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### Workshop on Socioeconomic Research

Review and planning workshop on socioeconomic research was organized by Socio-economic and Agriculture Research Policy Division (SARPOD) on 15 July 2007 at Khumaltar, Lalitpur.

In the workshop, different research programs/activities accomplished under the Division were presented. Socioeconomics of upland rice production, constraints and opportunities; Socioeconomic study on trout fish farming in Nepal: A case study of Kathmandu-Trishuli-Rasuwa corridor; Marketing opportunity for aromatics rice in western hills of Nepal; Study on onion production and market potentiality; Perception of community based maize seed producing farmer and local maize seed growers;

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### National Commercial Agricultural Research Programme Formed

Nepal Agricultural Research Council (NARC) with a view to overcome the challenges in commercialization of agriculture through focused research from policy to technologies has established the National Commercial Agricultural Research Programme (NCARP) based in Agriculture Research Station, Pakhribas. The objectives of the Program are: to increase productivity of selected commercial commodities from 5 to 15 per cent by 2015; to provide need based quality service in cost basis; to conduct research on actual cost basis. The program has an strategy to explore oppurtunities with emphasis on public private partnership; design a communication approaches to disseminate NCARP's objective and working modalities; explore research opportunities with national and international organizations; establish incentive package for employee motivation and resources; identify the alternate use of available resources for higher farm income; establish and support alliances with stakeholders and interested groups. The NCARP has envisaged products/services on agronomy, horticulture, plant protection, soil,

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### New Wheat Variety Released

Variety Approval, Release and Registration Sub-Committee under National Seed Board that met on 13 September 2007 officially released and registered a new wheat variety named 'WK 1204' along with complete technology package for farmers to cultivate in different agro-ecological condition in mid and high hills of Nepal.

The new wheat variety released after 9 years' research and experiments at different research stations, disciplinary divisions and farmers' fields at different locations coordinated by Agri-Botany Division of NARC. The variety has been recommended to cultivate in mid and high hills in irrigated, partially irrigated and rain-fed conditions in cropping patterns: Rice-Wheat, Maize-Wheat, Potato-Wheat, Fallow-Wheat, Soybean-Wheat, Cowpea-Wheat, and rice-Wheat+Mustard.

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Photo: Rajendra Bajracharya

## NARC Scientist Awarded

Dr. Hira Kaji Manandhar, Senior Scientist in Nepal Agricultural Research Council (NARC) was awarded an Honour in recognition of his scientific work in agriculture by Tribhuvan University, Institute of Agriculture and Animal Science on the occasion of Golden Jubilee Year of Agriculture Education in Nepal on 22 August 2007.

A total of six persons were awarded for their outstanding contributions in different fields: Science & technology, Politics, Agri-business, NGO movement, Agri-extension and Community development.

Dr. Manandhar is currently working as Chief of Planning Division of NARC.

## NARC Scientist in Media

- Mr. BMS Basnet about rice research on Ujjyalo 95 FM Radio on 7 July 2007
- Mr. BMS Basnet, Dr. Madhusudan Prasad Upadhyaya, Mr. Ashok Mudvari, and SR Gupta about 'Gene Bank' on Channel Nepal TV on 16 July 2007
- Dr. Keshav Babu Koirala about agriculture research on HBC 94 FM Radio on 27 July 2007
- Mr. BMS Basnet about rice on HBC 94 FM Radio on 28 sept 2007

## MoU on TV Agriculture Program Signed

Agriculture Information and Communication Centre (AICC) of Ministry of Agriculture and Cooperatives, NARC and Nepal Television signed Memorandum of understanding on 18 September 2007 for the daily Agriculture Program on NTV for FY 2007/08.

## NARC Scientist at Cornell

Mr. BMS Basnet, Principal Scientist and Chief of Communication, Publication and Documentation Division of NARC gave a talk program on Rice and Rice-based research and development in Nepal at Cornell University, USA on June 18, 2007.

