HIMACHAL FARMERS’ LIVELIHOOD CONCERNS AND OPPORTUNITIES IN AGRICULTURE

THE UNIVERSITY MUST RESPOND

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Back Cover Photo
Interaction Meeting between farmers' representatives and the University team led by the Vice Chancellor in Chanshu Village, Sangla Valley, Kinnaur.

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Prelude

As the world is entering into a regime of globalization; nations, states, and the farming communities find themselves under unbelievable circumstances of opportunities and challenges. In the coming times, traditional agriculture and livelihood systems may become increasingly unsustainable largely because we are entering into an environment of opportunities. However, opportunities will need to be tapped and for that to happen it will be necessary to redesign our systems according to the new challenges. This paper is written from this viewpoint to highlight the changing circumstances in agriculture and farmers’ livelihood needs and about opportunities which might be waiting to be harnessed by farming communities of Himachal Pradesh.

However, in order to capture these opportunities: Are our research and extension services adequately prepared? Paper outlines concepts, blueprints and framework for bringing in desired changes in the University research and extension system to encash these opportunities and make it capable of serving hill and mountain farmers better. It also looks at the possibilities for the University to move towards rural development projects in which the outcomes may bring desired effects in the whole production system in a command area. While advocating the need for integrating research and extension system, a blueprint of the alternative set-up has also been outlined.

The intention behind writing this paper was to provide useful guidelines to the University scientists in reshaping their research programs and preparing new project proposals. To the rest, it provides useful insights about Himachal farmers’ problems, research and extension needs and priority areas for funding. Although the concepts in the paper about linking University research and extension more closely to Himachal Farmers are mine but over the past year concepts and frameworks have also been deliberated at various fora within the University. It has been a pleasure to debate issues with colleagues in the University faculty and receive their suggestions. Therefore, what ever is being presented in this paper, reflects common thinking for bringing far reaching changes in research and extension network.

I am grateful to several people within the University who have made useful contributions towards bringing this paper in this final shape. The list includes, groups of Himachal farmers who shared their concerns with me during my field visits, the scientists who participated in the brainstorming workshop on restructuring of research and extension systems, colleagues namely Dr R.C. Thakur Director Research, Dr V.K. Gupta Dean Post Graduate Studies, Dr K.K. Katoch Coordinator PME Cell, Dr Hans Raj Sharma, Dr Atul, and Mr Hirday Paul Singh. There are so many others I am not able to name here, I shall remain thankful.

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4.1. The perspective
Agricultural and Livelihood Concerns in Himachal Pradesh

1.1 Agricultural Diversification in Himachal: The Turning Point

Himachal Pradesh is a small hill state located in the western Himalayas. Ninety percent of its 6.1 million population inhabits over 17,000 villages spread over the mountain landscape from low hills to high mountain areas. The dominant features of hill and mountain farming in Himachal Pradesh are small land holdings, sloping marginal farmlands and cultivation under rainfed farming. Subsistence farming on these farmlands was a dominating feature until the past decade. Since then a wave of change is underway towards diversification to high value cash crops. As a result the State is now known for Rs. 700 crores of fruit and off season vegetable production. Because of this diversification, one can already find successful examples of improved livelihoods in small pockets across different agroecological zones of the State. However, the present agricultural diversification is already facing second generation problems and this challenge of sustaining and widening benefits of hill agricultural diversification is beset with range of new problems highlighted by the stakeholders.
1.2 Marginal Farmers Yet to Benefit from Agricultural Diversification

It is now an established fact that green revolution has not proved successful on marginal farmlands. As a result, a large number of farming families living on sloping upland areas have not been benefited much and they continue to live on subsistence farming systems. These small and marginal hill farmers are preparing to leave the age old subsistent hill farming and look for technical support to enjoy the benefits of green revolution on marginal farmlands. Food and income security of these marginal hill farmers of Himachal, the ones who are below the poverty line, will depend very much on the crucial technological inputs which can change the generally perceived limitations of rainfed marginal lands into farming for high value industrial crops. Promoting industrial / cash crops farming such as medicinal, aromatic and dye plants on these marginal lands makes sense for such ecological habitats. Further tree and shrubby crops perform better under conditions of water scarcity prevalent on such lands. But can that happen? Are there off the shelf technological options? And who will take the lead? What about market linkages in the past, absence of market linkages has contributed to the stories of failure of such attempts. These questions await answers from the mainstream society and responsible institutions.

