NARC NEWSLETTER
कृषि मूलश्च जीवनम्
A Quarterly Newsletter of Nepal Agricultural Research Council (NARC)
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Ambassador of Israel Visited Khumal Research Complex

His Excellency Ambassador of Israel to Nepal Mr. Dan Stav visited Khumal Research Complex of NARC on 21 August 2009 and had discussion with NARC management and scientists. The visit was started with a brief Welcome Program held at the meeting hall of Soil Science Division by National Agriculture Research Institute (NARI). Executive Director, NARC Directors, NARI and NASRI Directors and other scientists working in Khumal complex were present in the program. Director of NARI Mr. Srikrishna Adhikari presented the welcome address. In this occasion status of research and technology generation in the field of agriculture and livestock was presented by NARI and NASRI director respectively. Addressing the scientific gathering Israeli Ambassador expressed the view that all the technologies and knowledge generated through agriculture research should be delivered to farmers for production enhancement. He added that Israel has developed many agricultural innovations that can be equally useful for Nepalese farmers as well. Israeli Ambassador showed the interest of further strengthening Nepal-Israel collaboration on agriculture research from year 2010, the 50th anniversary of the establishment of Nepal-Israel diplomatic relationship. Israeli Ambassador also made a observational visit to research farms and different disciplinary divisions under NARI and NASRI and held discussion with concerned scientists.

H.E. Israeli Ambassador Mr. Dan Stav visiting research farm at Khumaltar with NARC management and scientists

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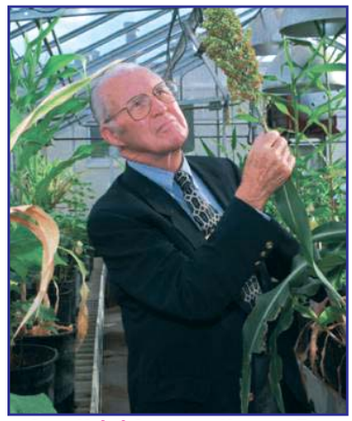
Tribute to Late Nobel Laureate Norman E. Borlaug



Late Nobel Laureate Norman E. Borlaug

National Agricultural Research Institute of NARC organized a program to mourn the demise of Late Nobel Laureate Norman E. Borlaug at Khumaltar on 15 September 2009. Agricultural scientists from NARC and different non-government organizations participated in the program. Executive director of NARC, Dr. Bharatendu Mishra was also present in the program and spoke the

Nepal Agricultural Research Council (NARC) is an apex body for Agricultural Research in the country with the goal of poverty alleviation and sustainable growth of agriculture production through technology development in different aspects of agriculture.

Bourlaug's contribution in the green revolution. Chief of the Agriculture Botany Division, Mr. Asok Mudwari highlighted the lifetime achievement of Dr. Bourlaug. ***"Dr. Bourlaug lives in heart of Nepalese scientists and we continue to cherish his values and try to follow his footsteps. We NARC family express our respectful tribute to Dr. Bourlaug. May his soul rest in peace***".

Agricultural scientist Norman E. Borlaug, the father of the "green revolution" who won the Nobel Peace Prize for his role in combating world hunger and saving hundreds of millions of lives, died on 12 September 2009 in Texas, USA at the age of 95. The Nobel committee had honored Borlaug in 1970 with Nobel Peace Prize for his contributions to high-yielding crop varieties and bringing other agricultural innovations to the developing world.

A central figure in the "green revolution", **Norman Ernest Borlaug** was born on a farm near Cresco, Iowa, to Henry and Clara Borlaug on March 25, 1914. After completing his secondary education in Cresco, Borlaug enrolled in the University of Minnesota where he studied forestry. Immediately after receiving his Bachelor of Science degree in 1937, he worked for the U.S. Forestry Service in Massachusetts and Idaho. Returning to the University of Minnesota to study plant pathology, he received the master's degree in 1939 and the doctorate in 1942. From 1942 to 1944, he was a microbiologist in the du Pont de Nemours Foundation where he was in charge of research on industrial and agricultural bactericides, fungicides, and preservatives. In 1944 he accepted an appointment as geneticist and plant pathologist and involved in the task of organizing and directing the Cooperative Wheat Research and Production Program in Mexico. This program, a joint undertaking by the Mexican government and the Rockefeller Foundation, involved scientific research in genetics, plant breeding, plant pathology, entomology, agronomy, soil science, and cereal technology. Within twenty years he was spectacularly successful in finding high-yielding dwarf and disease-resistant wheat varieties.