## TALK PROGRAMS

- 'Status of Agriculture in Korea' by Dr. Woon Goo Ha, Senior Scientist, Yeongnam Agricultural Research Institute, NICS, Rural Development Administration, Republic of Korea on 10 August 2007.
- 'Agro-biodiversity Management in India' by Dr. Satyabir Mallik, Scientist, Indian Council of Agriculture Research (ICAR) on 30 Sept 2007

## Hill Maize Research Project Partnership Meeting

Hill Maize Research Project (HMRP) Partnership Meeting was held at Regional Agriculture Research Station, Nepalgunj on 24-25 September 2007.

The meeting had the objective to review maize research and dissemination activities and achievements and workout for future strategies in maize research and development. In the meeting, efforts and findings of maize and maize-based research, deliverable achievements, seed production and marketing from research stations and divisions of NARC located in different eco-regions of eastern, central and western hills of Nepal were reviewed. Status, challenges and opportunities of maize production were presented by representatives from District Agricultural Development Offices in Dailekh, Surkhet, Doti, Dang, Jajarkot, Rukum, Rolpa, Salyan, Pyuthan, Dadeldhura, Darchula, Baitadi, Kalikot and Bajura districts. Efforts, contribution and experience of different NGOs, CBOs, Cooperatives, Agro-entrepreneurs, and Community-based Seed production groups were also presented.

The role of Regional Agricultural Directorate for coordinating DADOs for dissemination of technologies, Regional Seed Lab for quality control and seed certification were discussed in the meeting. The meeting divided in two groups namely for assured seed supply and sustainable marketing system/ model of maize seed production; and Future strategies for maize based technology generation and

dissemination for improving food security in the hills had discussions and presentations.

Discussions on new varieties and New Crop Management (Profitable, Intercropping) were also held. Some of the new promising varieties are Ganesh-1, Ganesh-2 (for high altitude); Deuti, Shitala, Mana-3, HPY, HPW, Pool 45, Resunga Composite, QPM IS99 TLYQ-AB (For Midhills); Arun-2, Arun-4, Arun IEV, Pool 15 (Yellow), Pool 17 (White) (For Low altitude). Maize + Soybean, Maize+ Groundnut, Maize + Ginger, Maize+ Tomato, Maize+ Radish are main inter cropping system. Seed priming, cover compost with black plastic etc. are new technologies presented in the meeting.

The meeting was participated by representatives from CIMMYT, NARC and its Divisions, Department of Agriculture, Regional Directorate of Agriculture, Regional and other Agricultural Research Stations, different district agriculture development offices, regional labs, different NGOs, CBOs and Private entrepreneurs.

The Hill Maize Research Project is in the final year of The Second Phase (2003-2007) that has the objective to develop a sustained capacity within the National Maize Research Program of NARC and in its research partners to generate maize production technologies; to develop technologies with and for poor maize farmers; to facilitate the dissemination of appropriate maize technologies through extension, communication and input delivery channels.

## NARC Line Directors Appointed

Some change in the NARC central management team took place in July 2007 with appointment of new line directors for Planning and Coordination, Crop and Horticulture Research, Administration and Finance. Currently the management team consists of:

Dr. Nanda Prasad Shrestha	- Executive Director
Mr. Parshuram Lal Karna	- Director, Planning and Coordination
Dr. Dil Prasad Sherchan	- Director, Crop and Horticulture Research
Dr. Adarsha Pradhan	- Director, Livestock and Fisheries Research
Mr. Bir Bahadur Maharjan	- Director, Finance
Dr. Krishna Prasad Poudel	- Director, Administration

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The wheat variety: "WK 1204" was developed from a single cross of SW89.3064/STAR with a pedigree CMBW91Y01627S-13Y-010M-010Y-010M-3Y-OM at Agri-Botany Division of NARC and was evaluated in series of trials in experimental as well as farmers' field conditions in hills of Nepal. It was also tested in different international disease screening nurseries in Pakistan, Australia and Kenya. It has been found resistant to yellow rust.

