



A Quarterly Newsletter of Nepal Agricultural Research Council (NARC)

Vol. 10 No. 3

July - September 2003

NARC Programs and Budget 2003/2004

His Majesty's Government has allocated a total of NRs 30,05,75,000 to Nepal Agricultural Research Council (NARC) for the fiscal year 2003/2004 to implement 398 different projects/programs approved on research, production, management, outreach and research support. The research projects have been proposed with major focuses on food security; industrial and exportable crops; meat and dairy production; post-harvest loss control technologies; soil, water and bio conservation; off-season vegetables; participatory research; high-value crops; resource conservation technologies; agro-based-industries. The budget allocated for agriculture research is 0.29% of the total National Budget.

Contd. on page 2

2nd Convention of SAS held in Kathmandu

With the theme "Agricultural Research for Enhancing Livelihood of Nepalese People" the Second Convention of Society of Agricultural Scientists, Nepal (SAS/N) was held in Kathmandu from 30 July-1 August 2003.

Inauguration

The Convention was inaugurated by Hon'ble Vice President of National Planning Commission and Chief Guest Dr. Shankar Prasad Sharma in a special function chaired by the SAS President, Dr. Madhusudan Prasad Upadhyaya. During the inauguration session Theme papers from Mr. Shankar Lal Chaudhary and Dr. Fanindra Prasad Neupane were presented. Inaugurating the Convention, Hon'ble Member of NPC Dr. Sharma

Contd. on page 4

Soybean Varieties Ready for Release

Nepal Agricultural Research Council (NARC) has proposed two soybean varieties for official release as vegetable soybean. The two varieties Huaichin#2 and Suaidachung introduced from china have been proposed after nine years of continuous trials at locations of mid hills of Nepal.

As per the official variety release process of the Variety Approval Release and Registration Sub-Committee under National Seed Board, a monitoring field visit was organized at Agronomy Division,

Contd. on page 8

ISSUE HIGHLIGHTS

- Programs and budget of NARC
- 2nd Convention of SAS-Nepal
- Soybean varieties for release
- Boro rice for increased production
- Workshop on uptake pathways and scaling-up of technologies
- MoU for coordination in agriculture development signed
- NARC-NEA collaboration for fisheries research
- Performance of Khumal-11 in Kathmandu valley



Monitoring visit of soyabean research field at Khumaltar

Photo: Rajendra Bajracharya

Contd. from page 1

The NARC following a bottom-up approach developed research proposals with consideration of the farmers' problems and burning issues in line with the national agricultural policies, Agriculture Perspective Plans (APP), Tenth Five-Year Plan and 20-Year Vision of the NARC.

Budget distribution by different categories are given below

Funding Source-wise Budget

Funding Source	Budget (Rs. '000)	Percent
NARC/HMG	48300	16.1
ARP/HMG	201960	67.2
KR2 Fish	28050	9.3
HARP/SDC	22265	7.4
Total	300575	100.0

Budget by Main Headings

Budget Head	Budget(Rs 000)	Percent
Staff Budget	159000	52.9
Operational Budget	99291	33.0
Administrative Budget	37604	12.5
Capital Budget	4680	1.6
Total	300575	100.0

Sector-wise Projects & Budget

Sector	No. of Projects	Operational Budget (Rs'000)	Percent
Crop	160	36706	37.0
Horticulture	77	11442	11.4
Livestock	72	15169	15.3
Fishery	35	11200	11.3
Multi sector	54	24774	25.0
Total	398	99291	100.0

Project Types & Budget

Project Types	No. of Projects	Operational Budget(Rs'000)	Percent
Research Project	246	36728	37.0
Outreach Res. Project	47	9998	10.1
Production Project	41	18859	19.0
Management Project	47	14966	15.1
Research Support Project	17	13093	18.8
Total	398	99291	100

Status-wise Projects and Budget Distribution

Status	No. of Projects	Budget(Rs'000)	Percent
Ongoing	212	32323	32.6
New	57	7444	7.5
Regular	129	59524	59.9
Total	514	188062	100.0