During the 1950s and 1960s, public health improvements fueled a population boom in underdeveloped nations, leading to concerns that agricultural systems could not keep up with growing food demand. Borlaug's work often is credited with expanding agriculture productivity at the moment such an increase in production was most needed. There he used innovative breeding techniques to produce disease-resistant varieties of wheat that produced much more grain than traditional strains. He and others later took those varieties and similarly improved strains of rice and corn to Asia, the Middle East, South America and Africa. "More than any other single person of his age, he has helped to provide bread for a hungry world," Nobel Peace Prize committee Chairman Aase Lionaes said in presenting the award to Borlaug. "We have made this choice in the hope that providing bread will also give the world peace."

"We must recognize the fact that adequate food is only the first requisite for life. For a decent and humane life we must also provide an opportunity for good education, remunerative employment, comfortable housing, good clothing and effective and compassionate medical care" Dr. Borlaug said in his Nobel acceptance speech. In Mexico, Borlaug was known both for his skill in breeding plants and for his eagerness to labor in the fields himself, rather than to let assistants do all the hard work. He remained active well into his 90s, campaigning for the use of biotechnology to fight hunger and working on a project to fight poverty and starvation in Africa by teaching new drought-resistant farming methods. "We still have a large number of miserable, hungry people and this contributes to world instability" Borlaug said in May 2006 at an Asian Development Bank forum in the Philippines. "Human misery is explosive, and you better not forget that."

In 1963, Borlaug was named head of the newly formed International Maize and Wheat Improvement Center, where he trained thousands of young scientists. Borlaug retired as head of the center in 1979 and turned to university teaching, first at Cornell University and then at Texas A & M, which presented him with an honorary doctorate in December 2007. In 1986, Borlaug established the Des Moines, Iowa-based World Food Prize, a $250,000 award given each year to a person whose work improves the world's food supply. He also helped found and served as president of the Sasakawa Africa Foundation, an organization funded by Japanese billionaire Ryoichi Sasakawa to introduce the green revolution to sub-Saharan Africa. In July 2007, Borlaug received the Congressional Gold Medal, the highest civilian honor given by US Congress

Workshop on Animal Genetic Resources

Animal Breeding Division of NARC organized one-day interaction workshop on Conservation and Utilization of Indigenous Animal Genetic Resources (AnGR) on 13 July, 2009 (29 Ashad, 2066) at Khumaltar under the chairmanship of Mr. Shanbhu Bahadur Pande, Director National Animal Science Institute (NASRI). The workshop was attended by more than 30 scientists from NARC, Department of Livestock Services and Universities. Three technical papers on status of Animal Genetic Resources with the perspective of research, extension and education were presented in the workshop.

After through discussion and receiving comments from reviewer and participants recommendations were made for conservation and promotion of indigenous Animal Genetic Resources.

Based on the papers presented in this workshop status of indigenous animal genetic resources is given below:

Status of indigenous cattle breeds

Breeds	Identification	Characterization	Status
Lulu	Yes	Phen+Chr+DNA	Population declining
Achhami	Yes	Phen	Endager
Siri	Yes	Phen	Extinct
Khaila	Yes	Phen	Population declining
Terai	Yes	Phen+ Chr	Normal
Pahadi	Yes	Phen	Normal
Yak	Yes	Phen+Chr+DNA	Population declining

Status of indigenous buffalo breeds

Breeds	Identification	Characterization	Status
Lime	Yes	Phen+Chr	Population declining
Parkote	Yes	Phen+Chr	Normal
Gaddi	Yes	Phen+Chr	Population declining

Status of indigenous Goat breeds

Breeds	Identification	Characterization	Status
Terai	Yes	Phen+Chr	Pure line hardly exists
Khari/Hill	Yes	Phen+Chr	Normal
Sinhal	Yes	Phen	Population declining
Chyangra	Yes	Phen	Population declining

Status of indigenous Sheep breeds

Breeds	Identification	Characterization	Status
Lampuchhre	Yes	Phen	Endagered
Kage	Yes	Phen	Population declining
Baruwal	Yes	Phen	Normal
Bhyanglung	Yes	Phen	Population declining

Status of indigenous pig breeds

Breeds	Identification	Characterization	Status
Hurrah	Yes	Phen+Chr	Population declining
Chwanche	Yes	Phen+chr	Normal
Bampudke	Yes	Phen	About to be extinct