1.3 Second Generation Problems in Cash Crops Farming

The crop diversification in Himachal has largely focused on fruits and vegetables farming and during recent years vegetables have even taken over fruits. However, initial successes in many valleys have over the years led to increasing crop husbandry costs and crop failures in alternate years leading to declining incomes of the farmers. One of the best examples of such cases is ginger farming in Sirmour hills. It was once growing well under rainfed conditions and became the backbone cash crop of small and marginal hill
farmers. The whole area was famous and had a trade name for dried ginger (south) at national level and fetched Rs 2-5 crore to the farmers of the area. Over the years reduced yields and crop failures have added to the woes of these small farmers. As a result of this crop failure, many of these families have now reverted to subsistence farming and doing labour. Ginger farm economy and “the Ginger Valley of Sirmour” is sick today. Distributing pesticides and leaving farmers to their plight has not helped so far. Thus, reviving the ginger and other such crops, needs integrated research, technology and extension support from institutions like universities, who have everything under one roof. Research and extension support strategy will also need to be changed from casual TOT practices, practiced so far, to strategy of adopting villages, enhancing knowledge and skill of farming families in the adopted villages on crop husbandry and by training them on farm. That means launching kind of “Farmers Village Schools” and creating villages / Panchayats as models for other villages to follow. Reviving village economy collectively will mean evolving new models and it may be the best option for encouraging village to village knowledge flow. Because of these emerging problems in cash crops farming in many areas the trend of emerging Hill Farmers' Associations is noticeable. It is time these institutions are given recognition for their role and the space for playing significant roles. Like ginger, there are other vegetable crops; such as pea, tomato, cabbages, potatoes and off-season vegetables both for table and seed purposes in the high mountains. These also demand stronger research and extension attention, today.

Over the years, the market forces have taken over as decision maker and companies are now supplying seed and decide what farmers should grow. The role of the Universities, is thus drastically changing from breeding and releasing crop varieties and advising the farmers on which crops to grow to that of advising on crop husbandry, largely plant protection and agronomy. In case of vegetables, it is the prevalent situation. How far institutions will
gear themselves to provide needed support to farmers, will
determine the success of the diversification process as well as the
significance ratings of the institutions themselves.

1.4 New Generation of Farmers – Educated Youth exploring
Self Employment and Entrepreneurship Opportunities

Today, Himachal Pradesh has a sizable number of unemployed
educated youth, both men and women. Latest statistical data
indicate that there are over 26,000 postgraduates, 72,000
graduates, 590,000 matriculates and 201,000 under matric
unemployed youth registered with employment offices of the State
Government. Considering that 90 percent population of the State
lives in the villages, majority of these unemployed youth are from
farming families in the mountain villages. They have a farming
background and may be helping their families in continuing
farming, while waiting for the jobs. Comprising both men and
women, this educated class of young farmers holds great potential
for opening self employment opportunities in agriculture and
boosting farm economy of Himachal. Even though, many of these
educated rural youth have acquired traditional knowledge of
farming from their families, yet they need to be equipped with
necessary knowledge and skill in farming, entrepreneurship and
agribusiness. Who can help build capacities of these youth in
providing them knowledge and skills to become new generation of
farmers/entrepreneurs?

The onus lies on the Agricultural Universities to make a major shift,
from the objective of imparting conventional university education
that produces job seeking graduates with little inclination to
farming, to prepare themselves for systematic and comprehensive
training of farmers to build their new knowledge and skills. It will
be the education, which will not give them jobs but train them
adequately to adopt new ways of farming and entrepreneurship and
improving their income and livelihoods. The goal should be to
make them better farmers and not job seekers. One hopes that
following these initiatives, this new generation of educated farmers
can make meaningful contributions to generate employment
opportunities, thus contributing to improve farm income and
further improve farm economy of the State.

1.5 Unexplored Comparative Advantages of the Hill and
Mountain Agriculture

One of the key benefits that hill agriculture will enjoy due to WTO
and liberal markets just after 2005, will be the comparative
advantage of unique farming niches and unique products because
of typical mountain climates. Certainly mountain farmers
specializing in producing unique mountain/hill produce will have
an edge in the markets. Development experts believe that if the
farming communities and governance systems in the hills and
mountains are smart they should start focusing on developing their
local farming niches for unique products, be it food crops,
industrial crops or medicinal or aromatic produce. If organic
farming can succeed anywhere it is in the mountains. To convert
small-scale hill crops farming into advantage, promoting the
certified organic production of these crops will be the best option.
Marketing channels are fast developing for such organic produce
with much better prices.

Land and water scarcity in the hills and mountains have forced
farmers to find ways for cultivating their marginal croplands with
little water available. However, the research offering improved farm
income and better livelihood opportunities on marginal lands, is
yet to receive central place in the hill agricultural research and
extension strategies. In fact, the marginal farmlands of Himachal,
provide excellent advantage for cultivating medicinal and aromatic
crops. Understanding the potentials well for marginal areas, FAO
has come up with new initiatives of institutional capacity building
for promoting organic farming of medicinal, aromatic and dye
crops (MADP-organic farming). For giving quality produce, these MADP crops need stressful soil-water and nutrient conditions- the inherent attributes of marginal mountain/hilly lands.

