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Communication for Agricultural Development Highlihted

Honorable Minister for Agriculture and Cooperatives Mr. Mahesh Acharya urged the journalists to work for educating and creating awareness among rural people with agriculture related knowledge and help increase productivity in order to make poverty alleviation goal and strategy of the nation successful.

Hon'ble Mr. Acharya was inaugurating a newly formed "Forum of Agricultural Journalists Nepal" and interaction on the role of journalism in agricultural extension organized by the Forum.

Mr. Acharya at the moment said improved technology and other useful information should reach the farmers on time. He hoped the forum constituted with the similar objectives will be able to do some good in this regards.

The function was held on Chairmanship of the Forum's President Mr. Batukrishna Karki who talked about why the Forum was created. He said most of the people live on agriculture but with the lack of relevant information they are not prepared to change their agriculture systems to new mode and styles. The number of newspapers is

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NARC Annual Research Planning & Budgeting

His Majesty's Government has allocated a total of NRs 577,760,000 to NARC for the fiscal year 2001/2002. It is 0.58% of the total National Budget. A total of 514 annual programs have been approved for the fiscal year that cover food security crops, grain legumes, oilseed crops, commercial crops, vegetables, fruits, milk and meat production, post harvest, outreach research, agri-communication, production program and human resources development. Budget distribution by different categories are given in page 2.

Ginger Variety Released

Variety Approval, Release and Registration Sub-Committee of the National Seed Board under Ministry of Agriculture and Cooperatives that met on 10 July 2001 officially releassed one Ginger variety named as "Kapurkot Aduwa-1" for commercial cultivation.

The variety of Ginger (*Zingiber officinale*) is released after years of research trials by Ginger Research Program, Salyan at resarch stations and farmers' field at different parts of Nepal.

The variety is released with full package of practices for farming in tarai, foot-hills, and mid-hills at the altitude of 700-1600 masl.

Maturity period of this variety is 225-240 days and fresh rhizome yield is 23-39 ton/ha (400-540 grams/clump).This variety produces bigger quantity of dried ginger with less fiber. It is relatively tolerant to leaf spot and rhizome rot diseases.

ISSUE HIGHLIGHTS

Implementation Guideline Workshop on ATWG

A one-day workshop on "Implementation Guidelines for Agriculture Technical Working Group (ATWG)" was organized by NARC in Kathmandu on 12 September 2001.

The workshop was organized with the view :

- To understand the guideline and required processes involved in utilizing the guidelines
- To make uniformity in organizing Regional Technical Working Groups (RTWGs) in respective R/ARSs, and
- To understand the roles and responsibilities of the ATWGs at various levels including their plans and programs

The workshop was participated by Regional Directors of Regional Agricultural Research Stations (RARSs) at Tarahara, Parwanipur and Nepalgunj; Station Chiefs and Outreach Research Coordinators of ARSs Pakhribas and Lumle; scientists and technical officers of Outreach Research Division and Planning Division of NARC. AREP consultants Dr. S. Biggs and Dr. P. Bisset also took part in the workshop.

The workshop was concluded with a special function Chaired by the then Executive Director Mr. Dhruva Joshy that was attended by invitees from Department of Agriculture, Department of Livestock Services, AREP. The then Director for Planning and Coordination Dr. Bhola Ram Pradhan highlighted importance of the workshop and Dr. Jagdish Raj Baral presented the insights of the guidelines. Mr. Dhruva Joshy at the conclusion expressed his hope that the guidelines would be helpful in implementing the ATWG effectively.

Third National Seed Seminar Held

With the theme "Promoting public-private sector partnership for seed industry development in Nepal", the Third National Seed Seminar was organized in Kathmandu on 13-14 August 2001.

The two-day seminar was inaugurated by Hon'ble Minister for Agriculture and Cooperatives, Mr. Mahesh Acharya in a special function. At themoment he said the available resources need to be properly utilized. Hon'ble Member of National Planning Commission Mr. Hari Shankar Tripathi assured that the upcoming tenth plan will give due emphasis to private sector involvement in seed production and research. Mr. Ratneswor Lal Kayastha, Secretary of Agriculture and Cooperatives highlighted the importance of improved seed. On the occasion Mr. Krishna Prasad Tamrakar, Chairman of Agro-Enterprise Centre (AEC) said unchecked imports of low quality seed may hamper the overall agriculture production.

The seminar focused on the strategic planning for overall seed sector development, seed research and varietal development, seed production, quality control, seed marketing, and human resource.