Status of indigenous Poultry breeds

Breeds	Identification	Characterization	Status
Sakini	Yes	Phen	Normal
Dumse (Puwank Utle)	Yes	Phen	Endangered
Ghanti Khuile	Yes	Phen	Endangered

The workshop also came-up identifying constraints on management of animal genetic resources and made following recommendation on this issue:

Recommendation:

- Wide variation within a breed for important traits needs to be utilized in breeding program
- Value addition for positive attributes such as Badel, Hurrah, Sakini through breeding approach
- Comprehensive characterization including DNA level
- Awareness programmes to promote AnGR need to be launched
- Tools of biotechnology including reproductive physiology technology need to be used in AnGR
- AnGR should be incorporated in academic courses.

NARC Scientist obtained PhD

Mr. Bhim Bahadur Khatri, Senior Scientist (S-4) in Nepal Agricultural Research Council (NARC) obtained his Ph. D. degree on Horticulture from University of Tasmania, Tasmania, Australia in August 2009. In his Ph. D. course Dr. Khatri did thesis on **"Potato tuber anatomy and susceptibility to common scab (*Streptomyces scabiei*)"**. The relationship between tuber structural properties and susceptibility to common scab disease infection was selected as the focus of the investigations. The objectives of the investigations were to document the development of lenticels, considered by many authors to be the entry point for the pathogen into the tuber, and describe the variability in lenticel number and structure under different growing environments, develop novel methods to inoculate tubers at different stages of plant or tuber development to allow detailed examination of tuber structural features at the time of exposure to the pathogen and changes after infection, and determine the disease infection window for common scab during which tubers and regions on tubers are most susceptible to infection, assess relationships between tuber structural attributes and infection rates in tubers of different cultivars, ages and growing environments and to determine if the structural features contribute to tuber susceptibility to infection. To achieve the objectives of the project, he conducted five studies in laboratory, glasshouse under soil-less (hydroponics) and pot conditions and in farmers' field conditions during 2005 to 2008.

In the findings, many tuber anatomical and morphological features (stomata and lenticel number, periderm thickness, lenticels structure, pattern of suberisation and internode expansion rate of the tubers) were found to be highly variable under different field and glasshouse conditions, and significant variability within crops/treatments was also observed. Lenticel diameter was determined by growing environment. Given the sporadic nature of occurrence of common scab symptoms within and between crops, the observations of variation in structural features was sufficient to indicate that anatomical features could be playing a role in susceptibility to infection. Detailed study of lenticel development on tubers revealed that two pathways of lenticel formation exist in potato tubers. Formation of lenticels from stomata, the commonly accepted pathway in the literature, occurred on all tubers, but when tubers expanded rapidly, lenticels were found to have also formed directly from peridermal rupture. No relationship

was found between tuber anatomical features at the time of exposure to the pathogen and either incidence or severity of common scab symptoms. The window of tuber susceptibility to common scab disease was shown to vary with the season or conditions under which the plants were grown. Basal internodes in older tubers, which were less susceptible to common scab infection, were shown to rapidly produce additional phellem cell layers when exposed to the pathogen, whereas the same internodes in young, susceptible tubers were slower to respond. A pathogen-induced suberin deposition in phellem and filling cells was observed in less susceptible tubers in addition to the increased thickens and number of cell layers in the phellem. This result suggested that the phellem layer rather than the lenticels may be involved in common scab infection. This project has contributed to a better understanding of the role and relationships between pre-existing or induced structural features of the tuber and common scab disease infection of potato.

Dr. Khatri had his MS degree on Horticulture from Benguet State University, La Trinidad, Benguet, Philippines on 1995 and B. Sc. Agriculture degree from Institute of Agriculture and Animal Science, Rampur Chitawan on 1982. He has been continuously working in the field of Horticulture Research and Development for more than 26 years in the country.

Papaya Cultivation Technology

J.N. Chaudhari, Y.R. Pandey, K.P. Paudyal

Introduction

Papaya (*Carica papaya L.)* is one of the important fruit crop grown in warm climate of the world. Papaya fruit is utilized in variety of ways. Ripe fruits are eaten as fresh. It is also used in making jam, soft drink, ice-cream, sweets etc. Being rich in Vitamin A, papaya fruit is useful to prevent blindness and also used for curing Jaundice. Unripe fruits are used for vegetable and pickle. Papaya fruit is also reported to have many medicinal values. Latex of papaya can be used in making papain enzyme which is very costly and utilized in medicine, gum, tenderization etc. Realizing these facts, the consumption of papaya is increasing day by day whereas the demand is not fulfilled by our own production.