However, the challenge remains, for developing technologies for farming, post harvest operations, value addition and above all organic certification of the produce of these new industrial crops. They do offer great hope for agribusiness and entrepreneurship provided farming communities are equipped with knowledge and information for cultivating these new crops. Many of these crops, such as Kuth, Kala zira, sonth, Colchicum etc. are traditionally grown by the Himachal farmers in some areas. Some of these crops are even farmer domesticated. Under WTO regime, these are the crops which will offer benefits of IPR to local farming communities, besides becoming industrial crops with comparative advantage to hill farmers. These are new areas of research and the challenge to the University is to evolve such technological options that will help develop range of mountain farming niches with variety of produce offering comparative advantage.

1.6 Constrained Livelihoods because of Biological Degradation of the Support Lands - the Wastelands

It is a widely acknowledged fact that most of our non-cropland areas in the low and mid hills, that is generally recognised as wasteland, is now biologically degraded, because of dominant growth of obnoxious unpalatable plant species, such as Lantana, Eupatorium, Ageratum and Congress grass. The problem has been increasing over the past few decades and these four plants have become nightmare for hill farming communities. Forest department is happy because these plants being unpalatable and poisonous push away grazing animals, thus help contribute towards soil conservation on Government forests and common property wastelands. There is little effort by any agency also to
work on ecological rehabilitation of wastelands invaded by these weeds. Rural development agencies should have been the ones taking such a responsibility, supported by the technological research and training from the universities.

However, the land policies, especially forest policy and law of the commons have not been seen in right perspective in terms of biological-ecological rehabilitation of these lands. As a result almost all those, farming families who are below poverty line and others who had small landholdings and depended for their livelihood on livestock, specially cattle, have suffered the most. Today, there is no productive grazing land left that can be used by such farming families. Subsequently, there is an emerging menace of abandoned cattle in several areas. It is a developing situation that may become very alarming in coming years. One finds herds of abandoned cattle on the road sides in low and mid hill areas. Farmers in many villages have to form village squads who act as night watchmen against the groups of abandoned cattle. While the numbers of such cattle are growing, opportunity for livelihood dependence on cow and dairy farming in these areas is diminishing simply because of fodder scarcity caused by biological degradation of the support lands.

Farmers pose questions like - can any institution help get rid of the obnoxious weeds from support lands by any technology so as to restore the productivity of fodder lands? In this regard any initiative for using plants like lantana for making cottage products does not find favour in Himachal Pradesh because the use value of restored land will be much more than allowing Lantana to grow for alternatives uses. It is a wild guess that if the biologically degraded support land/waste land and forest lands of low and mid hills of Himachal, specially Kangra valley, were ecologically rehabilitated today, majority of the below poverty line families will be directly benefited, by way of improving their incomes through animal husbandry.
There is a large scale fodder scarcity in the hills which can be reduced by restoring the health of these support lands. It can result in reviving the traditional livestock based livelihoods of small and marginal farmers which keep few cows to sell milk. Technologies have been perfected by the institutions but strange though, success stories of restoration are yet to be heard. The major reason could be the lack of extension that leads to community action as the efforts of individual farmers do not matter in such cases. Today, it is a top priority problem but unfortunately it is not being reflected in agricultural development discussions. Such discussions so far remain confined to crops, croplands and markets. As a viewpoint, village by village farmer participatory ecological rehabilitation approach may have better chances of success. But which agencies take the lead remains to be seen.

1.7 Hill and Mountain Farmers' Confusion over the Climate Change

It is now a recognized fact that agriculture in hills and mountains will be one of the key areas where climatic changes will show their major effect. Globally, the cropping areas are moving upwards because of general warming and availability of crop growth periods at higher altitudes, where it was not earlier possible to grow crops. Likewise, valleys and other such areas may become warmer, forcing several crops to be phased out of these areas.

This situation is becoming almost a reality in Himachal Pradesh too. Impact of global warming - known as climatic change impact is already visible on agriculture in several hilly areas of Himachal. For example, temperate fruit belt has moved upwards by about 50-100 kms. This has opened up new opportunities for highland farmers of Kinnaur and Lahul and Spiti but it also means that existing valleys of temperate fruits and vegetables are no longer the favourites. Farmers in these areas are looking for alternative technological options. General warming of the valleys has changed...
rainfall patterns, increased disease incidence in crops and created water scarcity. Usually good farm income opportunities due to fruits and vegetables enjoyed by Himachal farmers are threatened indeed. Crop failures and high costs of crop husbandry have become common.

It has however, opened up new opportunities for fruit and vegetable farming to farmers in the high mountain cold and dry Himalayan agro ecological zone. Preparing for giving them access to right knowledge and information for sustainable agricultural diversification is thus necessary at this stage. As a consequence of climate change, hill farmers in the mid hills and valleys are also forced to look for alternative cropping patterns that may suit changed environmental conditions.

Everywhere, in the hills, mountains and highlands, water for irrigation is becoming scarce and most farming technologies recommended today need more water. Farmers' wonder and expect to have new crops and cropping patterns requiring less water and enduring warmer climates. Their worry is- are we preparing for the upcoming warmer times?