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growing but mostly motivated by politics. Therefore, need of development journilism is highly realised in the country. This forum tends to specialize in agriculture that will inform people about agricultural advances, agri-environmental concerns etc.

At the occasion, Senior Scientist and Chief of Communication, Publication & Dcumentation Division of NARC, Mr. Bhola Man Singh Basnet and other spoke about the importance of communication in agriculture.

NARC Annual Program & Budget (FY 2001/2002)

Funding Source-wise Budget

Funding Source	Budget Rs. 000	Percent
NARC/HMG	40000	6.9
KR II /Japan	85443	14.8
AREP/World Bank	382317	66.2
HARP/HMG	70000	12.1
Total	**577760**	**100**

Budget by Heads

Budget Head	Budget(Rs 000)	Percent
Staff Budget	155086	26.8
Operational Budget	188062	32.6
Administrative Budget	61962	10.7
Capital Budget	172650	29.9
Total	**577760**	**100**

Sector-wise Projects & Budget

Sector	No. of Projects	Budget(Rs 000)	Percent
Crop	213	54679	29.1
Horticulture	105	23393	12.4
Livestock	102	35797	19.0
Fishery	33	12879	6.8
Multi sector	61	61314	32.6
Total	**514**	**188062**	**100**

Project Types & Budget

Project Types	No.of Projects	Budget(Rs 000)	Percent
Research Project	352	83049	44.2
Outreach Research Project	55	20309	10.8
Production Project	36	24504	13.0
Management Project	50	47107	25.0
Research Support Project	21	13093	7.0
Total	**514**	**188062**	**100**

Status-wise Projects and Budget Distribution

Status	No. of Projects	Budget(Rs 000)	Percent
Ongoing	402	166702	88.6
New	112	21360	11.4
Total	**514**	**188062**	**100**

Commodity-wise Projects & Budget

Commodity	No. of Projects	Budget(Rs 000)	Percent
Rice	28	10788	5.7
Maize	14	3671	2.0
Wheat	23	7501	4.0
Potato	15	5333	2.8
Rice-Wheat	24	4790	2.5
Major Multiple Crops (rice, maize, wheat, potato)	21	5767	3.1
Other Multiple Commodity	106	71379	38.0
Hill Crops	12	3307	1.8
Grain Legumes	25	5976	3.2
Oilseed Crops	14	2979	1.6
Commercial Crops	27	5392	2.9
Vegetables	33	5792	3.1
Fruits	27	5504	2.9
Spices	7	1227	0.7
Bovine	26	10858	5.8
Goat	14	5211	2.8
Sheep	8	2245	1.2
Swine	3	1462	0.8
Avian	16	7832	4.2
Pasture/Forage	25	4766	2.5
Other Livestock	2	1232	0.7
Fish	32	12634	6.7
Others	12	2416	1.3
Total	**514**	**188062**	**100**

National Workshop on Buckwheat Research and Development in Nepal

The National Workshop on " Research and Development on Buckwheat: An Important yet a Neglected Crop in Nepal " was held in Kathmandu from 13-14 September 2001.

The two-day workshop jointly organized by Nepal Agricultural Research Council (NARC), International Plant Genetic Resources Institute (IPGRI-APO), Malaysia and National Institute of Agrobiological Sciences (NIAS), Japan had the objectives:

- to bring out knowledge on buckwheat diversity and its wild relatives
- to develop scientific basis for their *in-situ* conservation by analyzing and monitoring buckwheat populations with biochemical and molecular techniques
- to broaden the use of buckwheat diversity

The workshop began with an inauguration by the Hon'ble Member of National Planning Commission Mr. Hari Shankar Tripathi in a special opening session. Mr. Tripathi who also chaired the session put emphasis on the development of new varieties of buckwheat with package of practices and its popularization in home and abroad. At the occasion Secretary to the Ministry of Agriculture and Co-operatives Mr. Ratneswor Lal Kayastha spoke on the need to sensitize the value of buckwheat through different media because of its multipurpose uses and values. The then Executive Director of NARC Mr. Dhruva Joshy, welcoming the participants and invitees briefed about the useful research findings and value of the buckwheat project. Senior Scientist and the Project Leader Dr. Hari Prasad Bimb had introduced the project and its objectives. The Project Leader and Head, Plant Genetic Resources Laboratory of NIAS Dr. T. Nagamine and Co-ordinator Office for East Asia (IPGRI) Prof. M. Zhou expressed their views about the buckwheat project. The then Chief of Agriculture Botany Division Mr. Raghunath Prasad Sapkota extended vote of thanks. The Session was conducted by Senior Scientist (Agronomist) and Chief of Communication, Publication & Documentation Divisionof NARC, Mr Bhola Man Singh Basnet as the Master of Ceremony (MC).

