CHAPTER VII

SUMMARY AND IMPLICATIONS

During the post-independence period several technology transfer models have been tried and there has been tremendous improvement in overall production of agriculture, livestock, poultry, etc. Of the several technology transfer models taken up by different organizations, institutions and government agencies, the HAU technology transfer model has been considered as unique.

This model has been in operation ever since the university came into being (February 2, 1970). Having been in operation for more than two decades, though it might not appear to be necessary, yet it would be in the interest of the organization to have a critical appraisal of the model to facilitate pruning where necessary and infrastructural modifications in the form of manpower and other resources to upkeep the efficiency of the organization for quick transfer of technology from the university to the concerned clientele and required feedback to pursue problem-oriented research and extension work on continued basis. With this background, this study is proposed to be taken up with the specific objectives given hereunder:

1. To study the university technology transfer model in historical perspective.

2. To critically examine the interdepartmental linkages essential for reinforcing and revitalizing the technology transfer model.

3. To determine the adequacy of linkages within and outside the university for efficient feedback.

4. To make an assessment of farmers' perception of the technology transfer system of the university.

5. To suggest modifications in the existing extension model for quick transfer of technology.

7.2 Theoretical Orientation

The Chapter II contains the theoretical orientation highlighting the conceptual framework of the research problem.

7.3 Methodology

The study was conducted in Haryana State. HAU technology transfer model was taken up for the analysis of linkages. The methodological steps followed were as follows:

For the study of the university technology transfer model in its historical perspective the relevant information and required data were collected from the annual reports of the period, records and other reports available in the Directorate of Extension Education of the university, publications brought out during the period besides verbal communication with some experienced faculty members who could serve as resource persons.

For the study of the interdepartmental linkages and adequacy of linkages within and outside the university, the data were collected from the 18 HODs amenable to extension

education, 12 ULEEs, 84 DEEs besides 100 field functionaries comprising SMSs, CAOs and ADOs.

For making an assessment of farmers' perception of technology transfer model of the university, the data were collected with the help of an interview schedule from 100 farmers drawn from all over the State.

7.4 Findings

Some of the major findings were as follows:

7.4.1 Technology Transfer Model in Historical Perspectives

The PAU Act 1961 included undertaking the extension of agricultural and other allied sciences to the rural people of the State as one of the objectives of the university. Based on the recommendations of Nalagarh Committee the scheme on the farm advisory service was started during the year 1961-62 with a provision for SMSs in four subjects, namely, Agronomy, Horticulture, Plant Protection and Soil Science at the headquarters of most of the districts. Under this programme, trainings were organized for inservice staff and farmers besides setting up a chain of demonstrations all over the State. The extension training and advisory activities of the university aroused great interest among the farming community.

The Extension Wing at Hisar started functioning during the year 1964-65. In spite of inadequate staff, it made a good start by organizing a number of extension activities in the field besides imparting undergraudate instructions and undertaking post-graduate study programme. A new dimension was added

to the Extension Department during the year 1966-67 in the form of Junior Staff School for strengthening the training activities for farmers and field functionaies of government department. Even before the HAU came into being, the Hisar campus of the university became a source of inspiration to great majority cf farmers and others connected with the development of agriculture and animal husbandry.

After the HAU came into being, farm advisory service centres (KGKs) were set up at all the district headquarters. The period under the stewardship of the then Vice-Chancellor A.L. Fletcher and Dr. J.C. Sharma as ADEE experienced tremendous developments in the extension education set up of the university. The ULESs were provided for 12 disciplines and a team of DESs in the corresponding disciplines (with the exception of poultry) was provided at the KGKs. The basic idea was to provide advisory services to the farmers under one roof. For their efficient performance and to define their roles, job chart was prepared both for ULESs and DESs. The progamme of work for implementation in the field was jointly prepared by the ULESs and DESs under the guidance of the respective subject-matter HODs and DEE.

According to Annual Report for the year 1990-91, a big step up activity of the KGK was the conversion of 12 KGKs into 16 KVKs under the financial arrangement of ICAR. The KVKs have already been set up at Faridabad, Jind, Kaithal, Kurukshetra, Sonipat and Yamuna Nagar in addition to Sadalpur (Hisar) where one already existed.

7.4.2 Interdepartmental Linkages Essential for Reinforcing and Revitalizing the Technology Transfer Model

7.4.2.1 Subject-Matter Heads of Departments

A significant majority of HODs (83.33%) had not obtained training in extension education. While most of the HODs conceptualized the importance of extension education as a discipline yet there seemed to be a need for developing correct concept of the discipline among them through proper orientation. The study established that almost every department had some research based recommendations for dissemination to the clientele concerned.