This variety has been released as it is high yielding and has stable performance across diverse environments and is resistant to yellow rust. It has wider adaptability, high tillering potential, good plant type, compact and parallel spike and high number of grains/spike. It has large sized, elliptical shaped, amber coloured, grain with high protein content along with good bread and chapatti making qualities. It has a yield potential of (8,889kg/ha and maturity period of 169 days from seeding.

The meeting of the Sub-Committee was held under the Chairmanship of Dr. Nanda Prasad Shrestha, Executive Director of NARC.

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socio-economics, agro-forestry, and livestock/fisheries. Currently there are a dozen of projects on seed production, tea and cardamom, chilli, citrus, allo, flower and livestock/poultry under commercial research program.

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Phone: 026-540310, 540381, 690503  
Email: arspakh@gmail.com

### **Bhutanese Scientist visited NARC**

Dr. Tashi Dorji, Program Director, Council for RNR Research of Bhutan visited NARC at Khumaltar, Lalitpur on 24 September 2007.

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Socioeconomic of coffee production: A case study of Sirubare of Syangja and Digam, Thanapati of Gulmi District; Socioeconomics of piggy business in Nepal; Awareness about agricultural publications vis-a vis newspaper reading habit of rural farmers of Nepal; Gender involvement in maize production; A case study of Bageshwori of Bhaktapur and Sukranagar of Chitwan District; Impact assessment of Outreach research sites under ARS (Horticulture) Malepatan, Pokhara; Gender involvement in rice production: A case study of Gauribas VDC Mahottari were research programs conducted in the last years.

SARPOD was established as a Division under NARC in 2005 with the responsibility of leading, coordinating and implementing a substantive work programmes on NARC socioeconomics & policy research and analysis in agriculture and to facilitate work through network of social scientists scattered in different NARC research divisions, programmes and Regional Agricultural Research Stations (RARSS).

Major focus area of the Division are to:

- Conduct demand driven socio-economics, agricultural marketing and policy research and analysis in agriculture
- Support NARC research planning in prioritizing research programs, projects and allocating resources in priority sectors based on the criteria of economic efficiency, social equity, gender and poverty focused research dimensions
- Conduct ex-post studies to evaluate uptake, adoption and impact of agricultural research
- Make contribution to the formation of a nation's agricultural research policy and strategy as guided by the national policies and NARC Vision (2021).

### **IRRI Contributed Books/ Documents to NARC**

International Rice Research Institute (IRRI) donated books/documents to CPDD IRRI-Nepal Office on 10 July 2007.

## **INTERACTION ON YELLOW RUST DISEASE MANAGEMENT**

With the view to share experiences on the Yellow Rust disease in wheat that has wide spread in the last years, and to make out strategies to manage the disease, an interaction program was organized by Plant Pathology Division of Nepal Agricultural Research Council (NARC) on 15 October 2007.

The interaction program was attended by NARC scientists and chiefs of different disciplinary divisions, agriculture development experts from Department of Agriculture, CIMMYT-Nepal, Agriculture development officers and plant protection officers from District Agriculture Development Offices in Kathmandu, Lalitpur and Bhaktapur, Chiefs of Agriculture Service Centres in Kathmandu, Lalitpur, Bhaktapur and Nuwakot. Interactions on the issues related to the incidence of disease and its management were held. Information about the disease and research activities conducted were reviewed

The yellow rust disease that passes through air has come as a serious disaster to wheat crops in the last few years especially in the hilly regions of country. Now the farmers seem to seek alternatives to wheat crops. By now, some varieties have been found resistant to yellow rust disease that are Pasang Lhamu and WK1204. The new resistant varieties of wheat have given hope to get rid of the disease and make farmers continue wheat planting.

Wheat is one of the most important cereal crops ranked third in production and consumption in Nepal. It is grown in all the regions of the country.

### **RP Sah Technical Advisor to Minister**

Dr. Ram P Sah, Principal Scientist in NARC has been appointed as Technical Advisor to Minister for Agriculture and Cooperatives.

