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Foreword

NARC has the mandate to manage agricultural research at the national level to generate technologies required for different production environments. Research thrusts during the last few years have been focused on generation of cost-effective and demand driven technologies having competitive advantage.

Agriculture in Nepal is the source of livelihood for almost all population in rural areas and is the pivotal for national economy. In the new context of making prosperous Nepal, the agriculture research has to concentrate in generating technologies for: subsistence (major food crops for food security); commercialization (marketing, processing agrobased industry); rural employment; and natural resource management for improving rural livelihood of Nepalese people.

With the changes taking place in the global agricultural research system and approach, NARC has to develop innovation research system with coordination of all actors in agriculture research and development in the country (I/NGOs, CBOs, private sectors, professional societies etc.). In this direction, NARC has prepared strategy that would help for smooth functioning of the system. Presently it has been working in technology generation through its research system with divisions, commodity programs, and research stations. It deals with field problems of farmers identifying technical solutions for different agricultural and horticultural crops, livestock and fisheries. Both in-house and participatory research approach involving farmers and other stakeholders has been followed.

This Research Highlights of NARC summarises the accomplishments of research projects/ activities conducted during 2002/03 to 2006/07. All institutions under NARC have already published their separate annual technical reports. This consolidated report is the compilation of excerpts from some of the major findings of the organisation. It contains the major technical outputs of mandatory food crops, livestock, fisheries and other allied subjects. It would be helpful to communicate with policy makers, planners, donor agencies, financial institutions, research scientists, extension workers, farmers, agro-enterprises and others in research activities and accomplishments. This also meets the statutory requirements of submitting activities and achievements to Government of Nepal.

I take this opportunity to acknowledge the support from the Ministry of Agriculture and Cooperatives (MoAC), Department of Agriculture (DoA), Department of Livestock Services (DLS) and the International Agencies such as WB/AREP, ADB, JICA/KR II, DFID/HARP, IFAD/HLFFDP, ACIAR, IARCs, CIMMYT, ICRISAT, ICARDA, APAARI, IRRI, SDC/HMRP, Helvetas/SSMP, CIP, IPGRI, IBSRAM, USDA, USAID, AVRDC, ICAR, AERC, IFPRI, SIDA, CRSP/Winrock, CAZS-NR, ICIMOD, RNAM, SIMI, ICUC, KVL, Universities (Cornell, IDAHO, Benguine, Life Science), RDA/YARI/ ICF (Korea), NARDF etc. for financial and technical supports (Annex 8)

I congratulate all the commodity programs, research stations, disciplinary divisions under NARC for their valuable contribution to generate new technologies according to the needs of the farmers and other clients. Thanks are due to previous executive directors, directors, chiefs of divisions, commodity programs, R/ARSs, scientists, technicians and other staff of NARC. Special thank goes to the members of this report preparation/ publication committee as well as information providers. I like to congratulate for taking painstaking work in collecting materials and compiling/ editing this five years rersearch highlights particularly to Dr T P Barakoti (who compiled most part) and Mr P P Khatiwada, Dr B N Mahato, Dr S M Pradhan, Dr T B Gurung, Dr U M singh, Mr BMS Basnet and Mr K R Bhatta. I appreciate all the directors including NARI and NASRI, chief of CPDD and M & E chief for going through the draft report and making comments/ suggestions and editing to bring this report into this shape, especially to Dr D P Sherchand, Dr A Pradhan, Dr K P Poudel, Mr BMS Basnet and Mr S N Vaidya. Likewise, thanks are due to Dr H K Manandhar, Dr B R Joshi, Mr B P Pokharel, Mr H K Shrestha, Mr K P Shrestha, and Mrs. Bhabana Shrestha, all other staff, who directly or indirectly helped in preparing the report. The press personnel are also thanked for publishing job.