Commodity-wise Projects & Budget

Commodity	No. of Projects	Budget (Rs '000)	Percent
Rice	19	3799	3.8
Maize	44	16223	16.3
Wheat	13	3135	3.2
Potato	13	2483	2.5
Rice-Wheat	11	1954	2.0
Major Multiple Crops (rice, maize, wheat, potato)	8	949	1.0
Other Multiple Commodity	106	35145	35.4
Hill Crops	4	491	0.5
Grain Legumes	11	1888	1.9
Oilseed Crops	9	1325	1.3
Commercial Crops (tea, coffee, cotton, cardamom, sugarcane, jute, tobacco etc.)	17	3316	3.3
Vegetables	18	1928	1.9
Off-season vegetables	8	893	0.9
Apple	2	190	0.2
Citrus	7	1354	1.4
Other fruits	5	403	0.4
Flowers	2	238	0.2
Spices	5	710	0.7
Bovine	18	3619	3.6
Goat	10	2657	2.7
Sheep	4	785	0.8
Swine	2	812	0.8
Avian	9	2146	2.2
Rabbit	2	174	0.2
Pasture/Forage	16	1475	1.5
Fish	35	11200	11.3
Total	514	188062	100.0

Workshop on uptake Pathways and Scaling-up of Agricultural Technologies

The Workshop on "Uptake Pathways and Scaling-up of Agricultural Technology to enhance Livelihood of Nepalese" was organized jointly by Ministry of Agriculture and cooperatives (MOAC), Nepal Agricultural Research Council (NARC), National Agricultural Research and Development Fund (NARDF), Department for International Development (DFID), and Hill Agriculture Research Project (HARP) in Kathmandu on 23-24 September 2003.

The two-day workshop reviewed the past experiences of uptake pathway and scaling-up of several technologies developed in Nepal through different means; strengths and weaknesses of methodological approaches of uptake pathways and scaling-up of agricultural technologies. The workshop had group discussions in different four parallel sessions, namely, i) Policy Issues and recommendations for Uptake Pathways and Scaling-up, ii) Methodological Issues and Recommendations for Uptake Pathways and Scaling-up, iii) Constraints and Solution for Uptake Pathways and Scaling-up, iv) Roles of Research and Extension Institutions, NGOs, Private Sectors and CBOs Uptake Pathways and Scaling-up and made recommendations on improving the approach.

Boro Rice for Increased Production

Rice is number one crop and the most important staple food for Nepalese people that is grown in over 1.56 million hectare. It is estimated that, by the year 2020, the country will require more than 6 millions tonnes of rice per year. The rice in Nepal is mainly grown in rainy season often subjected with a number of problems due to drought or flood. Even the spring rice (Chaite rice) is affected at harvesting when the monsoon starts.

The rice crop, as it is mainly cultivated in rainy season, faces every year several biotic and abiotic stresses. Sometimes it is subject to a destruction with heavy flood and some times with drought and some times with disease and insects causing massive loss. Moreover, there are around 7-10 per cent lowland areas in Nepal, which remains fallow after the harvest of normal rice due to excess moisture and water stagnation and are not used for any winter crop. In such cases, boro rice (winter rice) is the best alternative to use the fallow land before the next rice crop that would enhance to double the rice production in the problem areas where there is a natural resource of water. There are lots of areas in the terai and inner terai of Nepal suitable for boro rice.

The term 'boro' originated from the Sanskrit word 'Borob' refers to a special rice cultivation in low lying areas during November to May taking advantage of the residual water in field, longer moisture retentivity of the soil and surface water stored in the nearby ditches.

In order to bring out a package of practices for farmers, researches on different aspects of boro rice cultivation have been conducted at Regional Agriculture Research Station, Parwanipur under Nepal Agricultural Research Council (NARC) for the last three years. Different boro rice varieties brought

from India and Bangladesh and local varieties are being tested on station and farmers' fields. Based on three years data of more 25 varieties tested, Gautam, BRRIDHAN 36 and Sugaha local have been found more suitable for commercial cultivation as boro season rice. Chaite-2 and Ghaiya-2 showed excellent performance, which are the released Rice varieties of National Rice Research Program of Nepal.

The farmers in the central terai now seem to have been attracted to boro rice for the following reasons.

- Farmers have less competition receiving water for cultivation of boro rice compared to Chaite rice.
- Farmers can save straw for cattle from boro rice that would have been lost during Chaite rice harvest due to excess rainfall.
- Farmers do not face labour scarcity problem during boro rice harvest while they face the same due to synchrony in Chaite rice harvest and normal rice planting.
- Farmers are compelled to pay high labor charges because of shortage of labor during Chaite rice harvest.
- Sufficient turnover time is available where boro rice is grown, but very less time is left between Chaite and normal rice.
- Fresh rice has high market value for Chiura (beaten rice).
- Breeding material for hills would have two generations in a year and thus would save half of the required time for variety release.
- Boro rice would help to solve unemployment, income generation, poverty alleviation, sustainable food security and ultimately helps enhance livelihood of the people.