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## INDUCTION OF DOUBLED HAPLOID FROM F<sub>1</sub> HYBRID

- Bindeswor P Sah, Ph.D.

Rice is the staple food for more than half of the world's population. During the last four decades, development of high yielding varieties (HYVs) was in focus for increasing production. Rice production and productivity has now reached to plateau. In one hand, with limited scope for expansion of rice area, increasing cost of inputs and environmental concerns, the task of further increase in rice production now is much more complex. In other hand, growing population demand more rice for their consumptions. To achieve further elevation in rice yields, the options are to explore the possibility of modifying the present high yielding plant type and the physiological processes, which need longer duration and high cost. Another approach is through exploitation of hybrid vigour or heterosis employing biotechnological tools.

It was only by 1973 that China could successfully exploit hybrid vigour by developing commercial rice hybrids, which yielded 20 per cent higher than semidwarf rice varieties (Yuan, 1994). These hybrids could not be adapted in other tropical environments either because of their susceptibility to diseases, pests and their poor grain quality or unavailable freely. This clearly indicates that hybrids should be developed in the background of well adapted cultivars. Despite of the yield advantage of hybrids over pure lines, development of rice hybrids in tropics is still limited. Owing to the technical limitations in hybrid seed production and their high cost, poor grain quality, the hybrid rice technology is still facing problems for large-scale adoption by farmers. If recombinants that perform as good as hybrid can be identified, the problems with hybrid rice technology can be circumvented through biotechnological approach.

The theory of dominance for explaining hybrid vigour expressed in F<sub>1</sub> hybrids assumes that useful characters are determined by dominant genes. If the parents contribute different dominant genes, then all or most of them are expressed in the F<sub>1</sub> hybrid. It is because of the deleterious recessive genes of one parent are hidden by the dominants of the other parent and hybrid, therefore, appears to be vigorous i.e., F<sub>1</sub>s prove to be always better than their either parents.

Breeding of self-pollinating crops like rice aims to produce pure lines (homozygous for most of the favourable genes) with manifested superior phenotype. Normally, in case of rice, 6 to 7 cycles of selfing are needed to arrive at homozygous for most of the traits. Induction of doubled haploids through anther culture can shorten the required cycles of selfing to bring to homozygous considerably and it is possible to obtain pure lines in less than two generations.

Guha and Maheshwari (1964) were the first to demonstrate microspore derived haploid plant of *Datura innoxia* through anther culture. In case of rice, haploids were first produced through anther culture by Niizeki

and Oono (1968) and closely followed by Nishi and Mitsuoka (1969) in Japan, and Guha *et al.* (1970) in India. The advantages of doubled haploid breeding through anther culture in rice and other crop plants have been extensively reviewed (Raina, 1997; Oono, 1997; Niizeki, 1997). Niizeki and Oono (1971) reported that plantlets, irrespective of their ploidy level, obtained through anther culture in rice are from microspores, since anther tissues, in contrast to pollens, are incapable of producing callus. Chen (1986b) studied the plants developed through anther culture of F<sub>1</sub> plants and estimated that about 90 per cent of the diploids obtained through natural doubling in the process of anther culture were homozygous. Aruna and Reddy (1988) could also obtain very high frequency of diploids (71.42%) as compared to the lower frequency of haploids (28.58%) through anther culture. The frequency of spontaneously doubled haploids i.e. homozygous diploids is high and the colchicine is also a highly hazardous chemical, the application of colchicines for doubling the chromosome number of haploids is, therefore, not necessary.

China exploited the technique of anther culture for the first time. Varieties developed through anther culture yielded as high as 10.3 t/ha under moderate fertility. Chen and Li (1978) were the first to apply anther culture technique for fixing hybrid vigour. From several thousand of pollen derived plants from the hybrids, they found some lines more ideal than the hybrid itself. In general, their yields were proved to be higher than those of local standard cultivars. In India, promising lines with earliness and high yield potential were selected from a large number of plants derived from anther culture of several crosses (Raina, 1993). Parag 401, a semidwarf rice variety developed through anther culture, was released for cultivation on irrigated vertisols of Maharashtra State (Patil *et al.*, 1997). The magnitude of hybrid vigour that could be realized in doubled haploid lines (homozygous) derived through anther culture of hybrid rice has been evaluated and found to retain more or less the same level of vigour as the hybrids (Bong and Swaminathan, 1995).