Some of the important factors which impeded the forwardal of research findings to extension agencies were found to be non-availability of funds for large scale production of HYVs seeds, lack of rapport between department and extension agency, lack of faculty members having interest for extension jobs, etc.

The HODs kept their ULESs and DESs abreast of latest research advances in their respective disciplines by organizing refresher trainings, meetings, group discussions, participation in seminars, workshops, etc.

A significant majority of HODs (88.89%) were in favour of involving faculty members on extension side in teaching and/or research work. More than half of the HODs (55.56%), wanted complete control of the extension faculty members with the department (Table 5.1). Nearly two-fifth of HODs (38.89%) opted for the existing seating arrangements, that is, forenoon in the

department and Directorate of Extension Education in the afternoon.

Two-third of HODs (66.67%) claimed that activities of their department were carried out in collaboration with other departments.

The functional constraints encountered by HODs in promoting extension education activities included shortage of budget, problem of mobility for want of a vehicle, lack of audio-visual aids, etc., (Table 5.4).

7.4.2.2 University-Level Extension Specialists

The study indicated that total experience of ULESs ranged from 13 to 32 years. With the exception of one ULES, all of them were in professors rank. Half of them felt satisfied on the job of ULES.

Most of the ULESs toured for 5 to 8 days in a month for supervising the work of DESs and visited 6 to 8 villages.

The study indicated that most of the ULESs (8) obtained feedback from their respective DESs and in consultation with their HODs chalked out the annual programme of work.

It was found that none of the ULESs reported lack of collaboration or problems encountered in obtaining collaboration from any of the departments.

All the ULESs indicated that one-third of time was devoted by them to the teaching of courses and guidance of post-graduate students in their respective departments. Of the 12 ULESs, only four of them reported their involvement in research work.

The study indicated that of the 12 ULESs, 10 of them had published research papers.

It was found that nine of the ULESs were bringing out monthly or quarterly newsletters in their subject-matter areas.

The study showed that ULESs kept themselves abreast of latest advances in their respective subject-matter areas through the study of relevant literature consulting research journals, dailies, participation in seminars, conferences, etc. The ULESs got professional support from their department through discussion with their respective HODs, seminars organized in the department, etc.

The ULESs showed interest in obtaining advance training in institutions both within and outside the country.

The results suggested that most of the ULESs had intimated several field problems to their respective HODs for research and finding solutions for feedback to farmers (Table 5.7).

The findings suggested that there was increase in the adoption of new technology on continued basis at the level of farmers. Nevertheless, the assessment indicated qualitative improvements in extension education activities organized in the field.

The problems encountered by ULESs in their day to day work were reported to be difficulty in undertaking required touring for want of a vehicle, shortage of funds for TA and DA, lack of audio-visual aids, etc., (Table 5.8).

More than half of the ULESs asked for transportation facilities (9), provision for more funds for contingency, TA and POL, better audio-visual aids (6), etc.

7.4.2.3 District Extension Specialists

The study indicated that 51.19 per cent of DESs were transferred from teaching and research on their present positions and 65.48 per cent of them wanted to continue on their present job.

The study indicated that only 28 DESs had experience in teaching and 49 had research experience.

It was found that 51.19 per cent of the DESs possessed Master's degree in their respective discipline. The remaining 48.81 per cent were found to have Doctorate degree.

Of the 84 DESs, 69.05 per cent of them had obtained one or the other training of varying duration in their respective subject-matter areas either at HAU or outside HAU. On further probing, 67.86 per cent of them showed interest in obtaining training in extension methodology.

The monthly programme of work was reported to be prepared keeping in view the needs of the area and resources at their disposal for carrying out the extension activities.

Majority of the DESs (48.81%) reported that their respective ULESs supervised their work every month. A sizable number of DESs (38.10%) reported half yearly supervision by their respective HODs. In so far as supervision by DEE was concerned, more than half of them (57.14%) pointed out supervision after every quarter.

Of the 84 DESs, 77.38 per cent of them had not associated themselves in a research project or laid down adaptive research trials.

The study indicated that the DESs intimated a number of farming problems to their seniors (ULESs, HODs, DEE or the concerned scientists) for further investigation and finding solution (Table 5.11).

The ways for keeping themselves abreast of the latest advances in their discipline used by DESs were reported to be study of journals, reports and literature, participation in meetings, seminars, conferences, etc.

