils in this situation. The solution, therefore, is aggregation of small farmers’ produce at the farm level and supplying directly to the buyers. The aggregator role can very well be played by FPOs/FPCs and private sector entities.

**Concept of Agri Aggregators**

Unlike other industries where the manufacturing of the final product is at a single place, in Agriculture, the production is spread across the country. Given the agro climatic conditions, we can safely assume one District (if it is too big, a cluster of Mandals/Talukas) can be considered as one Aggregation Unit for a specific produce. Within this geographical area, the final aggregation itself will have to be series of aggregation from farm to village to cluster of villages to Mandal/Talukas to District.

The aggregation chain

1. Starts from the farms of the farmer (note a single farmer may have different farms at different locations within the village)
2. The farmers growing the same crop in the village come together to form Farmer Interest Groups (FIGs) and aggregate their produce
3. These FIGs form a Farmer Society or any other co-operative organization which would cover a cluster of 3 to 5 villages. This is the first aggregation point, where infrastructure for washing, crating, pre-cooling and sale of inputs should be created through the Society/co-operative. This also can form the first step for primary processing and sorting based on varieties and qualities in add value.
4. These Societies come together and form Farmer Producer organizations/Farmer Producer companies at Mandal/Taluka Levels. The FPOs will have pack houses, high levels of pre-cooling, cold storage facilities.
5. The FPOs/FPCs should federate themselves as Farmer Producer Federations as District Level with infrastructure to handle multiple produce like CA Storage, Refer Trucks, Quality Testing Labs, Auction Centers.



It is pertinent to note that this Agri Aggregation Chain will also be useful in the reverse direction to provide farm inputs to farmers. Given the value and volume, it is impossible to run this kind of chain without the support of private sector which can alone bring the technical, financial and managerial expertise. Suitable legislations to be made to make this happen.

On the other hand, similar Agri Aggregation Chains can be formed by non-farmer organizations also. In such a case, the chain will be managed by village Agriprenaurs and Agri and Management professionals. Franchisee model would be more apt in this model.

Creating infrastructure right from the farm level to District would be a high cost affair and break even volumes would come with sustained efforts only, as farmers would take some time to switch to this new model, from the traditional ways. Therefore, Governments should provide additional incentives for this model to establish itself than the normal ones. This concept of Agri Aggregators need to be promoted vigorously by the stakeholders. Aggregation models already exist, thanks to Amazon, Snapdeal, Flipcart, Ola and Uber. All that is needed is to replicate this model in agriculture. This Agri Aggregation Chain should be encouraged to have a transparent eAuction Platform along with contract farming and contact farming activities.

**Processing Sector**

The chain will be incomplete, if we do not speak about the issues and opportunities in the processing of fruits, vegetables and spices. Given the fact that less than 3% of the produce are processed, the scope of processing in this segment is many fold. As part of value addition and preservation, this sector should focus more on primary processing near production centers themselves. This will not only reduce the losses, but also provide enormous job opportunities to rural population. The primary processing sector is highly unorganized and no standards exist.

Ministry of Food Processing, should focus more in this sector in collaboration with the State Governments. Many home grown technologies are available, but, they are not being used. SMEs or Micro enterprises in food processing should be given major thrust. The Food Parks are beyond the scope of many of these organizations. A cluster and hub-n-spoke models approach would be the need of the hour to get the quality and standards. As a matter of fact, this primary processing food sector would go a long way in helping the secondary and thirsuary levels.

Undoubtedly, of late, more thrust is given on food processing through creation of Food Parks and Mega Food Parks. But these cannot succeed, unless a robust back-end supply chain is created to serve them. Unfortunately, this linking is not being given the importance. Many Food Parks are failing due to lack of back-end supply chain. Though the policies do speak about the need for a back- end, the processes does not appear to be in place. Connecting the Agri Aggregation Chain to the Food Park is the best thing that can happen to food processing sector. Special incentives and promotion is required to specifically increase the focus on back-end supply chain infrastructure in an integrated way.

Also there is a huge gap between the food processing technologies adapted in India and the advance countries. Technologies like Modified Atmospheric Packaging, Vacuum Deep Frying, High Pressure Processing, etc have to be encouraged. The capacities, in any case, no where near that of Chinese firms. FSSAI should also tighten the quality standards of processed foods. This would automatically put pressure on the farmers to focus on quality of output.

The essence of the this article, in the words of, Former Minister and a progressive farmer from Andhra Pradesh Shri Muthyam Reddy:

*“Need is manifold actions:*

*1. Proper Soil Testing*

*2. Recommended weather suitable crops*

*3. Quality power*

*4. Water*

*5. Seeds*

*6. Pesticides*

*7. Timely Credit*

*8. Harvesting technologies*

*9. Storage facilities*

*10. Marketing facilities*

*11. easy crop insurance scheme*

*12. Ways to reach consumer at affordable cost*

*13. Ease of doing business in agri sector*

*A snap in this chain or inclement weather can destroy the farmers”*

Here is the suggested ways to increase the profitability of the horticulture farmers:

|  |  |  |  |
| --- | --- | --- | --- |
| S.No | Action Required | Expected benefit | Additional Income expected |
| 1 | Promotion of IPM/NPM packages | Reduction in cost of production | Rs.5000 / acre |
| Better quality and better price | Rs.5000/ acre |
| 2. | Micro Post Harvest infrastructure at farm level | Reduction in losses of fruits and vegetables | 25% |
| 3. | Macro Cold Chain infrastructure | Reduction in losses | Another 5% |
| 4 | Formation of FPOs/FPCs | Better bargaining power | 5% additional price realization and 2% reduction in cost of inputs |
| 5. | New Technologies  | Buying during harvest season and selling during off season | 20% increase in prices |
| 6. | Primary Processing at farm level | Value addition | 5% increase in prices |

Note: The above estimates can vary based on the crop and geography. But the expected benefits will occur.

Let me conclude the article by giving the following road map:

1.   Promote Integrated Pest Management (IPM) practices to reduce cost of cultivation and increase productivity

2.     Just promotion of farmer interest groups (FIGs) or FPOs not enough – they must be facilitated to run post harvest management services by giving financial, managerial and technical support – NGOs who are promoting FIGs /FPOs cannot do this – private sector should play major role – banks should provide loans to them liberally -

3.       Cold Chain – Policies need to be revised – huge gap between requirement and capacities created-

4.       Integration of cold chain infrastructure from farm to market to be promoted – they are currently fragmented

5.       The links In supply chain for horticulture produce is very high – leading to cost escalations and wastages – Market (Traders, Processors, Exporters) should get supplies directly from FIGs or FPOs

6.     Promotion of value chain from farm to fork (integrated approach of production, post harvest, cold chain, logistics, pre-processing, value addition and food processing)

7.       Cluster or Horti colony (Telengana Govt approach) models developed.

8.     Major success in Horticulture is Micro Irrigation – it is slowly losing efficiency due to maintenance and non replacement of old and defunct equipments – policy to address this

9.       Preservation technologies like CA, MA still very nascent stage – need more push

10. Crop rotation

11. Primary Processing to increase income

12. Agri Aggregators concept promoted

It may be argued that many of the above steps are taken by different agencies. But

1. They are insufficient in terms of volume required

2. They are not co-ordinated

3. The process is cumbersome to be availed by the farmes

4. Fragmentation is not addressed

The name of the game therefore is “*Integrate, aggregate and professionalize”*