Immature anthers containing haploid microspores when cultured at a particular stage of development and under appropriate conditions, result in cell division and growth of gametophytic cells leading into plant regeneration. The anther culture system has the unique property of allowing male gametes of a heterozygous parent to develop into haploid or homozygous diploid lines in a single generation as against several generations of selfing. Thus it has become handy to evolve varieties in the shortest period with less effort.

Donor plants as a source of anthers and media for culturing anthers and continuous supply of nutrients for the responding microspores are the two basic requirements in anther culture. Fresh seeds of F<sub>1</sub> hybrids were carefully germinated in petriplates and the

seedlings were transferred to pots. Twenty five day old seedlings were transplanted in well-puddled and levelled field supplied with 60 kg N, 30 kg P<sub>2</sub>O<sub>5</sub>, 30 kg K<sub>2</sub>O and 20 kg ZnSO<sub>4</sub> per hectare adopting single seedling per hill with a spacing of 20 cm between rows and 15 cm between plants within the row. Need based plant protection measures were adopted to keep the crop free from insects, diseases and weeds.

Boots at two to three days prior to the emergence of panicles containing maximum number of florets with pollen at mid to late uninucleate stage were cut at the bottom of primary tillers and collected in polythene bags during 7 to 9 am. These boots were cleaned by wiping with muslin cloth moistened in 70% ethanol and wrapped in a paper towel followed by aluminium foil prior to transfer to refrigerator for cold shock treatment at 10±1°C for 10 days.

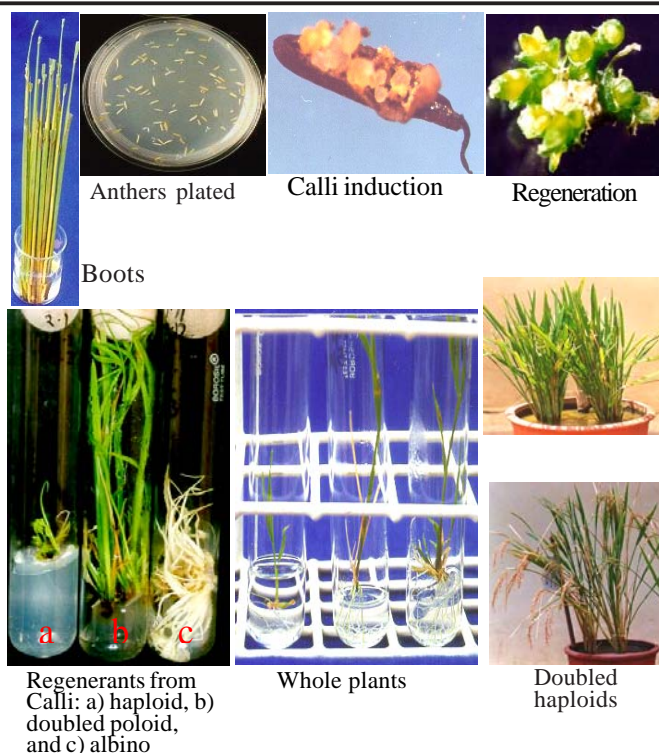
The anther culture was carried out with four different kinds of media for callus induction, regeneration, rooting and hardening liquid nutrient solution with pH 5.8. The culture medium was sterilised by autoclaving at 121°C for 20 minutes. Intact boots were dipped in 70% ethanol for about 10 seconds. The panicles were then removed from boot leaves. A cluster of 3 to 5 spikelets attached to the secondary and/or tertiary rachis were cut from the primary rachis, specially from the middle part of the panicle and collected in a beaker containing 5-10 ml distilled water. The second step of sterilisation was performed under aseptic condition inside a Laminar Air Flow Clean Air Work Station (LFWS). The selected spikelets were wrapped loosely in a muslin cloth and immersed in 70% alcohol for a minute followed by transferring in to 0.1% mercuric chloride solution (w/v) for 20 minutes then thoroughly washed four times with sterile water.