The workshop was participated by some 70 persons including crop experts, extensionists, agro-entrepreneurs, farmers, and representatives from universities, government and non-government organizations. Twenty-four working papers on buckwheat research and development were presented followed by discussion and interaction. After deliberate discussions in three different groups namely processing and marketing; research and collaboration; and uptake and dissemination, the workshop made out recommendations as following.

- Develop improved varieties with package of practices,
- Survey and collection of wild, bitter and sweet buckwheat in western and eastern Nepal,
- Continued study of genetic diversity using molecular techniques,
- Continued socio-economic study with reference to bitter buckwheat,
- Utilize useful genes for the development of varieties through integrated approach,
- Initiation of *in-situ* conservation for buckwheat species and on-farm conservation of bitter buckwheat,
- Continued monitoring of genetic diversity over time,
- Priority from government to buckwheat in terms of research, development and capacity building,
- Collaboration with all stakeholders i.e. research, education and extension
- Maintaining quality production, marketing information, cropping system inventory,
- Creating public awareness about the value and importance of buckwheat through print, electronic (radio, television) and other media etc.

The workshop was concluded with a special function chaired by the then Executive Director of NARC, Mr. Dhruva Joshy. Mr. Joshy, at the moment talked about the need to follow up the recommendations in future and thanked all the participants. He expressed gratitude to Dr. T. Nagamine and on behalf of Nepalese Government to the Japanese Government and Prof. M. Zhou for their support in the research and development of buckwheat in Nepal and hoped such efforts in coming days too.

Prof. M.Zhou in her remarks advised the participants for sharing the research results, increase the public awareness, increase the productivity and production of buckwheat. At the end she observed that the workshop was successful. Dr. T. Nagamine expressed happiness for the participation in the workshop, advised for the conservation and utilization of buckwheat in Nepal and information sharing, the recommendations were well analyzed and informative and he was happy with the coverage about workshop by the media.

Dr. Hari Prasad Bimb at the end extended vote of thanks to all the participants

Buckwheat (*Fagopyrum spp.*) is a minor food crop in Nepal, but is a staple and life supporting crop in the remote food deficit areas where it constitutes about a third of the total food items. ●

Workshop on Hill Maize and Green Manuring Projects

In order to share the findings of the projects "Participatory Crop Improvement for Hill Maize" and Evaluation of the Use and Promotion of Green Manuring in Rice systems" among relevant stakeholders, a two-day workshop was organized at Dhulikhel on 11-12 September 2001.

Overall objective of the Workshop was to evaluate and disseminate results of both the projects funded by Department for International Development (DFID), Plant Science Research Program (PSRP), Hill Agriculture Research HARP, and to consider future development in these areas.

On the first day of the workshop, presentation and discussion on implication of key findings from the research on hill maize systems were held and future participatory maize improvement strategies for the mid-hills of Nepal were discussed. On the second day research findings on green manures in high production potential (HPP) systems were presented and discussed for developing key extension messages and finding out knowledge gaps on green manures. ●

Coldwater Fishes in the Trans-Himalayan Region"- Symposium

A symposium on "Coldwater Fishes in the Trans-Himalayan Region" was organized in Kathmandu from 10-13 July 2001.

The four-day symposium was formally inaugurated by the then Rt. Hon'ble Prime Minister Mr.Girija Prasad Koirala in a special function presided over by the then Hon'ble Minister for Agriculture and Cooperatives Chakra Prasad Bastola that was attended by over 70 researchers, planners, policy makers, private entrepreneurs, representatives of international and regional organizations and rural development specialists from 10 different countries of the Trans-Himalayan and neighboring regions.

In the symposium country reports and working papers with recommendations were presented and after deliberate discussions on three major themes, namely, distribution and conservation of coldwater fishes; role of coldwater fishes in rural development and poverty alleviation; and, cold water fishes and aquaculture development., strategies and recommendations were made out for future fisheries and aquaculture development.

The Symposium was jointly organized by Ministry of Agriculture and Cooperatives/ HMGN, Nepal Agricultural Research Council (NARC), Food and Agriculture Organization (FAO), and Network of Aquaculture Center in Asia and Pacific(NACA) with co-sponsorship of Nepal Fisheries Society (NEFIS), The World Conservation Union (IUCN) and World Wildlife Fund (WWF).

