



A Quarterly Newsletter of Nepal Agricultural Research Council (NARC)

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Agriculture Sector Coordination Workshop

In an initiation to implement NARC's new strategic plan and to maximize impact of coordination and linkage, the Stake-holder Coordination Workshop was organized at Godavary on 6-8 November 2004.

The workshop had the objectives to enhance coordination and linkage among key agriculture sectors/organizations; to analyze the nature of the problems limiting coordination and linkage; to identify and prioritize research and development partners for maximum use of technology and resources through effective coordination and networking; and establish multi-sectoral networking mechanism for enhancing agricultural productivity and livelihoods of the rural poor.

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Agro-Expo 2004: Inaugurated by Her Majesty the Queen



Her Majesty Queen Komal Rajya Laxmi Devi Shah observing NARC's stall

With the slogan "Commercial Agriculture-Nation's Future", a five-day Agribusiness Fair "Agro Expo 2004" was held in Kathmandu from 25-29 November 2004. The Fair inaugurated by **Her Majesty Queen Komal Rajya Laxmi Devi Shah** at a special function had different 150 stalls held by research and development organizations, agro enterprises, agricultural industries for exhibition and sale of agriculture technologies and products. The Fair was largely participated by different organizations, firms and industries from all over the country. NARC actively participated in the Fair to exhibit its works and technologies developed with special focus on IYR 2004. The Fair was organized by Agro Enterprise Centre (AEC) of the Federation of Nepalese Chambers of Commerce and Industries (FNCCI) with the Marketing Development Directorate and Directorate of Livestock Marketing Promotion, Floriculture Association Nepal and Seed Entrepreneurs Association of Nepal as co-organizers.

International Year of Rice-2004 in Nepal

A special function to mark the International Year of Rice (IYR) - 2004 in Nepal was organized at NARC, Singhadurbar Plaza, Kathmandu on 17 December 2004. The Function chaired by Hon'ble Member of National Planning Commission, Dr. Harikrishna Upadhyaya was inaugurated by the then Hon'ble Minister for Agriculture and

Cooperatives, Mr. Hom Nath Dahal. At the function, the then Minister of Agriculture and Cooperatives honoured International Rice Research Institute (IRRI), Nepalese scientists, Late Dr. Gyan Lal Shrestha and Late Krishna Prasad Dhungana (posthumously) and Farmer,

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RWC-NTCC Meeting

Meeting of the National Technical Coordination Committee (NTCC) of the Rice-Wheat Consortium was held on 22 December 2004 in Kathmandu .

In the meeting chaired by Mr. Dularchan Sahu Pathik, Executive Director of NARC, the rice-wheat research works and activities under Rice-Wheat Projects in Nepal was briefly presented by Dr. Surya Laxmi Maskey, the National Rice-Wheat Project Coordinator and Director of Crop & Horticulture Research, NARC.

Reports on Rice-Wheat activities in three different sites: Naldung, Bhairahawa and Parwanipur were presented respectively by Ms. Shanti Bhattarai, Mr. Janmejaya Tripathi and Mr. Ganesh Sah. Review and discussion on rice-wheat system related issues and the achievement were undertaken.

The meeting was attended by NARC directors and scientists NARC and CIMMYT.

Regional Workshop on ICT Roadmap

SAARC Agricultural Information Centre (SAIC) organized a workshop on "Attempts and Success of ICT Roadmap to Villages in SAARC Countries" on 6-8 October 2004 in Dhaka, Bangladesh. The workshop had the objective to gather lessons from the attempts and successes of ICT roadmap to villages in SAARC Countries and to identify and share best practices from cases which help promote ICT implementation in the villages of SAARC Countries.

The workshop was participated by governing Board Members of SAIC, IT expert and representatives from government and non-government organizations of SAARC countries. Mr. BMS Basnet, Chief of Communication, Publication and Documentation Division of NARC participated in the workshop.

The workshop closely appraised the ICT initiatives in SAARC Countries and reviewed the status of ICT implementation in SAARC Countries. It worked out to identify expertise, suitable technologies, institutional/partnerships arrangements and sustainability etc. and to draw blueprints for ICT integration for development in the villages of SAARC Countries.

National Workshop on PRISM

National Workshop on PRISM (Project and Research Information System Module) coordinated by the Rice-Wheat Consortium (RWC) was held in Kathmandu on 6-8 October 2004.