The library facilities at KGKs were reported to be not adequate.

A majority of the DESs (67.86%) felt that they needed training in extension methodology.

The difficulties encountered by a large number of DESs included lack of budget (80.59%), lack of transportation facilities (64.29%), lack of audio-visual aids (60.71%), etc., (Table 5.12).

More than half of the DESs asked for provision for more funds for TA and POL (80.95%), transportation facilities (61.90%), audio-visual aids (59.92%), incentives for extension staff (54.76%), etc.

A significant majority of DESs (90.48%) were for the grant of incentive.

7.4.3 Adequacy of Linkages Within and Outside the University for Efficient Feedback

7.4.3.1 Adequacy of Linkages Within the University

The study indicated that HODs did participate in extension activities, namely, method demonstrations (72.22%), result demonstrations (55.56%), training organized in villages (55.56%), or at farmers' field (61.11%), etc.

The study revealed that the HODs devoted only 5 to 10 per cent of their time to extension work which included radio and TV talks, lectures in training programmes, etc.

The extent of help available to HODs from the Directorate of Extension Education was reported to be satisfactory by 66.67 per cent of them.

The HODs pointed out a number of weaknesses in implementing extension education programme of their respective discipline which included lack of budget, lack of advanced training facilities for field staff, unwilling extension worker, lack of audio-visual aids, failure to prepare actual farm plan, inadequate coordination with government field functionaries, etc.

The HODs based on their extension experience suggested several measures which needed to be promptly followed for strengthening the linkages. Some of these included more budgetary provision for extension work, more training facilities for farmers, strengthening of linkages between research and extension staff, audio-visual aid facilities, etc.

The shortcomings observed by ULESs on their visits to KGKs were lack of maintenance of records, lack of transport and other facilities, lack of funds for laying out demonstrations, etc.

The steps taken by ULESs in overcoming the shortcomings were that DESs were impressed upon for maintaining proper record of the work done by them, administrative action where needed, proper maintenance of daily diary, supply of inputs, etc.

The methods being used by ULESs for popularising the latest research finding among farmers were demonstrations, training camps, leaflets and handouts, radio talks, etc.

It was found that all the ULESs were approached by farmers through letters for seeking advice on farming problems.

The study indicated that the help rendered by Training Unit was organization of some training programmes, and publication of leaflets, handouts, etc., by the Farm Information and Communication Unit of the Directorate.

A majority of DESs (78.57%) spent 6 to 10 days on tour in a month.

More than three-fifth of DESs claimed that on an average 40 farmers contacted them at KGKs in a month.

The steps taken or methods adopted by DESs to bring home feedback on their problems to farmers included discussion of the problems with farmers, demonstration on relevant topics, home and field visits, etc.

For making KGK popular DESs suggested provision for sale counters for important inputs (80.95%) at KGKs, facilities for training of farmers (45.24%), a waiting room and stay facilities for farmers at KGKs (19.05%), etc., (Table 5.19).

7.4.3.2 Adequacy of Linkages Outside the University

The field functionaries acknowledged both direct and indirect help from HAU for their professional enrichment. The perception of direct help included training programmes, AOWs for Rabi and Kharif seasons, etc. The indirect help from HAU was reported to be through supply of leaflets on important topics related to crop and livestock production, through popular articles published in Haryana Kheti/Haryana Farming, etc.

It was observed that more than half (53.00%) of the field functionaries maintained contacts with the university at their individual level.

The study revealed that the important information given to the senior officers of the Department of Agriculture before Rabi and Kharif seasons in the AOWs were passed on to the field functionaries at the grass-root level through fortnightly trainings.

The expectations of the field functionaries from the university included supply of package of practices in the form of tips (95.00%), supply of HYVs seeds (92.00%), laying out of demonstrations in maximum number of villages (90.00%), etc.

The problems which were being encountered by majority of the field functionaries included problem of mobility (94.00%),

non-availability of audio-visual aids (92.00%), lack of recognition for the hard work done (70.00%), etc., (Table 5.20).

A significant majority of the field functionaries pointed out non-availability of HYV seeds (82.00%), problem of weed management (80.00%), irrigation and water management (76.00%), etc.

7.4.4 Farmers' Perception of the Technology Transfer System of the University

A majority of the farmers who have been visiting KGKs were observed to be in low to medium age group (78.00%), possessed medium to high education (76.00%), low to medium land holdings (80.00%), resorted to self farming (86.00%), with a membership status of one or more organization (60.00%).