According to government statistics, in 2007/08 nearly 30 thousand tons of papaya fruit was produced in Nepal from 2100 hectares of land with low productivity (14.1 mt/ha). In Nepal, papaya is mostly grown in homestead scale. Very few farmers of Nawalparasi, Chitwan and Dadhing districts are growing papaya in the commercial scale. In fact, market surveys have revealed that about 80% of papaya fruits sold in Kathmandu market are supplied by imports from India (Himal Khabar Pratica, Mewa Ko Arthasastra, Bhadra 1-15, 2061 and market surveys). Beside, Nepal is also importing large quantity of processed fruits in forms of Jam, Jelly and papain. Heavy dependency on import for papaya is mainly attributed to lack of technology on varietal and management practices. Considering these facts RARS Lumle has recently developed papaya production technology by conducting researches in Nawalparasi, Dhading and Kaski district from 2006 to 2008.

Suitable varieties

A number of hybrid and open pollinated varieties from India, China and local collections were evaluated for their performances. From the variety evaluation trial conducted at farmers' fields three varieties namely Farm Selection-1, Pusa Dwarf and Red Lady have been selected based on their yield, fruit quality and resistance ability to virus diseases. Farm Selection 1 was the highest yielder and seed of this variety is easily available in the local markets. Similarly, Pusa Dwarf was found better for higher yield, dwarfness and seed of this variety is also easily available in the ago-vets. This variety is resistant to viral diseases up to some extent. Red Lady genotype is gynodieocious line which has capacity of bearing fruits in 99 percent plants and gave very good yield, fruit quality (uniform ripening, tight outer layer surface, good storability, marketable size, taste, red pulp and sweet) and also was virus diseases resistant to some extent.

Fruit characteristics of selected varieties

Variety	Days to flowering	Days to first harvest	Marketable Fruit Yield (t/ha)	Fruit size (Kg/fruit)
Red Lady (Gynodieocious line)	219	324	111.0	1.27
Pusa Dwarf (Dieocius line)	231	344	114.7	1.77
Farm Sel-1 (Dieocious line)	230	347	117.4	2.66

Planting distance

Appropriate planting densities using various planting distance was investigated on recommended varieties. Based on this investigation a planting geometry of 1.90 x 1.9 m^2 was found to be appropriate and recommended for sustainable papaya production in Nepal.

Fertilizer requirement

Application of N: P: K at the rate of 250:250:400 gm along with 15 kg FYM/pit was found to be appropriate to get maximum yield from recommended papaya varieties.

Farm Selection-1

Pusa Dwarf

Red Lady

Economic of papaya cultivation

Economics of farmers' existing practices was compared with that of improved papaya production technology through field studies. Collected information were subjected to economic analysis to find out whether or not the improved papaya production technology is profitable in papaya growing pockets of Nepal. As presented in following table improved package of the practice for papaya cultivation developed by Lumle was found economically profitable to farmer's existing practice.

Comparative benefit of improved and papaya production practice over farmers practice (Rs/Katha)

Particular		Farmer's practice	Improved practice
Input	Nursery	1322	1847
	Field preparation, Planting	4995	4850
	Field management	3840	4450
	Harvesting	2275	2500
	Land rent	1140	1140
	Total production Cost	13572	14787
Output	Total income	42960	59840
	Net income	29388	45053
Cost Benefit ratio		3.17	4.05

International News

***Light and Photosynthesis Help Bacteria Invade Fresh Produce*:** Researchers from the Agricultural Research Organization at the Volcani Centre in Israel and Tel-Aviv University examined the role that light and photosynthesis might play on the ability of salmonella bacteria to infiltrate lettuce leaves via stomata. Sterile lettuce leaves were exposed to bacteria either in the light, in the dark, or in the dark after 30 minutes of exposure to light. Incubation in the light or pre-exposure to light resulted in aggregation of bacteria around open stomata and invasion into the inner leaf tissue. In contrast, incubation in the dark resulted in a scattered attachment pattern and very little internalization. The researchers believe that the increased propensity for internalization in the light may be due to several factors. First, in the absence of light plants enter a period of dormancy, where stomata are closed and no photosynthesis takes place. In the light, the stomata are open. Additional findings also suggest that the bacteria are attracted to the open stomata by the nutrients produced during photosynthesis which are not present in the dark. The result has important implications for both pre- and post-harvest handling of lettuce and probably other leafy vegetables. The capacity to inhibit internalization should limit bacterial colonization to the phylloplane and consequently might enhance the effectiveness of surface sanitisers.