(Based on paper from K.P Bhurer et al.)

Fishery Research at Hydroelectricity Project

Hydroelectricity is an important source of energy that can benefit the country a great deal. But it may incur some negative economic, social, and environmental impacts. Most of the negative social and environmental impacts are associated with hydroelectric reservoirs and dams in the river that are mostly required for the production of hydroelectric power.

It is now environmental concern that dam development for hydropower or other purposes can affect natural ecology and disrupt the culture and sources of livelihood of many communities.

The negative environmental impacts of dams and their reservoirs include loss of forests, wildlife habitats, species populations, aquatic biodiversity, upstream and downstream fisheries.

With the view of maintaining and conserving aquatic biodiversity and fish population, mitigating indigenous fish species, making study and developing fish technologies of important fish for mass production in future; a joint program at Kaligandaki A Hydroelectricity Project has been initiated in collaboration between Nepal Agricultural Research Council (NARC) and Nepal Electricity Authority (NEA).

As per the need to address the environmental concern on aquatic ecology of the river, the NEA has established Hatchery for fish breeding and fish ladder for upstream/downstream fish movement. Mainly three species, Sahar, Asla and Katle are kept in the Hatchery. Breeding started in the last year with hatching of 25 thousands fingerlings. More than 1 lakh fingerlings were later released. Different indigenous fish species from the river were also released.

The Program is conducted by NARC with physical facilities of NEA that involves Department of Agriculture, NGOs, INGOs, education institutions and farmers. The role of NARC is to conduct hatchery operation, training to fishers, socio-economic study, breeding activities, lab operation, cage trial, fingerlings production etc.

It is the first program implemented in association with the hydroelectric power plant.

Contd. from page 1

spoke on the present growth status of agriculture productivity and emphasized the need of effective implementation of prioritized programs and resource mobilization identifying the existing problems. He also suggested to identify the technologies developed in neighbouring countries that can be adopted in our condition. At the occasion Secretary of Agriculture and Cooperatives Mr. Purna Prasad Manandhar as the Special Guest outlined the need to learn better management technique and conduct need-based research in consideration of the WTO conditions. Mr. Raghunath Prasad Sapkota, Executive Director, NARC also spoke at the occasion expressing hope that the recommendations by the Convention will contribute for enhancing the research sector. President of the Society, Dr. Madhusudan Prasad Upadhyaya talked about the achievement of the Society. Vice-President of the Society Mr. Chiranjivi Adhikari conveyed the vote of thanks. General Secretary Dr. Shree Ram Neopane moderated the session.

Presentation of papers

A total of about 90 papers on different research works conducted and current issues were presented in different sessions grouped by disciplines, namely 1) Agronomy, Soil and Agri-Engineering; 2) Plant Protection; 3) Horticulture; 4) Plant Breeding and Biotechnology; 5) Animal Science and Fisheries; 6) Socio-economics and Miscellaneous; and 7) Cross-cutting each followed by discussions and suggestions.

Recommendations

The convention made out recommendations and suggestion on technical, management and policy issues after extensive discussions in different groups. Summary of recommendations is given below

Handover of Charge to new Executive Committee

The new Executive Committee elected for next three years' term was formally handed over the Charge of the Society. The outgoing Committee completed it's three years term as per the Constitution of the Society.

Society of Agricultural Scientists (SAS), Nepal is a professional organization as a common platform for agricultural graduates involved in agriculture research. It was established in 1995 with the view to help promote the economic development of the kingdom through agricultural research in an organized way

Newly Executive Committee of the SAS/N

President	Dr. Adarsha Pradhan
Vice-President	Ms. Shanti Bhattarai
General Secretary	Dr. Madhav Joshi
Secretary (Administrative Mgt.)	Mr. Kamak Sah
Secretary (Coordination)	Mr. Binesh Man Sakh
Secretary (Finance)	Mr. Keshav Prasad Shrestha
Treasurer	Ms. Gyanu Manandhar
Member (Seminar Conference)	Ms. Nirmala Pandey
Member (Plan. &Tech. Services)	Mr. Yagya Prasad Giri
Member (Publication)	Dr. Hari Prasad Bimb
Member (Membership Mgt.)	Mr. Bishwa Prasad Mainali