The three-day Workshop was organized by Communication, Publication and Documentation Division of NARC and RWC in cooperation with WIS International, Netherlands that brought together agriculture researchers and development workers from different institutions and Ministry of Agriculture and Cooperatives including some NGOs for enhancing capacity of web-based information management system and making out practical outputs.

The purpose of the workshop was to enhance the use of project related information system - PRISM as a tool for enhancing agricultural production and sustainable use of natural resources in the country. It focused on bringing available data on project, expert and organization in the country through the Project and Research Information Systems Module (PRISM).The participants had hands-on practical session on database management and

quality control measures and the roles of the focal points at the organizational and national levels. It focused on improving data-management skills, ensuring quality control and information use .

The PRISM is a shared regional platform for information on projects, organizations, experts and outputs of research (e.g. publications, models etc). The system has specific RWC-IGP functionality and classifications on top of the general functionality and common clearing mechanism in WISARD, the Web-Based Information System on Agricultural Research for Development. It is system based on decentralized management intended to support stakeholders in the region. It is managed by organizational and national focal points who check the data for quality at the organization and national levels before being cleared for display.

The Workshop was participated by 20 experts in agriculture research and development and trainers from RWC, New Delhi and WIS International, Netherlands.

SAIC Delagate Visited NARC

Deputy Director of SAARC Agricultural Information Centre (SAIC) Mr. WAG Sisira Kumara visited Communication, Publication and Documentation Division, NARC, Khumaltar on 18 November 2004.

Mr. Kumara was in Nepal from 15-20 November on a visit for monitoring and backstopping of SAIC's program implemented in Nepal. He also visited Agriculture Information and Communication Centre of Ministry of Agriculture and Cooperatives; Nepal Television, and different directorates under Department of Agriculture and Department of Livestock Services.

JAAN's Seminar on IYR 2004

A special seminar on rice cultivation was organized by JICA Alumni Association of Nepal (JAAN) to mark the International Year of Rice 2004. In the Seminar Mr. BMS Basnet shared his experience on rice cultivation in Japan and Nepal through his presentation entitled "Rice Production in Nepal: A lesson from Japan".

The seminar was attended by the then Hon'ble Minister Agriculture Mr. Hom Nath Dahal, Secretary of MOAC; Japanese Ambassador to Nepal Mr. Tsutomu Hiraoki; JAAN's President and Secretary, Ministry of Home Affairs, Mr. Chandi Prasad Shrestha and about one hundred JAAN members and invitees.

Agriculture News on Nepal Television

Weekly Agriculture News from Nepal Television has been initiated for the first time since 1 October 2004.

Daily agriculture Program on Nepal Television is in regular operation for the last seven years with a joint cooperation between Ministry of Agriculture, Nepal Agricultural Research Council and Nepal Television. It was started in 1998 under an MoU to launched the program to enhance

the knowledge level of the framers in agricultural technologies. The impact of the agriculture program on farming communities has been studies.

The agriculture news is telecast every Friday evening that covers new innovative information, major events on agriculture and related sector, farmers' success stories etc.

Poly-House for Plant Disease Research

The poly-house established by International Maize and Wheat Improvement Centre (CIMMYT) for the study of wheat disease was handed over to NARC with a special function on 1 December 2004 at Khumaltar.

In the function, the wheat disease situation in different parts of the country and the importance of the poly-house in the screening of disease resistant varieties of wheat was highlighted. The poly-house was handed over to the Chief of Plant Pathology Division of NARC, Mr. Tej Kumar Lama by CIMMYT Wheat Pathologist, Dr. Etienne Duvellier in the presence of Director of NARC Dr. Nanda Prasad Shrestha. The poly-house was established to study and select resistant varieties of wheat; however it can also be used for disease research in other plants.

During the occasion Ms. Sarala Sharma, Plant Pathologist at the Division presented an overview of rust work and importance of installation of poly-house.

The incidence of Yellow Rust Disease in wheat has severely affected production of wheat in different hilly regions of Nepal in recent years. Use of wheat varieties resistant to the disease can only help to get rid of the problem. The poly-house is useful in screening resistant varieties beforehand. The released varieties- RR-21, Nepal 297, and BL 1066 have been found susceptible to the disease whereas BL 2089, WK 1182, and WK 1204 are found to be resistant.



Poly-house at Plant Pathology Division, Khumaltar

NARC Annual Review Workshop

With an objective to review the annual research programs conducted by NARC in Fiscal Year 2003-2004, Annual Review Workshop was organized at NARC, Singh Durbar Plaza on 12 October 2004.