Florets near the base just below the position of anthers were cut with the help of scissors and collected in a sterile petri-plate lined with three or four layers of filter paper. Using a fine forceps each of the excised florets was then lifted by its distal end and gently tapped on the rim of the petri-plate so that all the anthers were dropped on the surface of the medium. Plated anthers were transferred to the dark for incubation at 26±1°C.

Anthers started callusing after four weeks of incubation. Embryogenic calli of 2 to 3 mm in size emerging from the plated anthers were transferred to regeneration medium in culture tubes. Cultures were maintained in the room temperature of 26±1°C provided with 16 hours of light and 8 hours of dark period. Green and albino plantlets were differentiated which were then transferred to rooting media (½ MS without hormones) under same temperature and light conditions. Well rooted plants were then transferred to liquid nutrient solution and allowed to grow for one week. Later they were shifted to pots and grown in glasshouse.

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## Tannin Contents in Nepalese Fodder Tree Foliages

- C. R. Upreti, Ph.D

Tree foliages are important source of cellulosic biomass for feeding ruminants such as cattle, buffalo, sheep, and goats in Nepal. Tree foliages are rich source of protein for these animals particularly for winter season. But majority of these fodder trees are source of anti-nutrient chemical known as tannin. The most important property of tannins is their strong affinity for enzyme and feed protein. At higher levels (5–9%) tannins become highly detrimental as they reduce digestibility of fibre in the rumen by inhibiting the activity of bacteria and anaerobic, high levels also lead to reduced intake; above 9% tannins may become lethal to an animal if these feedstuff solely fed. Tannin content in tree foliage, therefore, potentially alter the use and value of tree foliages and may at times be responsible for the poor utilization of such forages by ruminant livestock. Therefore, it is important to know about the level of tannin content in the fodder trees for safer feeding to the ruminant animal. In this connection, an assessment was made to find out the level of tannin in different fodder tree, shrubs and climbers found in different agro-ecological zones of Nepal.

Among the analyzed fodder species, total 15.5 % are high in tannin content (more than 5% on DM basis). Out of 226 fodder tree, shrubs, and climbers, 35 were found to be containing more than 5 % tannin that are low in feeding quality. Some of the high tannin containing fodders are: Aderi (7.40), Amala (9.10), Kathe Bar (11.60), Kaiyo (6.2), Kimbu (15.10), Khursane (6.70), Gaya (6.64), Ghiu Chiuri (8.13), Jamuna (5.47), Theki Pipal (8.70), Darne Kanda (12.70), Darim Pate (12.18), Tilke (8.3), Budo Dhangero (12.80), Dhangero (14.60), Patle Katush (6.8), Pithari (7.40), Pipli (5.8), Phapar Pate (8.15), Bad Kamle (16.60), Barro (12.50), Bhote Katus (5.65), Bhir Tanki (5.10), Mahele (5.0), Musa Kane ( 5.05), Pokhare (5.3), Rato nagari (6.10), Rato Tilke (5.80), Rato Kapase ( 6.40) Lati Kath (9.0), Lekali Darim (5.60), Sal (8.97), Sati Bayar (5.40), Saj (13.0), Higuwa (6.60).

As shown above, Bad Kamle, Kimbu, Dhangero, Budo Dhangero, Darne Kanda, Saj and Barro contains very high amount of tannin and therefore farmers are suggested not to feed these tree foliage in excess to their animal. Any forage containing more than 5 % tannin should not be fed as sole diet to the ruminants as it depresses on the utilization of protein and are even toxic to the ruminant. Out of 226 fodder tree, shrubs, and climbers analyzed, 191 (84.51%) found to contain less than 5% tannin, hence are safe for feeding animals.