Visits

Mr. John Shutherland, HARP Research Management Advisor visited NARC on 23 August 2001. He was on a familiarization visit to Nepal from 19 to 24 of the month.

●

Board Chairman of International Rice Research Institute (IRRI) Mrs. Angelenia Kamba visited NARC on 9 September 2001.

●

A travelling seminar of Rice-Wheat Consortium (RWC) took place at NARC, Khumaltar on 16 September 2001. The group consisted of about 35 researchers/ experts from Nepal, India Bangladesh and Pakistan.

●

Director of SAARC Agriculture Information Centre (SAIC) Dr. Md.Abdur Razzaque visited the Communication, Publication and Documentation Division of NARC on 18 September.

●

A group of trainees from Social work Institute had a study visit of NARC on July 2001.

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Training Workshop on "IPNM System"

The workshop/training of trainers on "Integrated Plant Nutrient Management System (IPNMS) for Sustainable Agriculture Production" was jointly organized by NARC, Department of Agriculture, Fertilizer Advisory Development Information Network (FADINAP) at Khumaltar on 6-7 September 2001.

The two-day workshop was participated by scientists/researchers and representatives from Ministry of Agriculture and Cooperatives, department of Agriculture, I/NGOs (LI-BIRD, SSMP, CEAPRED, INSAN) and farmers.

In the technical session of the workshop field experiences and research results were presented. Norms for dissemination of technology on IPNMS was also presented and discussed. Discussion was also held on training manuals presented.

Agreement on Chiraito Research and Development

Agriculture Research Station, Pakhribas under NARC and Panchavati Greentech Research Society, Darjeeling, India have agreed to collaborate for research and development, domestication and utilization of Chiraito (*Swertia chirayita*) in the region.

Scientists of both the institutes will exchange relevant information relating *to Swertia chirayita* for research and extension purposes and will visit each other's field for sharing technical know-how and interacting with the target groups. Both the partners will have regular consultation on the priorities of the program in the field of chiraito conservation, cultivation, domestication, research and extension.

The agreement was signed on 27 August 2001 at Pakhribas, Nepal.

Mahato and K.C. obtained Ph.D. Degree

Mr. Baidya Nath Mahato Senior Scientist and Mr. Hari Bahadur K.C., Technical Officer in Nepal Agricultural Research Council (NARC) have obtained Ph.D. degrees from Indian Agricultural Research Institute (IARI), New Delhi and United Graduate School of Agricultural Sciences, Ehime University, Japan respectively.

Dr Baidya Nath Mahato

Dr. Mahato born on 21 January in Siraha, Nepal made study on "Characterization of variability in *Bipolaris sorokiniana* causing Spot blotch of wheat" in his Ph.D course. He was awarded SAARC (South Asian Association for Regional Co-operation) Fellowship in 1996 for the Ph.D. study.

Dr. Mahato "University Gold Medal" and "Vice-Chancellor' Gold Medal Awardee for first class first in B.Sc.Ag. and M.Sc.Ag. respectively from N.D. University of Agriculture and Technology, Faizabad, India, has been working as plant pathologist in the NARC since 1988.

Dr Hari Bahadur K.C.

Dr. K.C. born on 2 May 1960 in Lamjung, Nepal, made study on "Relation between Low Temperature Damage and Dwarfing Genes in Rice" in his Ph.D. course. He was awarded Heiwa Nakajima Scholarship from Heiwa Nakajima Foundation Tokyo, Japan in 1998 for the Ph.D. study.

Dr. K.C. previously was awarded "Peace and Friendship Scholarship from Association of International Education, Japan and Yoneyama Scholarship from Rotary Yoneyama Memorial Foundation, Tokyo, Japan for his M.Sc. study in Japan. He has been working as Seed Researcher in the Council since 1985.

Research Program Planning Process of NARC

Research priorities of Nepal Agricultural Research Council (NARC) are guided by national priorities indicated in the Agricultural Perspective Plan (APP) and Five Year Plan. NARC follows bottom-up and top-down convergent approach in planning process (NARC Guidelines 2000). The planning starts from village level planning workshop with the active participation of different stakeholders such as farmers, extensionists, entrepreneurs and local non-governmental organizations (NGOs). As the top-down approach National Planning Commission (NPC) and Ministry of Agriculture and Cooperatives provide policy and guidelines for program budget preparation.

Planning process passes following steps before a project proposals get approved.