In the program, annual progress of the NARC was presented by Mr. S N Vaiddhya, Chief, Monitoring and Evaluation Division of NARC for review and discussion. The workshop was participated by Executive Director and Directors of NARC, Director Generals of Department of Agriculture and Department of Livestock Services, Joint Secretary, Monitoring and Evaluation Division of Ministry of Agriculture and Cooperatives, scientists and representatives from NARC and Ministry of Agriculture and Cooperatives.

The Workshop was chaired by DS Pathik, Executive Director of NARC.

Wheat Seed Distribution

With the view to motivate farmers' participation in research and promote wheat production and to make a strategic plan to extend the participatory varietal selection (PVS) programs to other different areas through research and extension agencies, wheat seeds were distributed to farmers amidst a special function at NARC, Khumaltar, Lalitpur on 18 October 2004.

Based on the participatory variety selection (PVS) at different places in the valley for last some years, seeds of the variety "BL 1473" already released and "WK 1204" in the process of release were distributed a packet of 15 and 10 kilograms each to fifty five farmers from Kathmandu, Lalitpur and Bhaktapur districts.

Secretary of Ministry of Agriculture and Cooperatives, Mr. G P Pandey, the Chief Guest to the function distributed the wheat seed packets to the farmers.

During the occasion, the Secretary, Director General of Department of Agriculture, Mr. S S Shrestha, CIMMYT Scientist and Representative, CIMMYT- South Asia Regional Office (SARO) Dr. G O Ferrera, Director of Crop and Horticulture Research Dr. S L Maskey, Director of National Agricultural Research Institute (NARI), Mr. Bimal Kumar Baniya, NARC Scientist and Chief of Agriculture Botany Division, Mr. Ashok Mudwari spoke on the importance of the program. Farmers also expressed their experiences and reactions on the PVS program.

At the functions, Farmers, Agriculture Development Officers, representatives from Ministry of Agriculture, Department of Agriculture, Scientists/Researchers from NARC and CIMMYT were present.

The Function was chaired by Mr. D S Pathik, Executive Director and Mr. BMS Basnet conducted the Program.

The wheat is third important APP prioritized cereal after rice and maize in Nepal and is grown in all 75 districts of the country summer wheat is limited to some high hill areas such as Mustang and Dolakha districts. Improved wheat varieties cover 93% of the total wheat area in the country. Participatory Varietal Selection is in practice that helps to faster dissemination of farmer preferred varieties.

A total of 28 wheat varieties along with package of practices have been so far released in Nepal and some resource conservation technologies like zero-tillage, minimum tillage, combined harvester etc. have been developed for wheat crop.

Short News

- Presentation on the Summer Crops' Preliminary Estimate for 2003/04 by Ministry of Agriculture and Cooperatives was held at the Ministry on 1 December 2004.
- Discussion on the organization structure of NARC was held at NARC Building, Singh Durbar Plaza on 17 December 2004
- An interaction on Agriculture Communication Strategy was held at Agriculture Information and Communication Centre (AICC) on 17 December 2004

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Mr. Paras Prasad Sah for remarkable contribution to rice research and development in Nepal. During the occasion Special Issue on Rice, Bi-monthly Krishi Magazine and Rice Knowledge Bank CD were released.

Nepal-IRRI Office at NARC Building, Singhadurbar Plaza Kathmandu was also inaugurated. National Rice Status and Strategies by Dr. N.P. Adhikari, Coordinator of National Rice Research Program, NARC and Rice Extension and Strategies from Mr. S.S. Shrestha, Director General of Department of Agriculture were presented. IRRI Representative – India, Dr. J.K. Ladha presented Rice Research and Development. Mr. Kazuyuki Tsurumi, FAO Representative gave his Remarks on International Year of Rice (IYR). Dr. G.O. Ferrara, Regional Coordinator of CIMMYT, Dr. S.B. Mathema, HARP Manager; Mr. Govinda Prasad Pandey, Secretary of Agriculture and Cooperatives; Dr Krishna Bahadur Shrestha, Joint Secretary of Ministry of Agriculture and Cooperatives and the honoured farmer expressed their views on the importance of rice crop and issues related to it.

A memorandum of agreement (MOA) was exchanged between Dr. Surya Laxmi Maskey, Director, Crop and Horticulture Research, NARC and Dr. Davis Johnson, Senior Weed Scientist, IRRI.

A one-day special exhibition on rice was also organized during the occasion.