In hills changing climate is also being realized by many farmers through unpredictable period of rains. Under rainfed conditions, it is forcing shorter duration of crop seasons for food crops, such as wheat, maize, rice and pulses. Farmers remain confused. Any one would ask - is the university breeding varieties of these staple food grains that can grow during the remaining short periods available to the farmers? Who is to help predict for the farmers what the weather is going to be in the coming years and what should they do? They look for a kind of seasonal and long duration climate forecasting system. For example, for planning fruit farming, the mountain and highland farmers now commonly ask, if we plant fruit trees then what will happen by the time these trees start bearing fruits- can we get the crop for decades or few years only? What will happen climatically if we move on to a particular crop?
Need for a decision support system is felt much more today.

The question is - are our universities and other research institutions preparing themselves to provide these answers to the hill, mountain, and highland farmers? There is, therefore, a potential research challenge to explore new crops and technological options that fit in well with the changed agro-ecological environment of hills, mountains and highlands. Exploring potentials for organic farming of medicinal, aromatic and other high value crops, including native mountain crops, on dry marginal hilly lands, is a new area for agricultural research and technology generation, little attended by the hill agricultural universities and research institutes.

1.8 Weak Mountain Agricultural Research & Extension Support Services

India has so far missed the opportunity of creating a strong Mountain / Hill Agricultural research, education and extension system. The universities and other institutions located in the mountains have not been able to acquire the necessary Hill Perspective in the mandate and functioning. Focus on developing professional capacities for hill oriented R&E probably never received the necessary attention. This neglect has another dimension i.e. the lack of understanding of the special needs of mountain environments and farm economies. That is the reason why green revolution technologies were extended to mountain agricultural systems, imposing similar farming criteria as for the plains and the outcome was limited success in valley areas.

Agricultural Universities were also constrained in other ways. Either university research was never designed with strong linkages to farmers' needs or research got diluted over the years with declining financial support. Today one finds terrible scarcity of funds within the universities to plan for research and extension projects for solving farmers problems.
Further, whatever research is being carried out by the University, it is through small individual scientific expertise based projects funded by the ICAR and other central agencies. Therefore, it is but natural that in this process major problems of farming communities, as described above, remain unattended. Surely, farmers problems need holistic approach where in multidisciplinary R&E focus of projects is necessary. Further, extension services in the University were added at later stage with the establishment of KVKs. A decade of experience tells that research and extension system required special attention for their integration, that did not happen. Therefore, the outcome has been the less than expected performance of research and extension efforts.

One can not also ignore the fact that State Government is now only paying salaries to the University staff, which means 100 percent state budget is spent on staff salaries. It is generally 80-90 percent of the total budget of the universities. Universities get another 10-20 percent budget from ICAR and other donors as project funding. Most of these projects are focused on research or extension on specific issues only. As such, scarcity of funds has become a bottleneck in planning and implementing farmer oriented major research and extension programs. It will be appropriate to add here that university's technical expertise in R&E remains grossly under utilized, simply because university is not given funds to plan its own research and extension agenda for addressing problems of farmers of the State.

To sum up, concerns of the hill and mountain farmers are many. Every problem though points to one thing that there has to be a paradigm shift in agricultural research and extension for hill, mountain and highland farming. In Himachal Pradesh efforts have to be made to address the current and potential problems of the farming communities by reframing the agricultural research and extension strategy. The focus should be on formulating the
farmers' problems based research and extension programs. Adopting such a strategy would mean that the universities will need to redesign their research and extension approaches to include new cash crops and suitable cropping patterns for the marginal farmlands, training farmers in proper use of natural resources for sustainable farming, effects of changing climatic conditions, farming under water scarcity like search for less water requiring crops and cropping systems, high value commercial crops, agribusiness training and capacity building etc.
2.1. Stakeholders Perceptions about the University

The public feeling is that the universities have not evolved integrated research and extension systems and the mechanisms to address problems of hill production systems. As a result the impact of research work done within the University remained small and therefore, little known. This lead to following common perceptions;

- The research being done at the University research stations is not of much relevance to the hill/mountain farmers. It is the expression of such views by the stakeholders that harms reputation of the University.

- The University R&E lacks integrated functioning and its research and extension is compartmentalized.
• The research and extension at the University lacks mountain perspective both in design and implementation approaches.

Therefore, the need of the hour is to address this issue upfront so as to remove such common perceptions among the stakeholders. For the University to maintain relevance in the public eye and for seeking comfortable State funding, it is important to plan impact making research and extension. Keeping this in view, the University needs to take special initiative to reorganize its research and extension system and affect following changes in R&E services;

• Restructure its research and extension system
• Promote more rural development oriented projects.
• Establish Hill Farmers School for creating a cadre of trained farmers.

2.2. Environment is Ripe for Integrating R&E Systems

The University has the mandate and responsibility to fulfil technological needs of the farmers of Himachal Pradesh. The University should thus be willing to be in the fore front to provide technological support and extension services, so as to provide answers to the farming problems of Himachal Pradesh, as described earlier.