Guideline and Directives: Within the framework of national guidelines and some additional of its own, NARC prepares guidelines and directives and sends to all research stations in advance before starting formulation of research proposals. Guidelines cover research policy as well as the procedure. NARC uses specific project proposal formats and codes for preparing project proposals.

Project Formulation: With the feed-back from different sources like village level workshop at outreach research sites, Rapid Rural Appraisal (RRA) and Participatory Rural Appraisal (PRA) conducted within the command area of research stations, planning and coordination meetings at station level, Regional Technical Working Group (RTWG) meeting at regional level, joint monitoring tour with extension personnel, field day, inter and intra site visits, and agricultural fair and exhibitions, the researchers formulate research proposals for consequent year and submit to their research stations. The proposals are collected and compiled at respective regional stations. Commodity research programs and disciplinary divisions submit their proposals to the Planning Division directly. This process begins about six months prior to new fiscal year.

Initial Review of Research Proposal: Planning Division sends multi-disciplinary teams to regional stations for evaluating the research proposals. Usually this process takes place during the Regional Program Budget Workshop. The proposals submitted by commodity programs and disciplinary divisions are evaluated by reviewers during central level program-budget workshop. Multi-disciplinary teams in accordance with given TOR evaluate the research proposals. The team can accept, reject or suggest for improving or modifying the proposals. After incorporation of team's comment all the proposals are submitted to the planning division of NARC.

Review by Technical Panels: Planning Division collects, compiles and categorises all the proposals and sends them to the high level technical panels for final technical review and evaluation. The panels consist of senior level scientists/experts from NARC and outside NARC. The panels are authorized to amend, merge, reject, accept or suggest to improve/modify the project proposals.

Processing at Planning Division: After receiving the proposals from technical panels, Planning Division prepares lists of total accepted projects station-wise. It sends the lists and the proposals to be corrected to the proposal makers through station chiefs and that are to be resubmitted with required modification to the Planning Division within a given period. Proposal developers are informed with the projects rejected by the panels. After verification all the project informations are entered to the computer for final compilation and analyses. After analyzing it delineates the shape and size of the program-budget and proceeds to the Sectoral Panel.

Sectoral Panel: Sectoral Panel checks whether the programs address the sectoral problems or not. NARC has four sectors namely crop, horticulture, livestock and fishery. Comments submitted by the panels are incorporated at Planning Division are submitted to the NARC management for consent on program-budget especially on management aspects such as capital and administrative costs.

Executive Board: After required amendment NARC management submits the proposed program-budget to the Executive Board that reviews at national level whether the resource allocations sufficiently address to solve the targets set in given five-year plan and APP and then proceeds to Council for final approval.

Council: The Council is more concerned with the government policies and guidelines. It examines the resources allocation in research and gives approval to program budget. It is the final step for annual program planning process from the NARC side. But there are still some procedures to reach the government's final approval.

Governmental Level: The program budget proposals aproved by NARC is submitted to the line ministry that is Ministry of Agriculture and Cooperatives. The line Ministry summarizes the programs of all its implementing actors at ministry level and submits to the NPC. The NPC examines the program at national level whether it is in the line or not and then forwards to the Ministry of Finance. Ministry of Finance examines the financial aspects and allocates the fund through a national budget statement in the house of parliament. Programs are readjusted after the budget allocation from the Government.

- Govinda Raj Sedhai

●

Planning Meeting on Adoption of Zero-tillage

In order to develop work-plan for the Nepal component, a one-day planning meeting on" Accelerating Adoption of Zero-tillage in Rice-Wheat System in the Indo-Gangetic Plains" was organized jointly by NARC and CIMMYT n Kathmandu on 3 September 2001.

The meeting Chaired by the then Executive Director of NARC, Dhruva Joshy, was attended by representatives from NARC, CIMMYT and Massey University, New Zealand.

W orkshop on "Adoption of Technology in Livestock Development"

With the theme of "Increasing Livestock productivity in mixed Crop-Livestock Farming Systems in Nepal", The one-day workshop was organized at Khumaltar on 13 July 2001.

In the workshop experts from NARC and Department of Livestock Service made presentations on livestock research and extension.

Rainbow Trout culture in Nepal

Besides warm water carp species used in Nepal, an exotic cold-water fish species Rainbow trout (*Oncorhynchus mykiss*) has been introduced that may bring up a profitable enterprise in the country. The culture and seed production techniques of rainbow trout have been developed and can be made available in the private sectors. Rainbow trout is a carnivorous and sport fish of North America. This fish was taken to California, Alaska and later on to Asia and Europe during 19th century. It was introduced in Japan in 1877 and now it has the third largest production in freshwater aquaculture in Japan. It lives on aquatic insects, small crustaceans and small fish in natural water but needs high protein content of quality feed in captivity and its cost of price is high but is tasty and easy to eat because no small Y bones as in other carps.