ASHAR 15 National Rice Day

His Majesty's Government, with the view to motivate farmers in cultivation and enhance productivity of rice, the main food crop of Nepal, has declared the 15 Ashar to be observed as National Rice Day every year. It was announced by the then Minister of Agriculture and Cooperatives, Mr. Hom Nath Dahal at a Special Function held to mark the International Year of Rice 2004. The decision was made on 14 December 2004.

Message from Director General of IRRI

INTERNATIONAL RICE RESEARCH INSTITUTE OFFICE OF THE DIRECTOR GENERAL

IRRI-Nepal collaboration: Building on past successes

Greetings from the International Rice Research Institute (IRRI) in the international Year of Rice (IYR) and congratulations for organizing this week's activities and events to celebrate the importance of rice in Nepal.

IRRI is deeply grateful for the friendly support and excellent cooperation we have received from everyone involved in rice research in Nepal over the past years. It is especially fitting that IRRI is able to strengthen its already very good relations with Nepal in the International Year of Rice by opening a new office in Kathmandu.

Please allow me to thank everyone involved in the IRRI office opening ceremonies and offer my congratulations once again for what I am sure will be a very successful event on December 17.

We are very excited about the opportunities to work with Nepal and its committed community of high quality rice researchers. Together we are confident we can make a big difference in the lives of Nepalese rice farmers and consumers.

Ongoing activities in Nepal such as the work of the International Network for Genetic Evaluation of Rice (INGER); research on nutrient management in rice-wheat systems; and, improving seed grain quality at the farm level confirm the great potential of IRRI-Nepalese cooperation. I would like to take this opportunity to thank all the scientists and researchers involved in these activities and commend them for their hard work and success.

IRRI looks forward to building on these past successes—especially through the project of the Rice Knowledge Bank—and to continuing a long and productive partnership with the rice researchers and rice farmers of Nepal.

Thank you.

Ronald P. Cantrell
Director General

The International Year of Rice (IYR) - 2004 With the fundamental aim of promoting and guiding the sustainable development of rice and rice-based production systems, was celebrated over the world with various events and functions organized by national and international governmental and non-governmental organizations. The focus of the IYR activities were on increasing public awareness of the contributions of rice-based systems to food security, better nutrition, poverty alleviation and livelihood improvement; increasing public awareness of the diversity and complexity of rice-based production systems, and the challenges and opportunities for their sustainable development; promoting and providing technical support to ensure the sustainable development of rice and rice-based systems at the global, regional, national and community

levels; and promoting the conservation and enhancement of rice-based products in order to derive economic, social, cultural and health benefits for the world's human population.

The International Year of Rice that had the theme "The Rice is Life" was viewed to promote improved production and access to Rice. Development of sustainable rice-based systems will reduce hunger and poverty, and contribute to environmental conservation and a better life for present and future generations.

With a declaration from the Fifty-Seventh Session of United Nation's General Assembly on 16 December 2002, the Year 2004 was dedicated to this vital food crop, which feeds more than half the world's population while providing income for millions of rice producers, processors and traders. FAO was invited to facilitate IYR implementation in collaboration with other relevant organizations.

Nepal celebrated the International Year with various formal and informal programs on creating awareness about the rice and rice related issues with special emphasis over the year. Special rice exhibitions at several programs were held. Rice Special Issue of the NARC Newsletter from Nepal Agricultural Research Council (NARC) and Special Issue on Rice,

Bi-monthly Krishi Magazine from Agriculture Information and Communication Centre (AICC) were published.

Year achieves high profile in Nepal: IRRI

On an evaluation of the different activities conducted in Nepal on the theme of International Year of Rice 2004, the International Rice Research Institute (IRRI), in its July-September issue of Rice Today, has observed Nepal to be in high profile for the year.

An article in the issue states different events and activities held in Nepal in the context of IYR. Coverage by print and electronic media and special focus of IYR theme at different occasions have been highlighted in the article.

Workshop on Chickpea

Workshop on "Policy and strategy for increasing income and food security for poor farmers in Nepal and South Asia through improved crop management of high yielding chickpea in rice fallows" was held in Kathmandu on 17-18 November 2004.

The two-day workshop was jointly organized by Nepal Agricultural Research Council (NARC), International Crop Research Centre for Semi-Arid Tropic (ICRISAT), Natural Resource Institute (NRI) of the University of Greenwich Chatham, UK with funding by DFID-CIP, UK, and was participated by scientists from Nepal, India, Bangladesh, UK and representatives from national and international institutions/organizations and farmers from different parts of the country.