The University was established in 1978 with three dimensional mandate - education, research and extension. To fulfill its mandate, it has a faculty strength of over four hundred engaged in teaching, research and extension activities. In four colleges at Palampur viz, College of Agriculture, College of Home Science, College of Biological and Environmental Sciences and College of Veterinary and Animal Sciences, the University produces skilled manpower for the State and country.
Regional Research Stations and Research Sub-stations of the University located in different agroecological zones were established on NARP zones pattern at the time of the establishment of the University. Since 1980's, the University was also entrusted with additional functions of technology transfer through 8 Farm Science Centres popularly called as “Krishi Vigyan Kendras (KVKs).” While starting KVKs, little efforts were made to formulate a system that could integrate research and extension services. Therefore, the experience of the past decade has been that R&E programs remained weakly integrated. Consequently, greater efficiency and impact of the agricultural research and extension services to the farmers as well as in the form of policy inputs had not been strong enough. The increasing rate of agricultural diversification process in different areas of Himachal Pradesh required launching of the integrated R&E programmes that could contribute to improving the knowledge and skills of the hill/mountain farmers.

2.3 Blueprint for Restructuring R&E Systems

In order to bring in efficiency to fulfil the mandate of improving agriculture and livelihoods of Himachal farmers following key changes will need to be affected in the University research and extension approaches:

Adopt the command areas based production systems approach: In order to achieve this the University will need to reorganize its research and extension service stations according to production systems. The command area concept may be introduced to serve each production system. For meaningful demonstration of its work, the University will need to adopt villages or Panchayats in a command area, so as to demonstrate its R&E programs in more effective manner. These villages or Panchayats will then become the center of activities and serve as de facto field laboratories-cum-
experimental stations-cum-farmers training school or demonstration facility for a particular command area.

Set up farmers advisory bodies for each regional research center: In order to make research and extension more effective and pro-farmer there is a need to improve upon our strategies for strengthening farmer-scientist partnership and interaction, which are so far poor and unstructured. To address this concern, the University needs to set up an advisory group of farmers called “FARMERS FORUM” for each Regional Research and Extension Center, comprising representative farmers, Panchayats and Mahila Mandals representatives from that area. Let there be farmers representatives from each development block. The role of these farmers, will be to scrutinize new programs and advise on farmers need based priority programs for each Regional Research and Extension Center. These farmers will need to be associated in project implementation also.

Integrate research and extension activities using 5 program areas approach: Presently each regional research center is organized into separate research and extension units. The R&E activities have little in common. Thus, these will need to be merged to set up an integrated research and extension system. In terms of using staff resources efficiently, a system be devised in such ways that instead of only KVK scientists doing the extension activities, other research scientists of the stations/centers should also be equally involved in extension programme.

The key features of this integrated R&E system, outlined here, is that it is farmer centered and research and extension is inseparable. The interlinked research and extension activities ensure that research outputs flow out as extension inputs.
2.4 Framework for Integration of R&E System

Programme Area 1: Farmers' Needs Based Research

This programme area can focus on identifying the needs and concerns of the farmers and giving top priority for designing projects in research and extension which could solve these problems. The indicators of success will be the impact of the projects on the livelihoods of the farmers after the adoption of effective solutions to their farming and livelihood problems.

Programme Area 2: Strategic Research

Strategic research program should include three aspects. First, it should focus on the adaptive research on new technologies that
may have potential. Second, it should include feedback studies on agriculture transformation processes so as to advise on emerging needs of R&E. In addition, studies on impact of changing markets, public interventions, Govt policies, environmental changes etc. can form part of this program area, so as to advise on suitable adjustments in R&E programs. The third aspect should be on impact evaluation survey of R&E work of the University.

Programme Area 3: Enhancing Knowledge and Skills of Hill Farmers

New approach in extension education will need to move beyond the traditional Transfer of Technology (TOT) concept. Extension strategy will need to create an environment for enhancing overall knowledge and skills of farmers to equip them better for adopting sustainable options in agriculture diversification. The focus under this programme area should combine KVK programs, research, demonstrations, trainings etc. to evolve into Hill Farmers School. Programme should also adopt any other means available for building capacity of farmers for sustainable agricultural practices and entrepreneurship.

Programme Area 4: Managing Hill Agrobiodiversity in Partnership with Farmers

Himachal is rich in agricultural crops related genetic diversity, gene pools of crops and land races. Through this programme area, the hill agricultural bioresources can be managed in partnership with custodian farming communities and used for economic well being of the farmers in an appropriate manner. The University should facilitate registering of custodian farmers of unique indigenous crop germ plasm resources. This unique in situ conservation program about local germ plasm of crops will be beneficial to both the farmers and institutions. New dimension can be added through initiating farmer participatory crop breeding programs to evolve ecological niches adapted varieties of crops for which
individual farmers or groups of farmers can have the ownership / patent rights.

Programme Area 5: Income Generation – Seeds, Enterprises and Services

The program area should be designed to generate income for the institution through supplies of seeds, plant material, value added products, consultancy services etc. Based on its own produce, the University can invest in small enterprises development. The criteria could be that the University maintains the comparative advantage of available knowledge and material and investments and marketing mechanisms can be tapped from outside sources.