Rainbow trout in Nepal: First time rainbow trout was introduced to Nepal in 1969 from India. The second time, Her Majesty the Queen of United Kingdom presented 10,000 fingerlings of brown trout to His Majesty the King of Nepal. Those fish were kept in Fisheries Development Centre, Godawari (now Fisheries Research Division) and later on it was introduced in Trout Hatchery, Trishuli (now Fisheries Research Centre), but the fish could not survive due to lack of technical know-how. Again 50,000 eyed eggs of rainbow trout were introduced from Miyazaki prefecture of Japan in 1988 and hatched out in Godawari. Now this fish is in culture as well as breeding practices both in Godawari and Trisuli stations.

Feeding : Trout being carnivorous and also sensitive fish, it needs high protein content of quality feed. 40-45% protein content of feed should be provided for fingerlings and feeding should be done 4-6 times daily for less than 10-g size. Feeding should be done 3-4 times daily for between 10-50 g size and 2-3 times daily for more than 50-g size of 35% protein content feed. The feed is provided 4-6% of body weight to young fish of below 30-g size and 1.5-2% of body weight to above 30-g size. The low cost plant protein feed for trout has not been developed yet and fishmeal especially the shrimp is in practice to make feed because of good quality than other fishmeal. The shrimp, which is more expensive, but good quality is mixed with local feed ingredients soybean, corn, wheat, oilcake, ricebran, vitamin mixture and minerals for making trout feed.

Water Temperature: It is said that trout can live within the water temperature range of 0-25°C. The normal feeding habits and growth can be expected between 13-18°C of water temperature with more than 7 mg/l of dissolved oxygen. For spawning and hatching of eggs at the other hand, the suitable water temperature is said to be lower (7-15°C). However the constant water temperature, enough quantity and quality of water is very important.

Growth and Breeding: Under suitable water temperature and sufficient supply of good quality feed, trout will reach 200-300 g size within 10 months after stocking 5-10 g size of fingerlings. The marketable fish size is varied. The big hotels prefer between 200-300 g size, whereas, for family purpose prefer bigger than 300 g size. Trout will mature after 2-3 years and spawn 2000-25000 mature eggs/kg of fish. The fish breeds once a year from December to February. Artificial breeding is the usual process for trout. The fertile eggs are incubated with the flow of water 3-7 L/Sec and more than 7mg/L of dissolved oxygen. The fertile eggs will hatch within 27-30 days at 9-13°C.

Site Selection: Before going for trout culture, some of the things should be considered as an important factors. Water source should be permanent and enough quantity, water temperature should be cold below 20°C year-round. Dissolved oxygen above 7mg/L and pH value of 6.5-8.0 are considered suitable for trout culture. The site should be road accessible and the land should be 1-3% slope to permit an adequate flow of water.

Trout Farming: Trout farming may be of two types Full and Partial. In full system, trout will raise from eggs to adult and vice Versa and in partial system, trout will raise for marketable size and is called production system. The feeding tanks, fry growing ponds and marketing ponds, feed store, residential and service accommodations are needed for production farm. The ponds can be circular and rectangular but maximum use of water and construction cost is low in rectangular pond. The suitable size and depth of the pond will be 50-150m^2 and 50-90 cm respectively. If water source is reliable, permanent and enough supply, then ponds should be constructed as parallel type, so that the water of one pond will not mix with other ponds otherwise the infected fish of one pond may contaminate with the fish of other ponds. Fish stocking density depends upon the quantity of water flow. Trout can be stocked 10 kg /m^2 at 1 L/sec of water flow. However, the fish need to grade time to time to avoid the cannibalism and to allow the fish to grow equally. Generally the fish will be graded at four stages: I) 2-5 g sizes, ii) 10-20 g sizes, iii) 50-60 g sizes and > lOO g sizes.

Diseases Control: The occurrence of trout diseases might happen frequently due to dirty and high water temperature, improper quantity and quality of feed supply. Therefore to control the general diseases of trout, pond should be cleaned regularly and timely, water temperature should not exceed more than 20°C, feed should be made of good quality, need to feed properly and should not be excess and nitrogen content should not exceed more than 0.4 ppm in trout pond.