The main objective of the workshop was to share experiences and make out recommendation for developing policy and strategy for increasing income and food security through integrated crop management of chickpea; and to publicize the benefits to key policy makers identifying effective strategies to enable GOs, NGOs and private companies to promote chickpea production countrywide and to address the principal goal of poverty reduction strategy.

The workshop was started with a special inaugural function attended by the then Hon'ble Minister of Agriculture and Cooperatives Mr. Hom Nath Dahal as the chief guest and Hon'ble Assistant Minister Mr. Umakant Chaudhary as the guest of honor. The function was chaired by Hon'ble Member of National Planning Commission Dr. Hari Krishna Upadhyaya in which keynote addresses on need and approaches in improving pulses-production in Nepal from Act. Executive Director of NARC D.S. Pathik; on improving production of pulses through extension programs: constraints and opportunities from Director General of Department of Agriculture Mr. S S

Shrestha; and on Rehabilitation of chickpea in Nepal: past, present and future from ICRISAT Scientist Dr S Pande were presented. Remarks on the importance of pulses research and development along with welcome address by Deputy Director General of ICRISAT, Dr. JDH Keating; Project Manager at Natural Resource Institute, Dr P Stevenson; and NARC Director Dr. S L Maskey were put forward.

In the Workshop a total of 20 papers on research, scaling up and uptake pathways, linkage and coordination, seed production and management aspects were presented by scientists and extensionists representing different governmental and non governmental organizations from Nepal, India, Pakistan, Bangladesh and UK. Farmers' experiences on on-farm IPM technology in chickpea cultivation were also presented by farmers from different parts of Nepal.

The Workshop concluded with recommendation after parallel group discussions on policy issues; methodological issues, constraints and solution, and roles of research and extension institutions, NGOs, private sector and CBOs in uptake pathways and scaling-up.

Chickpea is one of the most important winter legume crops cultivated in 9,738 hectares out of total legumes cultivation area of 3,11,000 hectares in Nepal with total production of 7,654 metric tones. The area and production has decreased in the last some decades due to some biotic and abiotic reasons. Considering these problems and recognizing the role of chickpea in human nutrition, a project on "IPM on Chickpea in Nepal" was conducted jointly by NARC, ICRISAT and NRI with funding assistance of DFID, UK from 1998-2004 that has made measurable impact on the livelihood of the poor farmers of rainfed rice ecosystem of Nepal.

Workshop on Pro-poor Research

With the aim of generating ideas for the design and implementation of a project to build pro-poor research capacities amongst Nepali and Austrian researchers and NGO workers, particularly in the fields of sustainable rural livelihoods, bio-diversity and health, a workshop was organized in Kathmandu The University of Natural Resources and Applied Life Sciences (BOKU) and Rural Reconstruction Nepal (RRN) on 10 November 2004.

The workshop was participated by representatives from NARC, Tribhuvan University, Institute of Forestry, Institute of Agriculture and Animal Science (IAAS), RRN and other NGOs and shared experiences on what has been done so far and discussed on developing the new project that aims to support research in Nepal and collaborative research in the fields of sustainable rural livelihoods, bio-diversity and health and to improve the links between research institute and the communities that could benefit research outcomes.

Seed and Sorrows

- Deepak Pandey

Inside the closed prison of test-tube
Tolerating tortures of treatments
Myself an unknown organism
Existing for the test for success of others

Breaking and tearing my Prestige
I am crying alone inside
And being sold on unknown cities
Again as the Basmati rice

I prefer flowering and fruiting
In the hills and the plains
With the popular names:
Jumli, Pokhrel, Hardinath and the same

I may be disappeared someday
Like the story of dinosaurs
As you lose me with no care
You will remember my merits there

Therefore, Oh! "Nationalist"
Try to save your identity that is with me
Think a little bit for nation's sake
Take Mt. Everest as witness if you don't believe.

(Written on the context of in situ conservation of agricultural biodiversity)

(Pandey is a Plant Breeder)

NARC Scientist: Recent Ph.D. Holder



Ms. Ram Devi Timila, Senior Scientist (S4), in NARC obtained PhD degree in Plant Science (Horticulture) majoring Integrated Pest Management from the University of Connecticut, USA in December 2004

In course of her PhD study she carried out a research on **Phytophthora blight of Pepper (*Phytophthora capsici* Leonian) and its Integrated Disease Management**. Field experiments were conducted at

farmers' field in Nepal and the laboratory test at the University in USA.