Source:Applied and Environmental Microbiology, October, 2009

***Naringenin in Citrus Fruits Helps Combat Hepatitis C Infection*:** A compound that naturally occurs in grapefruit and other citrus fruits may be able to block the secretion of hepatitis C virus (HCV) from infected cells, a process required to maintain chronic infection. A team of researchers from the Massachusetts General Hospital Centre for Engineering in Medicine reports that HCV is bound to very low density lipoprotein (vLDL, so called 'bad' cholesterol) when it is secreted from liver cells and that the viral secretion required to pass infection to other cells may be blocked by the common flavonoid naringenin. Grapefruit's bitter taste is caused by the presence of the flavonoid naringin, which metabolized into naringenin, an antioxidant previously reported to help lower cholesterol levels. The experiment confirmed that the naringenin also reduces the secretion of HCV from infected cell lines and showed that the compound inhibits the mechanism for secreting a specific lipoprotein that binds HCV. This work presents the possibility that non-toxic levels of a dietary supplement, such as naringenin could effectively block HCV secretion. (Source: Hepatology February, 2008)

Genome of Phytophthora infestans Sequenced: A large research team has decoded the genome of *Phytophthora infestans*, the notorious organism that causes blight disease in potato and tomato. The pathogen has an exquisite ability to adapt and change and that's what makes it so dangerous. The research conducted at

Genome Sequencing and Analysis Program at the Broad Institute of MIT and Harvard reveals that the organism boasts an unusually large genome size. It is more than twice that of closely related species and has an extraordinary structure. This feature appears to enable the rapid evolution of certain genes, particularly ones involved in plant infection. Even more surprising than the genome's large size is the source of added bulk. There are not more genes per se, but a huge amount of repetitive DNA. In fact this type of DNA accounts for about 75% of the entire *P. infestans* genome. The researchers gained some key insights into the potential advantages of carrying this glut of repetitive DNA. They made three critical observations:

- The *P. infestans* genome is comprised of alternating repeat-rich (and gene poor) regions and gene-dense regions.
- The gene-dense regions are shared among other Phytophthora species, preserved over million years of evolution, whereas the repeat-rich regions are undergoing relatively rapid changes.
- The repeat-rich regions contain fewer genes compared to other genomic regions. But those genes they do contain are ones that play crucial role in plant infection.

Source: ***Nature*** **- 461 (9 September 2009)**

New plant hormone discovered: Researchers from the Wageningen University Laboratory of Plant Physiology and an international team of scientists have discovered a new group of plant hormones, the so-called strigolactones. This group of chemicals is known to be involved in the interaction between plants and their environment. The scientists have now proven that strigolactones, as hormones, are also crucial for the branching of plants. The discovery has importance in development of cut flowers or tomato plants with more or fewer branches. These crops are of major economic and social importance worldwide. Strigolactones are of major importance to the interaction between plants and symbiotic fungi, for example. These fungi live in a symbiotic relationship with plants. They transport minerals from the soil to the plant, while the plant gives the fungi sugars 'in return. It has also been shown that the plants are capable of transporting strigolactones internally and that the chemicals work at very low concentrations. Cut flower varieties and potted plants with either more or less branching may have special ornamental value, while crops with more or less branching may be beneficial in cultivation. Tomato plants in which less branching occurs can benefit the greenhouse horticulture, for instance.

