

TOWARDS INCREASING PRODUCTIVITY AND IMPROVING POST HARVEST MANAGEMENT IN APPLE CULTIVATION IN HIMACHAL

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Abstract: *Productivity in Apples has been on the decline despite the state having huge extension machinery and good schemes in place. Implementing emerging technologies requires complex protocols. Thus, a grower may need hand-holding at all stages of cultivation. Encouraging trained graduates in Agriculture Sciences to practice as Krishi Doctors in rural areas would not only open avenues for their employment, but would also assist the growers at their door step, like a medical practitioner, encouraging them to adopt practices conducive to productivity growth. Such a Krishi Doctor may become a bridge between the credit agencies and technology providers. State extension machinery may make them focal points for disseminating their schemes among growers towards implementation. Krishi Doctor could also become instrumental in enabling growers to overcome some of their post harvest management aspects.*

Apple cultivation in Himachal Pradesh has shown a remarkable growth. The process of planned growth was initiated in 1950 after the State was constituted in the present geographical form. At that time the total area under fruit cultivation was 792 ha which has increased to 2.23 lakh ha corresponding to an increase in production from 1200 MT to 6.95 lakh MT in 2007. Around 40% of the total area under fruit cultivation is covered by apple cultivation. Around 200,000 families are engaged in apple production and 90% of them are small and marginal ones with an average holding of 0.6% ha. During the crop year 2010–11, it is expected that apple crop which is unprecedentedly high at 6.5 lakh tonnes) would be over ₹3000 crore in value.

Indeed a small step taken by Evans Stokes in 1914 at his Tea Estate in Thanedhar¹ has brought about tremendous economic gains to the farmers, traders and others as was visualized by him.

The tremendous success story has been limited by various curable factors both at the production stage and also at the post harvest management stage. In the process the growers have been short-changed on the gains which should have accrued to them and also the

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¹ Thakur, Prakash (2009), "Thanedhar—A story of Stokes legacy," *Himachal Travel Blog*, August 3. <http://www.himachaltravelblog.com/2009/08/03/thanedhar-a-story-of-stokes-legacy/>

consumers have to pay higher prices than what should have been fair. In economic terms, the full potential of economic gains to the growers, consumers and economy remains largely unexploited despite significant increase in production.

At the farm stage, the increase in production has taken place because larger areas over the years have been brought under cultivation. According to a study made by D.K. Sharma in 2008, a retired Principal Secretary of Himachal Pradesh, the productivity of apples has been on the decline.² It came down to 4247 kg/ha in 2000–01 from 4519 kg/ha in 1991–92, signifying a decline of 5.9%. At the all India level, he has computed a decline of 11.9%. This decline is further disappointing as the productivity of apples in India (5 MT/ha) is abysmal compared to 14.36 MT/ha of average global productivity. Austria leads in productivity of apples where it is 91 tonnes/ha.³ Many reasons for unusually low productivity compared to world standards have been identified. Cultivators continue to follow the age old practices of cultivation and have no idea of consumer preferences, market prices, various government schemes, scientific agro-commercial practices, especially agri inputs, sources of timely and adequate credit availability and market linkages. Majority of plantations are beyond their fruit bearing stage and would need to be replanted in a phased manner and on a continuous basis.

Government claims to have put in place an infrastructure from top to the grass-roots levels with R&D inputs to assist the farmers in augmenting the productivity. Such an infrastructure has been in existence since the 1950's and has been expanding. However, there seems to be no improvement in the productivity. Rather, there is evidence of decline. Mukesh Pandey, *et al.* (2009) have suggested creation of an information portal system interlinking stake holders in the entire chain for provisioning of, *inter alia*, better information and extension services to the farmers.⁴ Without discounting the possible benefit of ICT in increasing the productivity and improving on the value-chain it is imperative that the growers at the grass-roots level are encouraged to adopt basic minimum practices to constantly improve their production

² Sharma, D.K. (2008), "Agricultural Scenerio in Himachal Pradesh — A Macro View," *My Himachal*, 20 August. <http://himachal.us/2008/08/20/agricultural-scenerio-in-himachal-pradesh-a-macro-view/6090/news/dksharma>

³ Aivalli, Girish (2010), "Popular fruit lacking quality storage," *Business Line*, July 19. <http://www.thehindubusinessline.com/2010/07/19/Stories/2010071950551100.htm>

⁴ Pandey, Mukesh, B.K. Sikka & Sunil Panthari (2009), "ICT System for Increasing Efficiency of Apple-Value Chain," paper presented at the *National Seminar 2009 on ICT for Agriculture & Rural Development*, Arunachal Pradesh. http://gbpuat.academia.edu/MukeshPandey/Papers/126481/ICT_System_for_Increasing_Efficiency_of_Apple-Value_Chain

techniques to increase productivity. Increasing productivity, which has eluded the system so far and doggedly, will not come about magically. It would be a slow process but the trick would be turning the productivity curve northward by application of a mix of prescriptions.