Dr. Nanda Prasad Shrestha
Executive Director
April, 2008

Abbreviations an Acronyms

ACIAR	:	Australian Center for International Agricultural Research
AED	:	Agriculture Engineering Division
AEZ	:	Agro-ecological zone
ADB	:	Asian Development Bank
AGDP	:	Agriculture gross domestic product
AGRIS	:	International Information System for Agricultural Sciences & Technology
APAARI	:	Asia-Pacific Association of Agricultural Research Institutes
AREP	:	Agriculture Research and Extension Project
ARS	:	Agriculture Research Station
AVRDC	:	Asian Vegetable Research Development Center
BGM	:	Botrytis gray mold
BL	:	Bhairahawa line
BLB	:	Bacterial leaf blight
BLS	:	Brown leaf spot
BLSB	:	Banded leaf and seath blight
BP	:	Bed planting
BPH	:	Brown Plant hopper
BRRI	:	Bangladesh Rice Research Institute
BS	:	*Bikram Sambat*
CARIS	:	Current agricultural research information system
CBO	:	Community-based organization
CEAPRED	:	Center for Environmental and Agricultural Policy Research, Extension and Development
CFFT	:	Coordinated farmer's field trial
CGIAR	:	Consultative Group for International Agricultural Research
CIMMYT	:	International Maize and Wheat Improvement Center
CIP	:	International Potato Center
cm	:	Centimeter
CO_2	:	Carbon dioxide
CPDD	:	Communication, Publication and Documentation Division
CTV	:	Citrus tristeza virus
CVT	:	Coordinated varietal trial
DADO	:	District Agriculture Development Office
DAS	:	Days after seeding
DBM	:	Diamond back moth
DD	:	Disciplinary division
DFID	:	Department for International Development
DLS	:	Department of Livestock Services
DM	:	Dry matter
DOA	:	Department of Agriculture
DSR	:	Direct seeded rice
ED	:	Executive Director, Entomology Division
EM	:	Effective micro-organism

ET	:	Embryo transfer
FAO	:	Food and Agriculture Organization
FAT	:	Farmer's acceptance test
FB	:	Foliar blight
FFT	:	Farmer's field trial
FORWARD	:	Forum for Rural Welfare and Agricultural Reform for Development ...
FP	:	Farmer's practice
FS	:	Foundation seed
FY	:	Fiscal Year
FYM	:	Farm yard manure
g	:	Gram
GDP	:	Gross domestic product
GIS	:	Geographical information system
GLRP	:	Grain Legume Research Program
GRPI	:	Genetic resource policy initiatives
ha	:	hectare
HARP	:	Hill Agriculture Research Project
HCRP	:	Hill Crop Research Program
HLB	:	Helminthosporium leaf blight
HLFFDP	:	Hills Leasehold Forestry and Forage Development Project
HMRP	:	Hill Maize Research Program
IARC	:	International Agricultural Research Center
IBSRAM	:	International Board for Soil Research and Management
ICAR	:	Indian Council of Agricultural Research
ICARDA	:	International Center for Agricultural Research in the Dry Areas
ICIMOD	:	International Center for Integrated Mountain Development
ICM	:	Integrated crop management
ICRAF	:	International Centre for Research in Agroforestry
ICRISAT	:	International Crops Research Institute for Semi-Arid Tropic
ICUC	:	International Centre for Underutilised Crops
IDTN	:	International Disease Trap Nursery
IET-N	:	Initial evaluation trial-normal
IFAD	:	International Fund for International Development
IFPRI	:	International Food Policy Research Institute
IJO	:	International Jute Organization
IIMI	:	International Irrigation Management Institute
IPGRI	:	International Plant Genetic Resources Institute
IPM	:	Integrated pest management
IRLON	:	International rain-fed lowland observation nursery
IRRI	:	International Rice Research Institute
ISNAR	:	International services for national agricultural research
JICA	:	Japan International Cooperation Agency
JRP	:	Jute Research Program
kg	:	Kilogram
KOICA	:	Korea International Cooperation Agency

KPS	:	Kernel per spike
l	:	Liter
LER	:	Land equivalent ratio
LCC	:	Leaf color chart
LIBIRD	:	Local Initiative for Biodiversity Research and Development
masl	:	Meter above sea level
MoAC	:	Ministry of Agriculture and Cooperatives
MoU	:	Memorandum of understanding
MP	:	Methyl parathion
MRL	:	Maximum residue lecvel
mt	:	Metric tonne
NARC	:	Nepal Agricultural Research Council
NARDF	:	National Agriculture Research and Development Fund
NARI	:	National Agricultural Research Institute
NASRI	:	National Animal Science Research Institute
NCRP	:	National Commodity Research Program
NGO	:	Non-government organization
NGLRP	:	National Grain Legume Research Program
NGRP	:	National Ginger Research Program
NMH	:	Nepal maize hybrid
NMRP	:	National Maize Research Program
NL	:	Nepal line
NORP	:	National Oil Seed Crop Research Program
NPK	:	Nitrogen, phosphorus and potassium
NPV	:	Nuclear polyhedrosis virus
NRRP	:	National Rice Research Program
NSRP	:	National Sugarcane Research Program
NTFP	:	Non-timber forest products
NTV	:	Nepal Television
NWRP	:	National Wheat Research Program
ODAP	:	(3-N-Oxalyl)-L-2-3 diaminopropionic acid
OPV	:	Open polinated variety
OR	:	Outreach Research
ORD	:	Outreach Research Division
PBS	:	Pre-basic seed
PLCV	:	Potato leaf curl virus
PPB	:	Participatory plant breeding
PPD	:	Plant Pathology Division
PRA	:	Participatory rural appraisal
PRP	:	Potato Research Program
PT	:	Power tiller
PTD	:	Participatory technology development
PTM	:	Potato tuber moth
PTR	:	*Pyrennophora tritici-repentis*