Source: **Nature 455 (11 September 2008)**

TRAINING, WORKSHOP / SEMINARS, STUDY AND TOURS
(July – September, 2009)

S.N.	Name	Position	Office	Subject	Duration	Country
1	Mrs. Sudha Sapkota	S-1	NARC	Seminar on food safety	15 July – 11 August	China
2	Mr. Bahuri P. Chaudhary	S-4	NORP, Nawalpur	Seminar on food safety	15 July – 11 August	China
3	Mr. Man B. Shrestha	T-7	FRU, Khumal	Wheat quality	3 – 31 August	Mexico
4	Dr. Daya N. Pokharel	T-7	NWRP, Bhairahawa	Wheat Improvement	3 August – 24 Oct	Mexico
5	Mr Bimesh Man Sakh	S4	NPRP	Flower Technology	13 Aug – 21 Sept	China
6	Mr Amar B Pun	T6	HRD, Khumaltar	Flower Technology	13 Aug – 21 Sept	China
7	Mr. Resham B. Amagai	T-6	ABD, Khumal	Bio safety : Hazard ID and risk assessment	16-26 August	Norway
8	Mr. Netra P. Wasti	S-4	AND, Khumal	Developing economic opportunity for mountain areas	17 July – 1 August	Italy
9	Mr. Shambhu B. Pandey	Dir.	NASRI	Quality milk production & dairy value chain	15 - 21August	USA
10	Mr. Ananda Gautam	S-4	AEU, Khumal	The livelihoods & ecosystem service in the Himalayas	21 August	Nepal
11	Mr. Ram Baran Yadav	T-7	NRRP, Hardinath	Rice Breeding Course	24 August – 8 Sep.	Philippines
12	Mr. Mishri Lal Sah	S-5	NRRP, Hardinath	Workshops on IFAD TAG 706 & CURE	24 – 27 August	Philippines
13	Dr. Bhartendu Mishra	ED	NARC	Workshops on IFAD TAG 706 & CURE	24 – 27 August	Philippines

S.N.	Name	Position	Office	Subject	Duration	Country
14	Mr. Hari K. Shrestha	S-4	NARC	Workshops on IFAD TAG 706	24 – 27 August	Philippines
15	Mr. Purushottam Jha	S-1	NRRP, Hardinath	Phynotyping for host plant resistance to sheath blight	31 August – 1 Sept.	India
16	Mr. Surya N. Sah	S-4	NRRP, Hardinath	Regional training on hybrid rice cultivation	24 August – 4 Sept.	China
17	Mr. Babu Ram Pandey	T-6	NMRP, Rampur	Hybrid maize breeding for rainfed environment	31 August - 5 Sept.	India
18	Dr. Dil Bdr. Gurung	S-4	NMRP, Rampur	Breeding maize hybrids for rainfed environment	31 August - 5 Sept	India
19	Mrs. Neeru Tripathi	T-5	NMRP, Rampur	Breeding maize hybrids for rainfed environment	31 August – 5 Sept.	India
20	Mr. Bandhu Raj Baral	T-6	NMRP, Rampur	M.Sc. Soil Science	17 August, 09 – 16 August, 2011	Netherland
21	Mr. Buddhi B. Achhami	T-6	NMRP, Rampur	M.Sc. Plant Science	17 August, 09 – 16 August, 2011	Netherland
22	Mr. Dev Nidhi Tiwari	T-6	RARS, Lumle	M.Sc. Plant Science	20 August 09 - 19 August 2012	Netherland
23	Mr. Madan Raj Bhatta	Coordinator	NWRP, Bhairahawa	Planning Meeting of the USAID famine funds seed multiplications project	1-5 September	Syria
24	Mrs. Sarala Sharma	S-4	PPD, Khumal	Planning Meeting of the USAID famine funds seed multiplications project	1-5 September	Syria
25	Dr. Neena Amatya	T-6	ABD, Khumal	Molecular Tehniques & Bio-teconolgy	1 September 2009– 28 February 2010	China
26	Mr. K.K. Shrestha	Chief	PFRD, Khumal	The regional consultation workshop on developing climate change adaptation strategy for the Hindu Kush Himalaya rangelands	17-18 September	Nepal, ICIMOD
27	Mr. P.L. Karna	Director	NARC	Observation visit Program	7-11 September	India
28	Mr. Narendra Lakhe	A-6	NARC	Observation visit Program	7-11 September	India
29	Mr. Chudamani Bhattarai	T-6	FRU, Khumal	Seminar for inspection & quarantine officials of product quality & food safety	10-30 September	China
30	Mr. Ganesh C.Thakur	T-6	NRRP, Hardinath	Experimental design & data analysis	7-11 September	India
31	Mr. Ram Bhagat Chaudhari	T-6	RARS, Nepalgunj	Experimental design & data analysis	7-11 September	India
32	Mr. Manoj Thakur	T-7	CPDD, Khumal	Training workshop on the KOHA under INASP/PER program	9-11 September	TU Nepal
33	Mr. Surendra Prd Shrivastav	S-4	RARS, Parwanipur	Regional workshop on nutrient use efficiency in Agriculture	9-11 September	India
34	Mr. Jit Narayan Chaudhary	T-6	RARS, Lumle	Training in graft technology of tomato & eggplant	14-15 September	Nepal
35	Mr. Chandra Bdr. G.C.	T-6	RARS, Lumle	Training in graft technology of tomato & eggplant	14-15 September	Nepal
36	Mr. Ram Kumar Basnet	T-6	Agri-Botany Division	PhD	1 September 2009 – 30 March 2011	New Zealand
37	Mr. M.L. Sah	Coordinator	NRRP, Hardinath	International network for genetic evaluation of rice (INGER) technical advisory committee (TAC)	10-11 September	China
38	Dr. Jwala Bajracharya	S-4	Agri-Botany Division	FOSRIN Meeting	11-15 September	India
39	Mr. Nawal Kishor Yadav	S-4	Agronomy Division	FOSRIN Meeting	11-15 September	India
40	Dr. Sambhu Prd. Khatiwada	Chief	ARS, Pakhribas	Workshop of the regional project on sifting cultivation	15-18 September	Nepal