2.5 The Command Areas Approach for Regional Agricultural Research and Extension Centres

For effective research and extension, the State can be divided into production system domains in which the University will have facilities of regional agricultural research and extension centres. This way each regional research and extension centre can give services to a command area comprising of a broad production system. From Himachal's perspective, development blocks can form basic units for delineating these command areas. Each regional research and extension centre may control a number of research stations and research farms. The KVKs in that command area should also function as part of the units of these centres. Following this approach existing Research Centres and KVKs can be re-grouped as follows:

i. Highland Agricultural Research and Extension Centre, Kukumseri, Lahul

ii. Mountain Agricultural Research and Extension Centre, Sangla, Kinnaur

iii. Hill Agricultural Research and Extension Centre, Bajaura, Kullu

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iv. Hill Agricultural Research and Extension Centre, Dhaulakuan, Sirmour

v. Shivalik Agricultural Research and Extension Centre, Kangra

In addition the University may set up special extension support service facilities to serve the marginal farming communities living in remote mountain areas of the State. In setting up these extension facilities, the aim will be to reach the unreached farming communities:

vi. Remote Mountain Agricultural Research and Extension Station, Salooni, Chamba

vii. Remote Mountain Agricultural Extension Service Station, Pangi, Chamba

viii. Remote Mountain Agricultural Extension Service Station, Dodra Kwar, Shimla

The Regional Agricultural Research and Extension Centres should maintain a multidisciplinary team of scientists for program implementation. The program planning at each center will need to be backed by the Farmers' Forum of the command area comprising representatives of Panchayati Raj Institutions, Mahila Mandals and any farmers cooperative societies and associations. At the University level, the Research and Extension activities can be guided and monitored centrally through a team of five program leaders of respective programme areas managing the Program Planning Monitoring and Evaluation (PME) cell of the Directorates of Research and Extension Education. Each program leader at PME can be made responsible for managing his program along with other programme leaders of the same programme area placed at each RAREC.
Approach to Respond: Incorporating Farmers' Concerns in R&E Programs

3.1 Preparing to Address the Farmers' Concerns in R&E

The section one on agricultural issues has highlighted several new challenges about improving agriculture based rural livelihoods to policy makers, planners and researchers alike. Since this paper is confining the discussions about improving the role of the University in addressing these concerns the other issues are not touched here.

Working for the hill and mountain farmers over the past 25 years, the University has learnt its experience that it can only remain relevant to farmers if it addresses the complex and inter-related issues of mountain agriculture, poverty and sustainability within the diverse ecological and socioeconomic environment of Himachal Pradesh. Therefore, for the University to maintain its relevance and make meaningful contributions in addressing multiple livelihood and agricultural sustainability concerns of the farming community of Himachal Pradesh, it is imperative that it redefines its research and extension strategies, both for planning and implementation. The University thus, needs to give added attention to formulate larger integrated R&E projects focusing on...
key problems of production systems in a command area. The outcomes of such projects will clearly benefit - the target farming families. Through such rural development projects University must aim to play a lead role in helping the hill farmers in building their capacities for improving their farm incomes as well as generating self employment opportunities for educated farmers.

3.2 Moving Forward: Defining Strategic Outcomes of R & E

The concerns of Himachal Farmers elaborated in the earlier section, provide a good basis for identifying the expected outcomes of research and extension services which the University may be planning. A list of such key expectations is summarized here;

A. Providing basket of production technologies to hill farmers belonging to different agro-ecological regimes/production systems so as to create an enabling environment for diversifying towards high value crops and agribusiness.

B. To ensure sustainability of the existing cash crops farming systems in several command areas, there is a need for providing stronger R&E support by the University.

C. Providing sustainable resource management technological options to farmers, so as to enable them use marginal farmlands more productively. It requires testing/verification and incorporation of the indigenous resource management practices/innovations of the hill farmers as cheaper and more appropriate location specific strategies.

D. To impart comprehensive focused training and education to the younger generation of the educated farmers who hold the potential of harnessing agribusiness and entrepreneurship opportunities for self-employment. Other farmers also need to be educated in new farming opportunities that they can use profitably.
3.3 Five Criteria for Selecting Priority Project Areas

Taking into account the enormity of the challenges posed by these strategic outcomes and the limited resources available for competitive project funding, the University will have to plan focused R&E projects and promote synergies between research and extension aspects so as to have meaningful impact. Following criteria is outlined for identifying and planning integrated R&E projects / programmes (Scientists may use this set of criteria as filter mechanism for assessing significance value of the project):

- **Strategic relevance:** based on alignment with the University's mandate, vision, mission, and the strategic outcomes; the project should meet the demonstrated demands and needs of the farmers of Himachal Pradesh and other stakeholder agencies e.g. agricultural department.

- **Comparative advantage:** based on the University's track record, previous achievements, and comparative advantages; the projects should also cover sizable farming niches or areas that are unattended.