The study indicated that more than three-fourth of the farmers (78.00%) did visit KGKs at least once or more than that in a period of two months. More than half of the farmers (56.00%) visited KGKs to get information on the latest technology for crop or livestock production (Table 5.24).

The utilization of different DESs stationed at KGKs by farmers in descending order was found to be Plant Pathology (78.00%), Agronomy (72.00%), Entomology (68.00%), Vegetable Crops (56.00%), Farm Management (52.00%), Horticulture (42.00%), Soil Science (40.00%), Agricultural Engineering (14.00%), Animal Sciences (26.00%), Veterinary Sciences (48.00%) and Home Science (6.00%).

The study indicated that a sizable number of respondents found their visits highly beneficial (46.00%) and half of them as beneficial.

A significant majority of the farmers (84.00%) indicated that DESs visited their villages and more than three-fourth of them (76.00%) contacted the DESs of their own as and when they visited their villages.

A significant majority of the farmers (84.00%) confirmed having organized extension activities in their villages by their respective KGKs.

The study indicated that the formal ssources of information were reported to be ADOs (80.00%) and DESs (70.00%). The informal sources of information progressive farmers (64.00%), dealers (32.00%), neighbours (20.00%) and relatives (2.00%).

The study indicated that almost half of the farmers had visited university campus at Hisar on the occasion of Kisan Mela and Farm Darshan.

The study indicated that a sizable number of respondents (46.00%) had subscribed for 'Haryana Kheti' at one stage or the other on yearly membership basis. There were only 26.08 per cent respondents who had sought solutions of their problems through 'Pathak Parsonouttri' column in 'Haryana Kheti'.

The study indicated that majority of the farmers who have been visiting KGKs did perceive and acknowledged appreciable help on various aspects related to crop and livestock production as well as poultry farming from the KGKs (Table 5.27).

The farmers who visited KGKs expected the provision to them of some inputs, implements or planting material (Table 5.28).

The study indicated that a significant majority of the farmers demanded required quantity of seeds for demonstration plots (84.00%), provision for refresher course for crop production on scientific lines (80.00%), provision for implements required for crop production at sowing time (72.00%), etc., (Table 5.29).

7.4.5 Suggested Modifications in Technology Transfer Model

Based on the findings of the study some suggestions have been given to make improvements in the existing HAU model of technolgoy transfer. The need for a coherent strategy for implementing the extension activities in the field and for efficient feedback for resolving the farmers problems, building up of an effective extension administration, provision for adequate infrastructural facilities and making KGKs a popular institution for farm advisory service constituted priority areas for improving over the existing situation.

IMPLICATIONS

Based on the findings of the study, some important implications have emerged which might help in providing some insight into the intricacies involved in the transfer of technology and bringing about necessary improvements in the technology transfer system. In this connection, the following issues need attention:

1. The existing organizational set up does not provide adequate input of extension education in the process of technology transfer. With the exception of Joint Director (Extension) all the senior positions (Director of Extension Education, Associate Director Farm Advisory Service, Associate Director Training) have been occupied by scientists from disciplines other than Extension Education. Some other positions like that of Audio-Visual Specialist and Exhibition Officer are also being manned by individuals who have no training in Extension Education. Obviously, this will have retrograte effect in the transfer of technology.

2. Majority of the HODs, ULESs and DESs have shown interest in training in extension methodology. It implies that they do feel the necessity of this training. The sooner this training is organized, the better it would be. In tune with their interest in training in extension methodology, such a training should become a regular feature and integral part of the policy framework.

3. The expansion in extension positions coupled with sufficient increase in budget provisions for the Directorate of Extension Education and at the same time obervations of HODs, ULESs and DESs about the shortage of budget for POL, TA and DA, demonstrations, etc., implies lack of mutual discussion on budgetary provisions. Rather than asking for more budget the issues should be clear in realistic terms so that uncalled for demands can be avoided.

4. Different concept of Extension Education by different subject-matter HODs implies the lack of correct concept of Extension Education. Obviously, this calls for measures directed to develop correct concept of Extension Education among all concerned.

5. None of the HODs having opted for complete control of extension staff with the DEE implies a weak link between the Directorate of Extension Education and the subject-matter departments. There should be a firm policy for strengthening these linkages (Table 5.1).

6. The lack of audio-visual aids and lack of interaction between research and extension staff as pointed out by HODs (Table 5.4) on the one hand will bring down the quality of extension activities and on the other hand will weaken the timely feedback of farming problems.