The objective of the study was to determine management approaches that would help minimize fungicide use through integrated pest management (IPM). The study showed that Phytophthora blight could be managed successfully by treating seedlings either with Dhanucop or with Krilaxyl followed by two foliar sprays at two weeks interval. The use of G. virens in combination with Krilaxyl appeared to be another alternative tactic to manage this disease that help reduce the use of chemical fungicide and environmental pollution. The study also attempted to find out morphological variation, mating type structure, metalaxyl sensitivity and race identification, and to evaluate resistance of pepper genotypes.

Dr. Timila has been working in vegetable disease research and seed pathology research field for last 21 years.



Mr. Binaya Kumar Batsa, Senior Scientist (S4), in NARC obtained PhD degree in Plant Pathology from Indian Agricultural Research Institute (IARI), New Delhi.

Dr. Batsa, in his Ph.D. course, made study on **Integrated Management of Banded Leaf and Sheath Blight of Maize Caused by *Rhizoctonia solani* f. sp. *sasaki***.

The main objectives of his research were to evaluate the efficacy of bio-agents against *Rhizoctonia solani* f. sp. *sasaki* *in vitro*; and the efficacy of biological, chemical and

cultural methods individually and in combination against *R. solani* f. sp. *sasaki* *in vivo*. Among the bioagents *Pseudomonas fluorescens* Pf Bb1, *Trichoderma harzianum* ThPn 1 and *T-viride* TvBb1s effectively inhibited the growth of *R. solani* *in vitro*. In *in vivo* experiments, highest disease control of 56.3 percent was attained by the integration of leaf stripping, bioagents and validamycin. This combination also produced more than 116 percent grain yield over the control. Yield and yield components were also found negatively correlated with disease severity. Economic analysis of BLSB management showed that leaf stripping alone required costs minimum to manage the disease. However cost benefit ratio of leaf stripping treatment was nearly equal to that of validamycin and validamycin integrated with biological control treatments.

Dr. Batsa has been working in the field of agriculture research and development for about three decades with specialization in host plant resistance, biological control and integrated disease management in maize.

Crossing frequency and ancestors of Nepalese mid and high hills rice cultivars

- BK Joshi

Many rice cultivars have been released after crossing many times among different landraces. Crossing frequency and ancestors of a particular cultivar can be useful in breeding and genetic resources conservation program. Rice cultivars recommended to mid and high hills of Nepal were taken to trace back to their ancestors, which had no known relationship and to estimate crossing frequency. There are 20 rice cultivars released for mid and high hills upto 2003 (NARC 1997) in Nepal. Potential yield and breeding history (ancestors, their frequency and group, and crossing frequency) of each cultivar was surveyed in literature. Crossing frequency is the total number of crosses made in breeding history of each cultivar. If the intermediate line, which is developed after many crosses, is repeated, the crossing frequency is added accordingly. For example IR8 is developed after two crosses, if IR8 is used 4 times to develop any cultivar, its crossing frequency is 8. Accordingly ancestor's frequency was estimated based on the how many times the ancestor appears in breeding history of concern cultivar.

Cultivars were classified as diverse gene rich, medium gene rich and narrow gene rich based on different types of ancestors used in developing them. Cultivars developed using more than 10 different ancestors were categorized as diverse gene rich, from 3 to 10 as medium gene rich and less than 3 as poor gene rich. If we conserved diverse gene rich cultivars more genes of many ancestors are supposed to be conserved. Regression model was run treating potential yield as dependent variable and crossing frequency and ancestors' numbers as independent variables. In regression model three cultivars were excluded because, no crossing was done for developing them.

Japonica, indica and *Oryza nivara* are the type of ancestors for 20 released rice cultivars. Highest crossing frequency was found in developing Khumal 6 followed by Manjushri 2. Cultivars developed using more than 10 different ancestors are Kanchan,

Khumal 4, Khumal 6, and Manjushri 2. These are classified as diverse gene rich cultivars and if conserved them it is supposed to conserve more different genes. Medium gene rich cultivars are Chianan 2, Chainung 242, Himali, Khumal 3, Palung 2, Khumal 5, Khumal 7, Khumal 11, and Khumal 2. Similarly Chandannath 1, Chandannath 3, Chhomrong, Khumal 9, Machhapuchhre 3, Taichung 176, and Tainan 1 are poor gene rich cultivars. A total of 47 ancestors were used in developing 20 rice cultivars. Dilday (1990) traced 140 rice lines back to 22 ancestors indicating narrow genetic base. Among these 47 ancestors Cina and Latisail were used most frequently (127) followed by DGWG and Sigadis.