PVM	:	Potato virus M
PVS	:	Participatory varietal selection
QPM	:	Quality protein maize
RCBD	:	Randomized complete block design
RARS	:	Regional Agricultural Research Station
RCT	:	Resource conservation technology
R & D	:	Research and Development
RMA	:	Rapid marketing appraisal
RNAM	:	Regional Network For Agricultural Machinery
R-W	:	Rice-wheat
RWC	:	Rice-Wheat Consortium
RT	:	Reduced tillage
SS	:	Surface seeding
SAARC	:	South Asian Association for Regional Cooperation
SALT	:	Sloping agricultural land technology
SARO	:	South Asian Regional Office
SARPOD	:	Socio-economics and Agriculture Research Policy Division
SDC	:	Swiss Agency for Development and Cooperation
SIDA	:	Swedish International Development Cooperation Agency
SNF	:	Solid not fat
SRI	:	System of rice intensification
SS	:	Surface seeding
SSD	:	Soil Science Division
SSMP	:	Sustainable Soil Management Project
TEEAL	:	The Essential Electronic Agriculture Library
TGW	:	Thousand grain weight
TPS	:	True potato seed
TS	:	Total solid
TSS	:	Total soluble solid
UK	:	United Kingdom
UNO	:	United Nations Organization
USAID	:	United States Agency for International Development
USD	:	US Dollar
USDA	:	United States Development Agency
VDC	:	Village Development Committee
WK	:	Wheat Khumal
WTO	:	World Trade Organization

NARC Highlights

Nepal Agricultural Research Council (NARC) was established in 1991 under the Nepal Agricultural Research Council Act, 2048 (1991). It is operated under two tier decision making bodies: a 16-member NARC Council chaired by Minister for Agriculture and Cooperatives and a 8-member Executive Board chaired by Executive Director of NARC.

NARC is an autonomous national apex body responsible for overall agriculture research in the country. It is mandated to conduct research and study in different aspects of agriculture for increasing agricultural productivity and production by generating appropriate agro-technologies suitable to various agro-ecological zones (AEZs) for the country's diversified commodities like cereal crops, grain legumes, oilseeds, cash/industrial crops, horticultural crops, livestock (bovine, swine, avian, goat, sheep) and fisheries.

As stated in the Preamble of NARC Act, 1991, the mission of NARC is to conduct high level studies and research on problems of the agriculture sector and to find out measures of solutions of the problems and thereby uplift the quality of life of general public. So, the main mission of NARC is to develop and provide appropriate technologies to the farmers, extension agents, agro-entrepreneurs and other clients/ stakeholders in order to convert the agriculture into a viable/ dynamic system and thereby to improve the standard of living of Nepalese people.

Objectives

As mentioned in the Act, there are three major objectives of NARC as follows:

1. To conduct and /or let to conduct quality research and studies related to agriculture,
2. To find appropriate strategy to resolve problems in the agriculture sector, and
3. To provide necessary advice to Government of Nepal in formulating National Agricultural policy.

Mandates

In pursuance of these objectives the following mandates have been provisioned:

- To conduct and/or let to conduct agricultural research,
- To determine priorities in studies and research related to agriculture,
- To provide consultant services and research support services to agricultural research,
- To coordinate, supervise, monitor, review and evaluate research activities related to agriculture in the country,
- To maintain/document up-to-date records of agricultural research, and
- To conduct and /or let to conduct other necessary activities related to agricultural research.