Recommendations of the Convention

Plant breeding/biotechnology

Transferable technologies

Rice

- Hardening technique for regenerants through embryo rescue (Distant hybridization)
- Genes from 47 ancestors originating from 12 countries are available in 20 released varieties of Nepal (Rice breeding program in Mid and high hills)

Technology in pipeline

Rice

- NR10288-10J-2J; NR10288-015J-015J-7 (Blast resistance) for Jumla

Wheat

- WK904; WK935; WK930; WK914 (Grain production) for Jumla
- WK921; WK919 (Biomass production) for Jumla

Common bean

- PB0001; PB0002; PB0048 (PVS needed) for Jumla

Chickpea

- ICCx840508-36; ICCx840508-21 for terai

Future research issue

- Hybrid rice and maize technology
- Exploitation of biotechnology

Soil Science

- Rice bean - environmentally friendly technology for maintaining plant nutrient in soil. (Hills, Terai)
- Biogas effluent can substitute mineral fertilizer demand to some extent if it is handled carefully and composted properly. (Low hills and Terai)
- 50 kg N and 60 kg K₂O /ha for good yield and quality of potato. (Mid-hills)
- 40 kg Sulphur/ha for good yield of Onion bulbs in the acidic soils of Pokhara valley

Agri Engineering

- Tubular corn sheller for reducing time and drudgery (Maize growing areas)
- Mini SRR dryer for drying rice during rainy season.(Early Rice growing areas)
- Low cost solar dryer in drying agro commodities (apple, apricot and vegetables) in the remote areas (mid hills and high hills)

Agronomy

- Full package of practices to increase Toria (Terai and Inner terai)
- Double corn plants per hill with 75 x 50 cm spacing to reduce shading effect in maize, soyabean or bean intercropping (Mid hills & high yields)
- Gautam, Khumal 11, Chaitya 2 and Saroj promising line for boro rice cultivation (Terai and inner terai)
- Genetic improvement in Kanchhi Masuli for higher rice yield;
- Marketing intermediaries such as rice millers, traders etc. should be involved in rice variety development process;
- Seed multiplication program be launched at farmer's level (Eastern Terai)

Contd..

Future research issues

- Micronutrient study in vegetables as well as cereal crops
- Strengthening laboratory and physical facilities and manpower development
- Participatory research involving farmers to verify technology generated
- Organic waste recycling
- Integration of legumes in cropping to reduce leaching losses
- Hedge row intervention to reduce soil loss
- Crop physiological research
- Crop rotation for maintaining soil fertility and profitability
- Development of appropriate technology for resource conservation and reduction of cost of cultivation
- Development of appropriate tools and machines for reduction of drudgery and improvement of efficiency in agricultural operations.
- Development of water management practices and technologies for the efficient water application for maximizing the productivity
- Appropriate post harvest technology to reduce the losses of the perishables and for high value addition in the commodities
- Resource management: System perspective and indigenous knowledge and techniques.

Horticulture

Transferable technologies

Cauliflower

- Kathmandu Local, planted from 10th of Chaitra to Jestha, for maximum yield
- Snow King for early production and Snow Crown for high yield (High hills of eastern Nepal)
- Maize 150X25 and cauliflower 45x30 cm spacing for intercropping situation after harvest of potato

Gladiolus

- Vase life of cut spike extended up to 11.3 days in 12% sucrose solution (Room condition)

Saffron

- >15 g corm is suitable for bulb production. Artificial cultivation gave a net return of Rs. 97,700/ropani. (Jumla)

Banana

- William hybrid and Jhapali Malbog found better. (Low hill)
- 300:110:300 g NPK/plant/year in 3 split dose in Feb, May and Aug. (Low hill)
- Feb-April is the best planting time (Low hill)

Potato

- Short dormancy varieties stored in diffused light system found very effective by de-sprouting. (>1500 m)

Cabbage

- 60:80:50 kg NPK/ha for rainy season cabbage cultivation

Technology in pipeline

Potato

- Faba bean best for residue incorporation for succeeding potato crops (Mid-hills)
- SerenaXTPS67 and HPS 11/67 promising for TPS (Terai)

Bean

- LB-25 and Pant Anupam found suitable in on-station condition (Mid hills)

Vegetable type soybean

- AGS-352 superior genotype and resistant to powdery mildew for pre and post monsoon season - Mid hills

Future research issues

- Food security from horticultural crops – Sweet potato, *Colocasia spp*
- Environment: ICM on highly commercial vegetable crops
- Agro-biodiversity: Collection and preservation of horticultural crops
- Technology transfer: Action research on horticultural crops
- Resource management: System perspective and indigenous knowledge and techniques.