Conventional extension techniques have not yielded the desired results and have been rather disappointing. Can we privatise the extension services inducting professional agriculture graduates on lines of private practitioners for the treatment of the sick when government medical services do not respond to their needs? Conventional extension services get bureaucratized and their response to the problems faced by individual growers is slow. If, on the other side, there is a practising agriculture graduate in the vicinity and is approached, he would respond immediately and suggest measures that would best suit the local conditions and the capacity of the grower. An agriculture practitioner also would, for the sake of his practice, arrange for the root stock, fertilizer, pesticides, medicines, timely sprays, etc., i.e. encourage scientific practices required by the grower at a cost including his fee. If he is an enterprising practitioner, he may even recover his costs and fee at the time of the harvest. The practitioner, being educated, can facilitate bringing together credit agencies and the grower. Besides, he can earn the trust of the growers and help them in post harvesting management.

Government may register such practitioners and develop a code of ethics for them to be supervised by their own professional body. There could be Government/Financial assistance to enable these professionals to set up their practice with a liberal moratorium period.

Pandey's ICT model⁵ would be understood and availed by such trained professionals who could translate the information to the growers and also obtain advice from their peers on specific issues as necessary. ICT model, if developed, and implemented, can be used as a tool to serve the entire agriculture and rural development operations. New Technologies for increasing productivity are on the anvil for all the agri crops. The protocols for the development of such emerging technologies would be somewhat complex and the growers may have to be assisted at different stages of cultivation. This requires educating growers (with the help of a skilled and competent person) and hand-holding them. An agriculture scientist, practicing in the vicinity would be the best bet. He would be an effective bridge between the technology providers and the growers and also facilitate the growers in accessing credit from the financial institutions and/or technology providers.

⁵ *Ibid.*

The existing state extension machinery can also designate such practitioners as focal points for translating their programmes into activities at fields.

Thus, it is foreseen that such agriculture scientists practising as *Krishi* Doctors can become agents of change in bringing about increase in productivity in apple cultivation and also in other crops.

In the post harvesting scenario, growers face a host of problems which are well identified and yet remain generally unresolved despite the concerned authorities' assertion to address the same. A farmer at the grass-roots level has rudimentary storage facility and is ill equipped in grading and sorting. A large number of the growers are forced to sell the crops at flowering stage and thus their returns stand discounted. The physical facilities at loading points remain insufficient and inefficient. The cartons also become scarce in the peak demand period. The connecting roads to the loading points are bad and the shelters at these points are next to nothing. The growers are at the mercy of the agents. The transporters also play difficult despite government fixing rates of transportation.

Situations turn ugly when there is a bumper crop as in the current season of 2010. There is reduction in the sale price while the costs of transport and packaging increase. As a result, gains to farmers are neutralized. The road conditions, including that of National Highways, also, add to the delay in reaching the desired destinations because the number of days to reach the produce to markets increases. In the process, there is increase in transport costs which further results in loss in quality. In the market place (*mandi*), the manipulations of the Commission Agents limit the gains of the growers and the consumer and the retail sector bears the brunt of the crisis. Deodhar's (2005) study indicates that even for a short distance between growing areas in Himachal Pradesh and Delhi markets, traders' margin accounts for 46% of the consumer rupee spent on apple.⁶ The grower would at best get 30–35% of the retail price after providing for over head costs such as transport. Thus, the grower remains in marginal, subsistence groups and the consumer has to pay exorbitantly high price even during bumper crop years.

The development of local markets near the growing centres has been slow and wherever such markets have developed, the traders from the established *mandis* descend upon these

⁶ Deodhar, Satish Y. (2005), "What's Keeping the Apples Away? Addressing the Market Integration Issue," Indian Institute of Management WP No. 2005-08-03.

markets; as a result the growers and consumers continue to be at the receiving end. The processing industry is stagnant. The procurement by the HPMC is generally of left over apples which are not otherwise saleable. In any case, the support price is at around ₹5/- per kg only. There are limited cold storage facilities. There have been some private initiatives like that of Adani. The growers have to adopt stringent practices to be eligible for procurement by owners of such cold storages.

In fact, the recent bumper crop has demonstrated severe limitations of post harvesting managements. If the farmers do not perceive gains in the face of bumper crop, it would hamper their efforts in increasing the productivity.

Deodhar's study, as referred above, reveals that despite what is made out to be huge transport cost, the incidence of this cost is insignificant compared to the cost push by the Commission agents.

On a pragmatic approach, one would reckon that improvement of infrastructure such as roads, transport, cold storage facilities, etc., would be beyond the growers to handle except through a political process when they force the state government to see sense in improving the situation. The real challenge, which would be in their domain, is to minimize the incidence of the cost of Commission agents. To meet such a challenge, they would have to organize themselves for bringing about fair and transparent *mandi* practices. In the first instance the local markets would have to be developed which would provide them somewhat better bargaining position and help in planning to pluck in a precise manner and may also result in reduced transport costs. The local administration should be in a better position to create transparent conditions of bidding and if necessary by appointment of a Regulator who oversees the local markets ensuring fair play.

At the post harvesting stage also, the *Krishi* Doctor can play a crucial role in improving supervision of storage and sorting for grades and scientific packaging. More enterprising among them may also become catalytic agents in increasing the bargaining power of the growers.