Century Patna, GP 15, *O nivara*, Sigadis, SLO, and Tadukan are the important ancestors to express the variability in first principal component. Manjushri 2 and Khumal 6 are distinct cultivars among released cultivars based on their ancestors (data not shown). Regression equations based on 17 Nepalese mid and high hill rice cultivars are:

$$PY = 6.93 + 0.00314 CF$$

$$PY = 6.72 + 0.0487 AN$$

$$PY = 6.80 + 0.00200 CF + 0.0254 AN$$

Where, PY = Potential Yield (t/ha), CF = Crossing Frequency and AN = Ancestors' Numbers

Regression analysis indicated that different kinds of ancestors are relatively more important than crossing frequency for designing rice plant with desired grain yield. Use of many diverse ancestors in crossing program is a good way of improving rice grain yield and genes conservation. Breeding history (ancestors, their frequency and group, and crossing frequency) of each cultivar should be regularly studied for effective and efficient plant breeding and conservation works.

TRAINING WORKSHOP/SEMINARS, STUDY & TOURS (October - December 2004)

S.N.	Name	Position	Subject	Duration	Country
1.	Mr. Bholu Man Singh Basnet	Chief, CPDD	Attempt and Success of ICT Roadmap to Villages in SAARC Countries	6-8 Oct.	Bangladesh
2.	Mr. Chitra Bahadur Kunwar	T-6/Agronomy, NMRRP	Plant Breeding Using maize as a Model Workshop	6-8 October	Thailand
3.	Dr. Surya Laxmi Maskey	Director, Crop & Hort.	Gap Analysis and Agricultural Research Priorities for Nepal	7-8 Oct.	India
4.	Dr. Niranjana Prasad Adhikari	Coordinator, NRRP	International Symposium Rainfed Rice Eco-System	11-13 Oct.	India
5.	Mr. Bholu Shanker Shrestha	S-4/Livestock, RARS, Lumle	7th World Buffalo Congress	20-23 Oct.	Philippines
6.	Dr. Bindeswore Prasad Sah	S-4/Bio-Tech.	Prospects and Regulatory Framework of Bio-Technology	3-11 Nov, 2004	Japan
7.	Dr. Samudra Lal Joshi	Chief, Entomology Div.	Mr Knight Foundations Collaborative Crop Res. Prog. (CCRP) Conference	6-10 Nov, 2004	Netherlands
8.	Mr. Hari Krishna Uprety	S-4/Botany	Participatory Plant Breeding and Support of Local Seed Supply	31 Oct-12 Nov.	Thailand
9.	Dr. Surya Laxmi Maskey	Director, Crop & Hort.	World Rice Wheat Research Conference	4-7 Nov	Japan
10.	Mr. Babu Ram Bastola	Coordinator, Bovine Res. Prog.	Enhancing the Contribution of Small L/S to the Livelihoods	14-19 Nov.	Uganda
11.	Mr. Nawal Kishore Yadav	Coordinator, Bovine Res. Prog.	International W/S on Grasspea as a Food/Feed Crops	22-25 Nov.	Syria
12.	Dr. Krishna Prasad Paudel	S-4/Animal Health	Study Visit on DNA Marker	16-29 Nov.	India
13.	Dr. Madhav Prasad Acharya	T-6/Animal Health	Standardization and Control of Veterinary Quality	1-14 Dec.	India
14.	Mr. Yug Nath Ghimire	S-4/Outreach Division	Socio-Economic Quantitative Methodology for Agri. Policy Research	20-29 Dec.	India
15.	Mr. Naresh Singh Thakur	S-3/Outreach Division	Socio-Economic Quantitative Methodology for Agri. Policy Research	20-29 Dec.	India
16.	Dr. Ash Kumar Rai	Chief, FRD, Godawari	7th Asian Fisheries Forum	29 Nov-3 Dec	Malaysia
17.	Dr. Tek Bahadur Gurung	S-4/ARS (Fishery), Pokhara	7th Asian Fisheries Forum	29 Nov-3 Dec.	Malaysia
18.	Mr. Jaya Dev Bista	S-4/ARS (Fishery), Pokhara	7th Asian Fisheries Forum	29 Nov-3 Dec	Malaysia
19.	Mr. Suresh Kumar Wagle	S-4/ARS (Fishery), Pokhara	7th Asian Fisheries Forum	29 Nov-3 Dec	Malaysia
20.	Dr. Surya Laxmi Maskey	Director, Crop & Hort.	The Eighth General Assembly of APAARI	1-3 Dec.	Thailand
21.	Mr. Subhashananda Vaidya	S-4, M & E Division	Study Visit on Research Policy	9-17 Dec.	Sri Lanka
22.	Dr. Hira Kaji Manandhar	S-3, Planning Division	Study Visit on Research Policy	9-17 Dec.	Sri Lanka
23.	Mr. Pradeep Kumar Yadav	T-7, Commercial Crop Div.	Training on Tropical Plantation Crop Tea	9-31 Dec.	Sri Lanka
24.	Mr. Shree Krishna Adhikari	Chief, Engineering Div.	APCAEM & GB Meeting	13-16 Dec.	Vietnam
25.	Dr. Madhusudan Pd. Upadhyay	S-4/Botany Div.	International Steering Committee W/S	11-13 Dec.	Italy