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*A detail information about the tannin content of tree foliage of Nepal can be obtained from the book "Nutrient content of Feeds and Fodder in Nepal" by Chet R. Upreti and Basanta K. Shrestha. Pub. NARC 2006. pP 2, 45-85.*

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## Workshop on Supply Chain Management in Horticulture Commodities

Horticulture Research Division (HRD) of Nepal Agriculture Research Council (NARC), Centre for Plant and Water Science (CPWS), Central Queensland University (CQU), Rockhampton jointly organized a five-day training workshop on International Supply Chains for Horticultural Produce; with focus on Quality Assessment and the use of Multivariate Statistical Analysis. The training was held on 17 - 21 July 2007 at Soil Science Division/NARC, Khumaltar. The programme was partially supported by the ATSE CRAFT FUND, Australia and CAMO Software India Pvt. Ltd, Bangalore, India.

The broad objectives of the training workshop were:

- To deepen understanding of 'produce quality', particularly with reference to horticultural produce, understand the theory of advanced technologies being developed for assessment of such attributes and develop practical skills in assessing the attributes;
- To develop an understanding of the dominant supply chains for international marketing of horticultural produce, and their required specifications/quality control, including overview of QC structures such as the Codex Alimentarius, EureGap and USID product specification guidelines.

The training was focused on:

- Supply chain management of perishable commodities particularly on fruits and vegetables. Training was also included some successful story of Australian horticulture industries in mango, citrus and grapes, and the consequent changes to production practice, transport (cool chain) and marketing.
- Quality control/regulatory systems in use for fresh fruit, eg Australia and Newzealand product specification guideline, EureGap, USDA supply chain standard and product supply chain in Thailand.
- A rapid marketing appraisal survey was designed to understand the present marketing system, government regulatory and policy frame for marketing fresh fruit and vegetables in Kathmandu.
- Standard quality control assessment procedures.
- Advanced, non-invasive quality control procedures: e.g., NIRS, NMR, acoustic, X-ray.
- Sampling technique and sample preparation,
- Use of chemo-metric techniques using multivariate analysis, for example using The Unscrambler packager.
- Introduction to a specific (multivariate) statistical analysis tool, for use in R&D programs.

The training coordinator and presenter Mr Phul Subedi, delivered and highlighted the importance of the training in the context of Nepal that has just entered as a member country in WTO. A total of 14 scientists from different horticulture research Stations in the country participated in the training.

The chemometric software "The Unscrambler 9.7 version for multivariate data analysis was found as useful statistical package to the attribute correlation in complex biological research.