- **Potential for impact:** based on the potential for agricultural development and poverty alleviation, projects should have potential for magnifying the scale, potential for incorporating effective policy strategies, and synergies with existing projects and programmes.

- **Feasibility:** building on existing human, institutional and available financial resources projects should have the commitment and ownership of other partners also, such as farmers, Government agencies, Panchayats and Mahila Mandals.

- **Sensitivity:** The identified projects should also be sensitive to the rich cultural diversity, fragile and marginal mountain
environment of the State and to the agricultural development strategy/development plan of the State.

3.4. Identifiable Priority Projects based on the Farmers Concerns

- Creating areas of specialized produce; e.g. mushroom valley/honey valley/ginger valleys etc.
- Evolving new technologies and package of practices to revitalize the failing cash cropping systems. Reviving the failing agricultural diversification options.
- To identify and demonstrate technologies for sustainable and productive use of marginal farmlands, such as medicinal and aromatic crops farming.
- Developing decision support systems for adjusting to and harnessing new opportunities opened by climate change effects in hills/mountains/highlands.
- Developing technologies for promoting organic farming of mountain crops so as to benefit from the comparative advantage.
- To give technological support to empower women for income generation, drudgery reduction and nutritional security.
- To train educated youth as better skilled farmers and entrepreneurs both for the sake of self-employment and to act as progressive farmers.
- To educate the farmers/young entrepreneurs about the unfolding marketing opportunities in the wake of new economic dispensations, especially WTO.
- To identify, develop, test and demonstrate appropriate natural resource management technologies for soil, water and nutrient management.
• To develop R&D infrastructure to support and sustain high value cash crop agriculture

3.5. The Umbrella Project Approach

In order to address the multiple needs of the hill farming communities, each R&E project has to be designed as a multidimensional project, both in terms of research and extension themes, as well as geographic coverage. The need is to develop umbrella projects for the command areas of each newly designated Regional Agricultural Research and Extension Centres and Remote Area Stations. Each umbrella project can have three key areas of intervention i.e. (a) technology generation and refinement, (b) technology diffusion to farmers fields and (c) building capacity of unemployed youth for self employment. In terms of thematic activities, projects can have several components. To be most relevant to farming communities and for making an impact, the interventions can be grouped on the basis of major problems and potentials of farming in respective production system represented by the command areas of RARECs. The project should take villages / Panchayats as units for intervention; be it one activity or group of activities. Farmers’ Forum of each regional center / local Panchayat Members and Mahila Mandal need to be involved in project planning and implementation processes. The villagers will need to be made partners in project implementation rather than testing objects.

For the umbrella projects, the intervention areas should be decided only after a survey of the target farmers problems and needs. In this way the project would become a combination of research, extension, demonstration, training and backup support services. Issues for applied research on new technologies, to be done both at regional centers and at the main campus, will be those identified for the target areas. These may be cross cutting themes, useful to one or more target areas. There is also need to formulate
focused projects on extension and development, knowledge and skill enhancement of farmers, natural resources management options etc. Most notable of these projects can be the ones addressing five priority areas; viz. replication of success stories of the University e.g. IVLP program, Hill Farmers' School, organic farming of high value cash crops etc. Some of the research and extension projects that emerge from the current scenario of agriculture in Himachal Pradesh include revival of failing ginger farming economy of Sirmour, creating honey valleys in Himachal, widening choices of hill farmers for high value cash crops farming and enterprises development, facilitating creation of mushroom valleys, promoting organic production of niches based mountain farm produce, greening the grasslands of cold desert to manage acute fodder shortage, helping contain biological degradation of support lands/waste lands in Shiwalik range to improve livelihoods of marginal families and promote technological options that facilitate economically productive and ecologically sustainable farming of marginal lands.

3.6. Partnership Among Farmers, the University and other Institutions

It is high time that the University designs projects in a manner that promote partnership with farmers, Panchayati Raj institutions, Mahila Mandals and villages. Representatives of Panchayats and Mahila Mandals should be encouraged to participate in making decisions and participate in the project activities in their areas. There should be new initiatives for forging partnership with ICAR and other national institutions located in Himachal Pradesh. These organizations can be involved as partners in the areas of their expertise and mandate.

3.7. Need for Partnership Approach in Project Funding

As in the case of many rural development projects, the University should also strive to adopt an approach where a project can have
multiple stakeholders and contributors. The University and State of Himachal Pradesh can and will continue to be the key contributors of the in kind contributions in the form of human resources, expertise and infrastructure facilities. In addition, ICAR will remain a major partner as there are several ICAR funded R&E projects, including KVK programs, which will keep supplementing project efforts and contribute to the objectives of the projects directly or indirectly. The University may seek core project funding support from one or more agencies to implement the umbrella programs of R&E at each regional centers (RARECs) and at the head quarters.