Animal science and Fisheries

Transferable Technology

- Local herbs for ecto parasite control
- Quality production of frozen semen
- Commercialization of goat production
- Cold water mountain aquaculture
- Lake fisheries management

Technology in pipeline

- Oat seed production technology
- Reducing cost of broiler production
- Wool blending technology (Angora wool with other)
- Inbreeding control in fish
- Local herbs for endoparasite control
- Cage culture of rainbow trout in stagnant water.

Future Research Area

- Improvement of indigenous buffaloes
- Fish health management in cultivated fish species
- Post harvest technology in fish
- Alternative parasite control approaches
- Research on turkey
- Cryopreservation of fish milt
- Low cost production technology in cold water fish

Socioeconomic and Miscellaneous

- Intensive training on control of livestock diseases & livestock management to farmers as a group approach.
- Stall feeding of goat and establishment of fruits, orchards, and vegetables farming and market oriented high value crops such as mustard & legumes for promoting livelihood.
- Controlled grazing, fodder trees plantation on waste & marginal lands
- Jamunapari, Barbari cross and Kiko popular
- Diversification in food preparation approaches in Kathmandu valley
- Need of a dormant varieties for Kathmandu valley
- Technologies for commercial production of medicinal and aromatical plants be developed
- Farmers training on off-season vegetable production technologies and marketing
- Participatory seed production and supply mechanism
- Plastic cover technology to reduce the cost of chemical fertilizer.
- Application of 50 % organic manure to reduce acidity of the soil caused by the excess use of chemical fertilizer
- Promotion of resource conservation technologies (mini-

mum tillage, zero tillage, surface seeding) in wheat for soil health

- Promotion of bed planting of wheat for minimization of helminthosporium leaf blight diseases

Cross Cutting

- Covering manures with black plastic sheets for nutrient content (N, P, K) and crop yield of maize and upland rice
- Diversity study in indigenous crops using biochemical and molecular tools
- Study of molecular markers integrated to breeding programs.
- Study on alternative feeding regimes and cost effective method of raising Pakhribas pig
- Research on poverty reduction aspects through diversification of employment and income from agriculture.
- Research on integrated approach on forward and backward linkage.
- Effort in maize technology generation and dissemination to improve productivity and profitability of maize and feed industries.
- Ethnographic Decision Modeling (EDM) should be incorporated in farming system research.
- Promotion of Farmers' Field School (FFS) for IDM in potato and other crops.
- CO_2 will have positive effect on rice but may not be for C_4 crops due to rise in temperature.

NARC Scientist: Recent Ph.D. Holder



Ms. Shree Baba Pradhan, Senior Scientist has obtained Ph.D. in Entomology from Govinda Ballabh Pant University of Agriculture and Technology, Pantnagar, Uttaranchal Pradesh, India.

In her Ph.D course, Dr. Pradhan did thesis on "Investigations on the use of *Apis mellifera* L. for hybrid seed production in *Brassica napus* L."

The experiment was conducted during winter-spring seasons of 2001 and 2002 at Pantnagar, India. It consisted four treatments of pollination : (T1) Caged with *A. mellifera* L. in 4-frame hives, (T2) Trained *A. mellifera* with 1:1 Sucrose:Water syrup with clove oil 1 ml/litter, (T3) Open pollinators and (T4) Caged without bees; with 5 replications in Randomized Block Design.

The objectives of the investigations were : to study relative abundance of different insect pollinators in *Brassica napus* L. and relative preference of *A. mellifera* L., *A. cerana indica* F. and *A. dorsata* F. to male and female plants lines; to study the foraging behaviour of different bee species, especially *A. mellifera*, and determine their pollination efficiency; and to compare effects of the pollination with trained bees with those of other pollination conditions, viz caged bees, open bees and no bees on *B. napus* hybrid crop in terms of (i) pod and seed setting (ii) grain yield (iii) grain quality.