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The three-day workshop facilitated by IDL Group, UK reviewed the past experiences and had an exercise to prepare a work-plan and timetable for implementation of the proposed Agriculture Sector Review's terms of reference, outline of methodologies and approaches to be used, preliminary list of stake-holders, and revised logical frame-work. It also worked out to produce a consensus action plan on the best way forward, including the questions of the APP Review and identify further inputs required.

The NARC's Strategic Plan was developed through consultation with other stakeholders that addresses the implementation of NARC's Vision 2021, the goal of the 10th Plan and the need for greater operational efficiency and effectiveness. It nests the organizations' own oals and objectives with those of its national partners. The plan articulates the goals of enhancing the agricultural contribution to livelihoods, especially those of the rural poor through better addressing the requirements of its clients. The approach marks a significant improvement in NARC's current operating practice and strategy, with a greater focus on deliverable outputs that are coherent with NARC's mandate and government plans.

Jumli Marshi On Postal Stamp

Jumli Marshi, a cold tolerant rice landrace to have been recorded as cultivated at the highest altitude of the world (3050 masl) in Jumla has got place in the postal stamp.



The first day issue of the stamp was held on 3 November 2004. It is one of the stamps in biodiversity series brought out to support the conservation of bio-diversity.

Jumli Marshi is a land race extensively used as donor parent to develop cold tolerant rice varieties in rice breeding or varietal improvement program.

Workshop on Sustainable Livelihood Approach

With the view to develop general understanding on the core concepts underlying sustainable livelihood (SL) approaches (principles and framework) and to increase the level of demand-led research in agriculture in line with the nation's goal of poverty alleviation, a training workshop was held at Godavary in December 2004.

The training was aimed at preparing trainers to guide other researchers to streamline SL approach in research planning. The workshop was participated by scientists from NARC.

In the training the participants were explained the different eight principles of sustainable livelihood and five components of SL framework and the relationship between the components of the framework. Group exercise and pair exercise were held to work out the the application of SL approach in NARC's research program to address the poverty and livelihoods.

NPMT Meeting on Agro-Biodiversity

Meeting of the National Project Management Team (NPMT) of the Project "Strengthening the Scientific basis of *In-situ* Conservation of Agricultural Biodiversity On-farm" Coordinated by Agriculture Botany Division of NARC was held at Khumaltar on 11 October 2004. The meeting reviewed on the progress of past activities and worked out a work-plan for next phase of the project that has the objectives to strengthen the scientific basis, institutional linkages and policies that can support farmers in conservation and use of crop genetic diversity.

Present NARC Management Team

Central Level Management of the Nepal Agricultural Research Council (NARC) has been reformed with new appointments to the positions of Directors. Presently the management team consists of:

- Mr. Dularchan Sahu Pathik - Act. Executive Director
- Dr. Surya Laxmi Maskey - Director, Crop and Horticulture Research
- Dr. Nanda Prasad Shrestha - Director, Livestock and Fisheries Research
- Mr. Shambhu Bahadur Panday - Director, Planning and Coordination
- Mr. Ram Bahadur Maskey - Director, Administration
- Mr. Parshuram Lal Karna - Director, Finance

The Executive Director is the administrative head of the NARC, Member-Secretary of the Council chaired by the Minister of Agriculture and Cooperatives, and Chairman of the NARC Executive Board. The Directors, with their responsibilities of respective lines/disciplines, assist the Executive Director in the administrative and management functions of the organization.

Patron: Mr. D.S. Pathik, Act. Executive Director
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To