Trout Fingerlings: Fingerlings are produced annually in the fisheries Research Centres Godawary and Trisuli under Nepal Agricultural Research Council (NARC). The centers can provide 2-3 size of trout fingerlings at Rs 2000.00/1000 fingerlings and >100 g size can provide at Rs 300.00/kg. The table fish of trout is being made available from the Fisheries Research Centers, Godawary and Trisuli.

Technical support: Trout fish industry is a new venture in Nepal. The breeding and the culture technology have been developed in Nepal after few years of study with JOCV. The production practices are being carried out in the centers. The Government has given priority to support

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TRAINING WORKSHOP/SEMINARS, STUDY & TOURS ABROAD

(July - September 2001)

S.N.	Name	Position/Faculty	Subject	Duration	Country
	SEMINAR/WORKSHOP/MEETING				
1.	Mr. Madan Raj Bhatta	S-3/Agronomy	All India Wheat Annual Meeting	21-24 August	India
2.	Dr. Chandra Bahadur Karki	S-3/Pathology	All India Wheat Annual Meeting	21-24 August	India
3.	Dr. Madhusudan Upadhyay	S-3/Agronomy	In situ Conservation of Agro-biodiversity Scientific Institutional Experiences and implication	14-17 August	Peru
4.	Dr. Surya Laxmi Maskey	Chief/Soil Sc. Div.	Regional Workshop on Integrated Plant Nutrition System (IPNS) for development and rural poverty alleviation	3-8 June	Thailand
5.	Dr. Sundar Kumar Shrestha	Chief/Plant Patho. Div.	Regional Coordination Meeting of Potato Late Blight	26-28 September	Srilanka
	OBSERVATION				
6.	Mr. Sadhu Ram Basnet	S-3/Fishery	Technical Assitance from Nepal to Pakistan in Artificial Breeding of Mahaseer	27 Aug. for 3 weeks	Pakistan
7.	Mr. Pradeep Shah	T-6/Fishery	Visit for Ocean water in Orrisa	5-10 September	India
8.	Dr. Raj Kumar Shrestha	S-3/Soil Science	Training Seminar to Indo-Gangetic Plains	10-22 September	India &
9.	Mr. Hari Krishna Shrestha	S-3/Socio-eco	Training Seminar to Indo-Gangetic Plains	,, ,,	Bangladesh
10.	Mr. Diwakar Sharma	S-3 /Agronomy	Visit on Maize Research	10-16 September	India
11.	Mr. Dil Bahadur Gurung	S-3/Agronomy	Visit on Maize Research	10-16 September	India
	TRAINING				
12.	Mr. Bijay Kumar Dutta	S-3/Agronomy	International Training Course on Participatory Research and Development	24 Sept-12 Oct.	Philippines
	STUDY				
13.	Mr. Krishna Kumar Mishra	T-6/Agronomy	M.Sc. in Plant Breeding	1 July 2001-31 June 2003	India
14.	Mr. Salik Ram Gupta	T-6/Agronomy	M.Sc. in Plant Breeding	1 July 2001-31 June 2003	India
15.	Mr. Nutan Raj Gautam	T-6/Agronomy	M.Sc. in Plant Breeding	1 July 2001-31 June 2003	India
16.	Mr Anisur Rehman Ansari	S-3/Entomology	M.Sc. in Entomology	1 July 2001-31 June 2003	India
17.	Mr. Sanjay Bista	T-6/Entomology	M.Sc. in Entomology	1 July 2001-31 June 2003	India
18.	Mr. Ram Baran Yadav	T-6/Agronomy	M.Sc. in Plant Breeding	1 0 July 2001-9 July 2003	India
19.	Mr. Purusottam Gautam	T-6/Entomology	M.Sc. in Entomology	3 Sept. 2001-2 Sept. 2003	India
20.	Mr. Mr. Tirtha Raj Rijal	T-6/Plant pathology	M.Sc. in Plant Pathology	3 Sept. 2001-2 Sept. 2003	India
21.	Mrs. Reshma Neupane	T-6/Agronomy	M.Sc. in Agronomy	1 Sept. 2001-31 Aug. 2003	India
22.	Mr. Rajendra Darai	T-6/Agronomy	M.Sc. in Agronomy	1 Sept. 2001-31 Aug. 2003	India
23.	Mr. Purushottam Jha	T-6/Plant Pathology	M.Sc. in Plant pathology	1 Sept. 2001-31 Aug. 2003	India
24.	Dr. Upendra Man Singh	S-3/Veterinary	Ph.D. in Veterinary	1 Sept. 2001-31 Aug. 2004	India
25.	Mr. Tirtha Raj Pokharel	T-6/Horticulture	M.Sc. in Plant Pathology	8 Sept. 2001-7 Sept.2003	India
26.	Mr. Subash Shrestha	T-6/Livestock	M.Sc. in Animal Breeding	15 Sept. 2001-14 Sept.2003	India
27.	Mr. Chitra Bahadur Kunwar	T-6/Agronomy	M.Sc. in Agronomy	1 Nov. 2001-5 Sept.2003	Thailand