Dr. Pradhan obtained her M.Sc. (Zoology) from Tribhuvan University, Kathmandu in 1977.. She has been working in the agriculture research.

MoU for Coordination

With the view to maintain mutual coordination in implementing the programs more effectively and transparently and to better utilize the resources in each of the departments under Ministry of Agriculture and Cooperatives, a memorandum of understanding (MoU) among Nepal Agricultural Research Council; Department of Agriculture; Department of Livestock Services; Department of Food Technology and Quality Control; Department of Cooperatives was signed on 4^{August} 2003.

As per the MoU, all the units will share information about the programs of each to make them transparent for avoiding duplication of work. They will meet regularly to identify the problems and measure to solve. They will share the resources available for mutual benefit wherever possible.

The MoU was signed by Mr. Raghunath Prasad Sapkota, Executive Director, NARC; Mr. Shiva Sundar Shrestha, Director General, Department of Agriculture; Dr. Shuva Narayan Mahato, Director General, Department of Livestock Services; Dr. Tika Bahadur Karki, Director General Department of Food Technology and Quality Control; and Mr. Binod Kumar Adhikari, Registrar, Department of Cooperatives

Interaction of Steering Committee

With the view to review and discuss on the strength and weaknesses of agricultural institutions under Ministry of Agriculture and Cooperatives and to develop a mechanism for coordination in implementing programs in each of the organizations, an interaction meeting of the Ministerial Level Steering Committee was organized at NARC Building, Ramshah Path on 17 September 2003.

The meeting was Chaired by the Secretary of the Ministry of Agriculture and Cooperatives, Mr. Purna Prasad Manandhar. In the meeting, representatives from Nepal Agricultural Research Council (NARC), Department of Agriculture, Department of Livestock Services, Department of Food Technology and Quality Control, and, Institute of Agriculture and Animal Science (IAAS) presented on their current activities followed by discussions for making out the activities in more transparent way. At the occasion, the Secretary of Agriculture and Executive Director of NARC spoke on the need of coordination for sustainable agriculture development.

TRAINING WORKSHOP/SEMINARS, STUDY & TOURS PARTICIPATED ABROAD (July - September 2003)

S.N.	Name	Position/Faculty/Office	Subject	Duration	Country
<u>TRAINING/WORKSHOP/SEMINAR/MEETING</u>					
1.	Dr. Dil Prasad Sherchan	S-4/NMRP,Rampur	Training on Experimental design and analysis of Multi-location trials	4-15 August	Mexico
2.	Mr. Surya Narayan Sah	S-3/RARS,Nepalgunj	Training Course on Rice Breeding	11-29 August	Philippines
3.	Mr. Kailash Prasad Bhurer	S-3/RARS, Parwanipur	Training Course on Rice Production	1-12 September	Philippines
4.	Dr. Ram Pratap Sah	Director/Crop & Hort.	International Symposium on Plant Breeding	17-22 August	Mexico
5.	Mr. Ram Krishna Neupane	S-3/NGLRP, Rampur	Study Visit on Australian Lentil Breeding Program	16-29 September	Australia
6.	Mr. Ram Bahadur Bhujel	S-3/RARS, Tarahara	Training Workshop on Rice Technology Transfer System in Asia	28 Sept-11 Oct	Korea
7.	Dr. Kedar Budhathoki	Chief/Horticulture Div.	Study Visit on Tropical Fruits Species	10-24 August	India
8.	Dr. Madhusudan Pd. Upadhyay	S-4/Agri-Botany	GRPI Phase I, Progress & Planning Meeting and W/S Meeting etc.	1-7 September	Italy
9.	Mr. Ram Chandra Munankarmi	S-3/Soil Science Div.	2nd Research Co-ordination Meeting on the CRP	8-12 September	China
10.	Mr. Bimal Kumar Baniya	Director/ NARI	Seed Systems and Crop Genetic Diversity on-farm	16-20 September	Peru
11.	Dr. Ananta Prasad Regmi	S-3/NWRP,Bhairahawa	All India Wheat Workshop	22-25 August	India
12.	Dr. Baidya Nath Mahato	S-3/Plant Pathology	All India Wheat Workshop	22-25 August	India
13.	Mr. Shree Krishna Adhikari	Chief/Agri-Engineering	Challenge Program on Water & Food 2 nd Workshop	28-29 August	India
14.	Mr. Shreemat Shrestha	S-3/Agri-Engineering	Challenge Program on Water & Food 2 nd Workshop	28-29 August	India
15.	Mr. Man Bahadur Shrestha	T-6/Food Res.Unit	Training on Rice Post Harvest Processing Technology	3 Sept-3 Month	Japan
16.	Dr. Surya Laxmi Maskey	S-4/Soil Science Div.	Management Tools for Water and Nutrient Resources	29-31 August	Germany
17.	Mr. Manoj Kumar Thakur	T-6/Comn.Publ. &Doc.	National Extension Education Congress 2003, Workshop	12-14 September	India
18.	Dr. Kedar Budhathoki	Chief/Horticulture Div.	Workshop on Conservation and Use of Native Tropical Fruits	16-23 September	Malaysia
19.	Mr. Ramesh Chandra Bhandari	S-3/Post-Harvest	Genetic Engineering & Nutrition Improvement in Rice	23-27 September	Philippines
<u>STUDY</u>					
20.	Mr. Yub Raj Thapa	T-6/Soil Science	M.Sc. in Soil Science	18 July, 2003 to 17 July, 2005	Rampur
21.	Mr. Maheswor Prasad Sah	T-6/Soil Science	M.Sc. in Soil Science	18 July, 2003 to 17 July, 2005	Rampur