## TRAINING WORKSHOP/SEMINARS, STUDY & TOURS (July - September 2007)

S.N.	Name	Position	Subject	Duration	Country
<b>TRAINING</b>					
1.	Mr. Harish Chandra BK	A-5, RARS, Nepalgunj	Office procedures & management	July5-Aug.7	Nepal
2.	Ms. Sarmila Piya	T-6, ARS, Pakhribas	Postharvest management in ornamental plant	Aug.16-26	India
3.	Mr. Ram Bahadur Rana	T-6, ABD, Khumal	Cryopreservation technology in cattle/buffalo/ goat/sheep	Aug.11-31	India
4.	Mr. Ram Babu Paneru	S-2, Entomology, Khumal	Pesticide residue extraction & analysis procedures	Aug.15-Sept.14	India
5.	Mr. Devendra K. Chaudhary	S-4, NRRP, Hardinath	Rice breeding course	Aug.20-31	Philippines
6.	Mr. Gopal Pradhan	S-4, Agri-Engineering	Training workshop on enhancing the access of agro based SMEs to the regional market through trade fair promotion	Sept.22-25	China
7.	Mr. Ram Narayan Chaudhary	S-4, NORP, Jitpur	Fifth International symposium on new crops and uses	Sept.3-4	U.K.
8.	Ms. Deepa Singh	S-1, HRD, Khumal	Training on plant breeding & seed production	Sept.3-28	Sweden
9.	Ms. Nita Pradhan	S-1, FRD, Godawari	Application of molecular genetic techniques in aquaculture and inland fisheries management	Sept.9-17	India
10.	Mr. Madan Raj Bhatta	S-4, NWRP, Bhairawa	Wheat breeders course	Sept.1-Oct.12	Mexico
11.	Mr. Man Bahadur Shrestha	T-7, Food Tech. Khumal	Biotechnology application on food industries	Sept.21-Nov.15	China
12.	Mr. Bal Krishna Joshi	S-1, Biotechnology unit	Biotechnology application on food industries	Sept.21-Nov.15	China
13.	Dr. Madav Joshi	S-4, Agronomy, Khumal	Regional training workshop on weed risk assessment	Sept.25-28	India
14.	Mr. Ramnath Jha	S-1, RARS, Tarahara	International Training and Research Course	Nov.13	India
<b>MEETING/SEMINAR</b>					
15.	Mr. Shreemat Shrestha	S-4, Agri-Engineering	International seminar on enhancing of conservation agriculture techniques in Asia & the Pacific	Oct.24-26	China
16.	Dr. Dil Prasad. Serchan	Director/Crop & Hort.	Steering Committee Meeting	Oct.8-10	India
17.	Dr. Kiran Raj Joshi	S-4, NARC	Study meeting on quality & safety standards	Nov. 14 -16	China
<b>OBSERVATION TOUR</b>					
18.	Mr. Mishree Lal Sah	S-4, RARS, Parwanipur	Observation visit of national Research Institute	Sept.20-30	India
19.	Dr. Shidhi Ganesh Shrestha	Sr. Economist, MOAC	Observation visit of national Research Institute	Sept.20-30	India
<b>STUDY</b>					
20.	Mr. Kul Prasad Aryal	S-1, CPPD, Khumal	PhD in Agriculture Economics	Aug.5 (3 yrs.)	UK
21.	Mr. Babu Ram Pandey	T-6, NMRP, Rampur	M.Sc. in Plant Breeding & Genetics	Aug.14 (2 yrs.)	Korea
22.	Dr. Doj Raj Khanal	S-4, AHRD, Khumal	PhD in Animal Health	Sept.12 (2 yrs.)	USA
23.	Mr. Pramod Sharma	S-1, Soil Science, Khumal	M.Sc. in GIS	Sept.17 (2 yrs.)	Netherlands
24.	Mr. Roman Karki	T-6, Food Tech., Khumal	M.Sc. in Food Technology	Sept.20 (2 yrs.)	Belgium
25.	Mr. Ram Kumar Basnet	T-6, Agri-Botany, Khumal	M.Sc. in Plant Breeding & Genetics	Sept.2 (2 yrs.)	Netherlands
26.	Mr. Gopal Prasad Lamsal	T-7, FRS, Trishuli	MSc. Ag. in Fishery	Aug.18 (2 yrs.)	Rampur
27.	Mr. Umesh Adhikari	T-6, NWRP, Bhairahawa	M.Sc. in Ag Engineering	Aug.28 (2 yrs.)	Thailand

Source: Training and Scholarship Division, NARC

# PHOTO GALLERY



Mr. Bhola Man Singh Basnet meeting with AIT President, Prof. Said Irandoust at AIT on Sept 6



Presentation by BMS Basnet on Rice and Rice-based research and development in Nepal at AIT on Sept 9



AIT President, Prof. Said Irandoust in Nepal meeting with officials at MoAC exploring for collaboration



Basnet observing Rice Gene Bank at IRRI Philippines on Sept. 3



Contributing countries in International Gene Bank at IRRI, Philippines



BMS Basnet at IRRI Headquarters, Philippines on August 31



Basnet with Dr. Gene P. Hettel, Editor and Head, Communication and Publications Services, IRRI on Sept.3



Basnet with Dr. Benito S. Vergara, Author of 'A Farmer Primer on Growing Rice' at IRRI on Sept. 4



TEEAL staff briefing the new LANTEEAL to Mr. Basnet at Cornell University, USA on June 18 2007

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To

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