Visit of Director General of CIMMYT International to Nepal

Dr. Thomas Lumpkin, Director General of CIMMYT, as well as Dr. Marianne Banzinger, Deputy Director General for Research and Partnerships-CIMMYT, visited Nepal from 28th July to 3rd of August 2009. Accompanied by Drs. G. Ortiz Ferrara (HMRP Team Leader and CIMMYT Country Representative), Dr. T.P. Tiwari (Agronomist in HMRP) and Dr. Arun K. Joshi (Sr. Regional Wheat Breeder), they visited NARC's Management as well as Khumaltar and RARS-Lumle research stations. They also had the opportunity to visit the Community Based Seed Production (CBSP) groups collaborating with the SDC-funded project (HMRP) in the districts of Palpa and Baglung. Dr. B. Mishra, Executive Director of NARC, and all his management Directors gave a comprehensive explanation about NARCs' research mandate, objectives, activities and the progress made in developing new technologies that have helped increased food production and livelihoods of resource- poor farmers over the past 25 years.

CIMMYT Delegation attending an interaction meeting at the Agriculture Botany Division, Khumaltar.

"NARC and CIMMYT have maintained a strong partnership in wheat and maize research over the past 25 years and we look forward to continue and further strengthen this collaboration" said Dr. Thomas Lumpkin. He and Dr. Banzinger visited the new Plant Genetic Resources building under construction at Khumaltar. They also had interaction meetings with soil scientists, plant breeders, agronomists and pathologists of Khumaltar and RARS-Lumle stations. During their stay in Nepal, they also paid a courtesy visit to the Secretary of Agriculture as well as several important donors in the community.

Skill Development Expo-2009

Skill Development Expo- 2009 was held on 9-11 September 2009 (24-26 Bhadra, 2066) at United World Trade Centre, Kathmandu with the theme "Skill for Employment". The Expo jointly organized by Federation of Nepalese Chamber of Commerce and Industries (FNCCI) and Council for Technical Education and Vocational Training (CTEVT) had the objective to show the technologies, skills and opportunities available within the country and abroad particularly to the youth of the country who are in need of employment or self-employment.

Visitors observing NARC's stall at Skill Development Expo.

The exhibition was participated by several government and non-government organizations and private sector entrepreneurs involved in knowledge and skill development representing agriculture, forestry, alternate energy, cottage industry, training institutions, foreign employment agencies etc. Representing the agriculture sector, Nepal Agricultural Research Council (NARC) had participation in the Expo displaying recent technologies and publications of NARC on crops, horticulture, livestock and fisheries sector. NARC stall was visited by more than 2000 people mainly students, traders, farmers, policy makers and academicians. Various publications of NARC were also distributed to free of cost during exhibition. The exhibition was helpful to convey the message to many youths of the country that self employment can be created through the use of scientific innovation into practice meaning that scientific innovation can be converted into employment.

Youth unemployment is one of the major problems of Nepal. Latest statistics shows that nearly 11 million workforces are available in Nepal and it is increasing at the rate of 2.6 percent per year. This means that about 300 thousands youth force are added every year in the labor market of the country. According to the statistics of National Planning Commission the unemployment rate in Nepal is about 2.2 percent.

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