Khumal-11 Gaining Popularity in Kathmandu

Khumal-11, recently released rice variety comes out to be a best alternative to the existing popular varieties: Taichung-176 and Chainung-242 that have been found highly susceptible to blast disease for the last 10 years.

The Khumal-11 is similar to Taichung-176 and Chainung-242 in grain quality suitable for Chiura (beaten rice) and is resistant to blast disease. The variety is gaining popularity among the farmers of Kathmandu Valley because it can withstand blast disease and gives high yield (8.6 mt/ha) and good quality grain containing 17.53% amylose with acceptable quality for Chiura and milling recovery of 78%.

The Khumal-11 was developed from cross between Akiyudaka and Barakat in 1992. and, after extensive trials and experiments was released in 2001.

(As reported by Sudarshan Bista)

Contd. from page 1

Khumaltar on 10 September 2003.

The two varieties proposed are high yielding and have large size pod with attractive bold tender seed as well as dry seed suitable for vegetable purpose. These varieties perform better in sole cropping and are resistant to bacterial pustules disease. The average fresh pod yield of Huaichin #2 is 10.85 and of Suaidachung is 9.6 tonnes per hectare. The fresh pod of Huaichin #2 can be harvested in 111-118 days and of Suaidachung in 104-113 days.

Soybean is grown for food, feed, fodder, oil and green manure purpose. Soybean food such as tofu,

miso, shoyu, soymilk, temph and immature green pod are very popular in China, Taiwan, Japan, Thailand and Malaysia. But in Nepal, it is only used in roasted form as snacks and green pod for vegetable purpose. Farmers are growing existing varieties such as Ransom, Seti, Sathiya and Black Local, which are all seed type soybean and green pod yields is very low. The dried seed of these varieties is suitable for using as roasted form only and not for vegetable purpose. Among them Sathiya and Black Local are susceptible to bacterial pustules disease.

The soybean (*Glycine max* L. Merr) miracle crop containing as much as 40-45% protein and 20 % oil plays a major role in the world food system. It is one of the nature's most efficient protein produces called as "meat of the fields" and producers about three times more protein than rice, wheat or maize on per hectare basis. It is also an excellent source of good quality unsaturated oil. It has also been reported that the use of soybean in daily dishes reduces the risk of breast cancer in women. The versatile plant serve as a natural soil fertilizer by fixing about 50 kg N per hectare.



Photo: Rajendra Bajracharya

Patron:
Raghunath Prasad Sapkota
Executive Director

Published by :

Communication, Publication and Documentation Division
Nepal Agricultural Research Council, Khumaltar
P.O. Box No. 5459, Kathmandu, Nepal

Phone : 5523041, 5525703, 5525704, 5540818

Fax : (977-1) 5521197 / 4262500

E-mail : cpdd@mos.com.np
ednarc@ntc.net.np

Bhola Man Singh Basnet : Division-Chief (Technical Editor)
Krishna Raj Bhatta : Editor

Website: <http://www.narc-nepal.org>

To

Printed at : The Rising Sun Printers, Teku, Kathmandu, Tel.: 4243557