7. The study has indicated that annual programme of work was being prepared in each of the discipline for undertaking extension activities in the field. But it further indicated different ways of preparing the annual programme of work. It implies lack of standardized procedures for the purpose and in case these already existed were not being practised. It calls for reinforcing the standardized procedures for preparation of the annual programme of work.

8. The utilization of one-third time by ULESs as a matter of routine in teaching or research and some other activities is in tune with the prescribed norms. But keeping in view the

increasing needs of technology transfer, the norms of utilizing one-third time for teaching and research should not be considered as obligatory. For the reason that the farmers have now become comparatively more receptive to the technology and seek for newer information with interest, the ULESs as well as DESs should work towards refining and modification of technology transfer techniques.

9. A large number of problems have been pointed out by ULESs and DESs to their seniors (Table 5.7 and 5.11). In the absence of proper feedback and follow up action this exercise may not be of much use. Obviously, it implies creation of a cell in the Directorate of Extension Education to monitor follow up action in such cases and similar other cases. Wherever feasible and considered appropriate, quantitative and qualitative assessment of the work done should be made.

10. A number of working facilities have been demanded by ULESs (Table 5.9). An examination of the facilities seems to imply that their working conditions need improvement in several ways. On the one hand, they need to be given some working facilities to promote their efficiency in their day-to-day work, on the other hand they should be given adequate administrative powers to have control over their respective DESs so that the later do listen to them and act on their instructions.

11. The percentage of DESs with research experience was found to be higher as compared to those with teaching experience (Table 5.10). It shows that the faculty members on teaching

side had lesser occasions for transfer to extension. In view of this, there is need for creating a balance when effecting transfers so that proportionate number of faculty members get transferred from teaching and research to extension so as to strike a reasonable balance of experience.

12. The inadequate library facilities at KGKs implies lack of due attention to this important aspect. To keep DESs well informed, theyshould have access to recent literature.

13. The limiting of undertaking of extension activities to merely three villages as at present implies repeated contacts with more or less the same clientele. In case the policy of limiting the work to three villages at a time is to be retained, the villages need to be changed after a reasonable period.

14. A sizable number of HODs have pointed out inadequate interaction between extension and research staff as well as inadequate coordination of the extension staff with government field functionaries (Table 5.16). It seems to imply either the lack of initiative on the part of the concerned extension faculty members to interact with research scientists or vice-versa. Possibly, this may be better achieved if a definite policy framework with due approval of Extension Education Advisory Committee. Likewise, all the problems related to interaction between the concerned units should be discussed and sorted out in EEAC. The meetings of EEAC should be regularly organized and presence of all concerned both within and outside the university should be ensured in the meetings.

15. The functionaries of the Department of Agriculture have acknowledged both direct and indirect help from the university. At the same time, they have a number of expectations from the university. To be realistic, their expectations, particularly, supply of package of practices in a concised form, training facilities in extension methodology and audio-visual aids, developing of low cost technology for small and marginal farmers, etc., are some of the expectations which need to be met with meticulous planning.

16. Majority of the farmers visiting KGKs belong to low to medium age group. It implies the interest of young farmers in crop and livestock farming. Efforts should be made to sustain their interest in farming.

17. Farmers' perception on problems in availing the services of KGKs indicate several types of difficulties encountered by them. Their perception of help available from KGKs (Table 5.27) and problems perceived by them in availing the services of KGKs need to be examined and discussed at appropriate forum for resolving the perceived problems as far as possible.

Suggested Areas For Future Research

Based on the study in hand, the following areas have emerged for research in future:

1. Study on the analysis of linkages between HODs and ULESs, HODs and DESs, HODs and DEE on independent basis in each case.

2. Study on the extent of percolation of information from subject-matter departments to the concerned units of the Directorate of Extension Education, and the follow up action taken thereon.

3. Study on the time-use analysis of ULESs, DESs and Coordinators.

4. Study on the facilities required by ULESs and DESs which would promote efficient performance on their part.

5. Study on the overall impact of the extension activities carried out by the Directorate of Extension Education all over the State of Haryana.

6. Study on the constraints encountered in the feedback of problems encountered by the farmers in the application of the recommended technology.

7. Study on the factors which dissuade scientists from taking up extension jobs in the field.

8. Study on the communication pattern practised in the Department of Agriculture for transfer of recommended practices to the field functionaries.

9. Study on the training needs of ULESs and DESs.

10. Study on the infrastructural needs at 'Krishi Gyan Kendras' for executing extension education programmes efficiently in villages.

11. Study of the factors which contribute to weakening of the linkages in the technology transfer model.