3.8. Aiming at Farmers’ Need Based R&E Program Outcomes

In order to qualify for the pro-farmer approach in R&E, the outcome of projects formulated and implemented by the University should match with one or more aspects included in the following list of the desired outcomes of such projects:

- Would arrest the declining production performance of any of the backbone cash crops in valleys / command areas (e.g. ginger in Sirmour and Pea in Lahaul). Restoring economic benefits flowing from these promising options.

- Would provide technologies for the cultivation of new promising cash crops and for organic farming.

- Add to harnessing native crops for evolving new farming niches on marginal lands.

- Would make available technologies for the cultivation of high value industrial mountain crops (notably medicinal, aromatic and dye crops-FAO). These have proven potentials for new cash crops/ agribusiness, enterprise development options to the farmers of specific hilly areas (ecological niches).
• Would train educated youths as entrepreneurs for self-employment in farm sector. They will continue receiving technical back up support in their choice of farming/enterprise options.

• Would train and create a cadre of skilled farmers, ready to adopt appropriate farming practices like the use of pesticides, practicing Organic farming, vermicomposting, improving FYM to better compost, water harvesting and low cost water harvesting methods etc.

• Would improve the availability of permanent facilities for training farmers/educated youth as entrepreneurs in the University.

• Add to building capacities/expertise for implementing development oriented projects. The University would gain confidence for implementing such large-scale umbrella projects.

• Add to experiences in building strong partnership with farmers. Channels of the University-Farmer-Trade links will be established.

• Would enhance availability of experts trained in hill agricultural development.

• Would provide valuable policy inputs to the planners and policymakers for need based agricultural planning.

• Would help in the commercialization of mountain agriculture and improved livelihoods.

• Would contribute to emergence of the State of Himachal Pradesh as a successful model of progress and decent livelihoods in the mountains.
4.1. The Perspective

The process of hill agricultural diversification in Himachal has reached a stage, where it has become imperative to launch wider initiative to educate and train the hill farmers – in new ways of farming with comparative advantage. It is so because, unlike in the past, today Himachal Pradesh has a sizable percentage of educated farming community of both men and woman. Cash crops farming, be it vegetable or fruit farming, has been able to provide opportunities of decent livelihoods to the younger generation of educated hill farmers. Even though, these educated youths have acquired traditional knowledge of farming from their families in a routine manner and over a period of time many of them have also tried to learn new farming technologies from extension agencies. However, wider knowledge and skills of modern agriculture are yet to be imparted to these farmers. If these farmers are imparted new knowledge and skills in farming, they can certainly make
meaningful contributions to improve the hill farm economy.

Even though there are multiple extension education activities launched by the University for training the farmers in using various kinds of technologies and practices, but most of them fall short of training the farmers in a holistic manner about the hill agriculture issues and options. At a time when the University is having a re-look at the research and extension education system, the opportunity can be availed to further improve upon the extension education services to make these more effective.

To fulfill the basic objective of creating a mass of well trained/educated farmers, agricultural universities may have to conceive and adopt alternative agricultural education approaches. The focus of these changes should be to equip the practising farmers with necessary knowledge and skill, so that in addition to what they know and practice, they are also able to understand new technologies and adjust their farming according to the challenges of modern day farming. It is important that these farmers understand the sustainable use of natural resources and environment, acceptable methods of plant husbandry, globalization affected marketing systems and institutional interventions.

In this context, the establishment of Hill Farmers' School will be an initiative to create a mass of enlightened hill farmers - who would be aware of the perspectives, practices, potentials and limitations of hill farming. Even while practicing certain cropping patterns and farming options these farmers would become capable of planning their agriculture and livelihood vocations within the parameters of ecological, economic and social sustainability. The hill farmers school curricula will be designed to create opportunities for the farmers and educated youth of the state to enable them to engage themselves in farming enterprises and agribusiness not only for self employment but also for employment generation.

These farmers can and would become leaders to be followed by
others in the area because of their knowledge and experience in selecting most appropriate technological options for farming their fields. They would be capable of understanding the comparative advantages of harnessing the potential farming niches, advantages of sustainable use of natural resources and market advantages and disadvantages. These farmers would know fully well the kind of policy changes they should be asking for. The ultimate goal of this school approach would be to create a class of trained hill farmers having the necessary knowledge and capability of making farming their vocation. They will not only have self employment and enhanced farm income but also create job opportunities for others.

It will be practically impossible to create facilities for training large number of farmers at one place. The gathering of hill farmers with diverse interests, at one place for training and hands on experience will also be difficult. Therefore, besides having a Hill Farmers' School at the head quarters, starting distance education for farmers at the Regional Research and Extension Centres spread over the State will also be an appropriate alternative option. The University can opt for delivering the packaged information through Distance Education Program using its existing infrastructure at five Regional Research Centres, covering five different hill production systems. (Further details on structure and operational mechanisms of the Hill Farmers School are available in the detailed proposal already submitted on behalf of the University to the Planning Commission of India for funding). The concept of Hill farmers School has already been borrowed from the University by Indira Gandhi National Open University and Distance Education Council of India, where in the University is a key partner for developing a larger program jointly with other institutions of the Indian Himalaya.