Contd. from page 6

the private enterprizes who come for the production industry. Trout culture is being a new venture and encourage the private enterprizes, the technical support will be made available to take up trout culture industry. Some of the sites for trout culture have been surveyed eg; Khokundole (Kodary, High way), Sunkoshi Reservoir and Dhunche (Rasuwa) but the detail survey need to be carried out. Other places will also be studied for the possibilities of trout culture industry.

Marketing: The market for trout fish will not be problem at least for few years. The fish can be consumed within the country, especially in the big hotels. Besides that there is a demand from overseas country Singapore including neighboring country India. Therefore some private enterprizes need to come for trout culture industry. This will be a big income source industry not only for the farmers but also for the nation as well.

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Raghunath Prasad Sapkota: Acting NARC Executive Director

Mr. Raghunath Prasad Sapkota, Principal Scientist (S-5) has been appointed as Acting Executive Director of NARC until confirmed appointment is made by His Majesty's Government as per "Nepal Agricultural Research Council Act, 1991" He was appointed by the decision of Minister for Agriculture and Cooperatives and the Chairman of the NARC Council Mr Mahesh Acharya on 29 September 2001.

Mr. Sapkota was born on 14 December 1944 in Mahottary, Nepal. He has been working in the field of agriculture for the last thirty-five years with various managerial and technical capacities.

Mr. Sapkota an M.Sc. in Agriculture from India in 1983 has already had the positions of Director for Crop and Horticulture Research; Regional Director and Chief of Agri-Botany Division of NARC.

The Executive Director is the Administrative Head of the Council.

RESEARCH HIGHLIGHTS

Experiment on some bio-pesticides on tomato and eggplants

Tomato and eggplants are important cash generating vegetable crops in Nepal but are very much subject to damage due to pests namely tomato by *Helicoverpa armigera* and eggplants by *Leucinodes orbonalis*. Farmers have been using insecticides to manage these insects. It has been highly felt that some alternatives be developed to control these problematic insects.

Experiment was carried out at field condition of Khumaltar, Lalitpur with an objective to develop suitable pest management system for the management of *Helicoverpa armigera* on tomato and *Leucinodes orbonalis* on eggplants.

The effectiveness of recommended and double than recommended doses of Bio-Multi-Neem, Bacillus thuringiensis (K), Nuclear Poly-hedrosis Virus (NPV) were tested against *H. armigera* on tomato and *Leucinodes orbonalis* on eggplants. The chemical pesticides (Thiodane and Cypermethrin alternately), Bio-Multi-Neem plus tobacco solution and water spray were also included as treatments. All these treatments were uniformly applied at an interval of 10 days. Treatment application was initiated as and when infestation of target insects was seen on plants. The parameters such as number of healthy fruits, number of bored fruits, number of larvae present at the treated plants, number of shoots infested (in case of eggplants) and fruit yield were critically observed during the crop stage.

Based on observed parameters, all the selected treatments were found superior to water spray in reducing damage *of H. armigera* on tomatoes. On the basis of fruit yields and number of bored fruits, treatments: Bt @ 3g and NPV @ 3ml per litre water, were superior to other treatments tested. Minimum number of fruits was bored in the plants treated with chemical pesticides but the number of rotten fruits were the maximum in these plants.

Based on the fruit yield and No.of fruits bored, none of the treatments were superior as chemical pesticides (Thiodane and Cypermethrin alternately) in reducing damage of *L. orbonalis* on eggplants. However, Bt. @ 3g per litre water and Bio-Multi-Neem @ 3 ml plus tobacco solution (1:4 neem and solution) were found slightly superior than normal water spray in reducing damage of *Leucinodes orbonalis* on eggplants.

- R. B Paneru.

Upcoming Event

International Symposium on Maize Research and Production in Nepal, 3-5 December 2001, in Kathmandu, organized by NARC, CIMMYT and SDC.

Patron:

Raghunath Prasad Sapkota
Act. Executive Director

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