Executive Director is the administrative head of the organization, who is responsible for all the activities of the institution. There are five line directors to help in the responsibility of the Executive Director. Director for Crops and Horticulture Research technically handles 11 national crops related research programs of rice, maize, wheat, grain legumes, oilseeds, hillcrops, sugarcane, citrus, potato, ginger and jute. Research and studies on these crops are also conducted in the multidisciplinary research stations and divisions as well. Director for

Livestock and Fisheries Research handles 3 livestock commodity programs on Bovine, Swine and Avian, Sheep and Goat, and Fisheries. Director for Planning and Coordination handles the planning process of research programs and coordinates for resource management and development. The following Divisions function under the Director for Planning and Coordination: Planning, Outreach Research, Socioeconomics & Agricultural Policy Research, Monitoring & Evaluation, Training & Scholarship, and Communication, Publication & Documentation. All the research projects are monitored and evaluated by the chiefs of Monitoring & Evaluation, disciplinary divisions, Regional Directors, Commodity Coordinators and senior scientists. Directors for Finance and Administration handle the financial and administrative management of NARC respectively.

In order to implement different research projects and activities, there are different organizational entities under NARC: Two institutes (National Agricultural Research Institute and National Animal Science Research Institute) are located at Khumaltar and separate wings of 14 National Commodity Research Programs (NCRPs), 4 Regional Agricultural Research Stations (RARSs), 14 Agricultural Research Stations (ARSs), 20 Technical Disciplinary Divisions (DDs) and units (Annex 2).

National Agricultural Research Institute (NARI) deals mainly with the agronomical and horticultural crops research and related activities. It includes seven related disciplinary divisions: Agronomy, Agriculture Botany, Soil Science, Plant Pathology, Entomology, Agricultural Engineering, and Horticulture Research. Director of NARI has the responsibility to administer their overall activities.

National Animal Science Research Institute (NASRI) deals mainly with the livestock and fisheries research. It includes five related disciplinary divisions such as Animal Breeding, Animal Nutrition, Animal Health, Pasture and Fodder Research and Fisheries Research. Its overall activities are administered by the Director for NASRI.

Human Resource

Currently 1,345 technical and administrative staffs with different levels are involved in NARC, though the approved manpower is 1,805. The total staff includes 201 scientists and 213 technical officers of various disciplines, 569 technical assistants and 362 administrative as well as accounts staff (Annex 3).

Projects and Budget

The total numbers of projects conducted in NARC during the Fiscal 2006/07, 2005/06, 2004/05, 2003/04, 2002/03 were 444, 426, 444, 398 and 407 respectively that includes on-station and on-farm/outreach research projects, research management programs, farmers' training, production programs, and others.

The total annual budget of NARC allocated for the Fiscal Years 2002/03, 2003/04, 2004/05, 2005/06 and 2006/07 were Nepalese Rs. 313.24, 300.58, 311.25, 295.06 and 355.00 million from Government of Nepal respectively. Likewise, the expenditures were Rs. 251.15, 268.05, 309.56, 269.27 and 343.06 million respectively. The main international donor agencies/ financial institutions that supported NARC were: Japan International Cooperation Agency (JICA) Japan through KR-II (Fisheries) and KR-II (others), Department for International Development (DFID) UK through Hill Agriculture Research Project (HARP), World Bank

(IDA) through Agricultural Research & Extension Project (AREP), Swiss Agency for Development and Cooperation (SDC) through Hill Maize Research Project (HMRP), IFAD through Hills Leasehold Forestry and Fodder Development Project and others.

The agricultural research activities of crop horticulture, animal science and fisheries were accomplished, with the joint efforts of commodity programs, disciplinary divisions, Regional/ Agricultural Research Stations of NARC in collaboration with other partners. On-farm/ outreach research including farmers' acceptance tests (FATs) has been conducted by the RARSs, ARSs, commodity programs and some divisions as regular activities.

Research programs are initiated with bottom-up planning through village level workshops followed by station/ regional level discussions and finally approved by the NARC Council. Joint meetings are also held among NARC, DOA and DLS and other allied agencies at different levels to identify problems, prioritize them and determine research agenda.

HIGHLIGHTS SUMMARY

Crops

1. **Varieties released.** High yielding, disease and insect resistant/ tolerant crop varieties released for different agro-ecological zones are: Khumal 8, Loktantra, Mithila, Ram, Barkhe 3004 and Pokhareli Jethobudho of Rice; Deuti and Shitala of Maize; Pragati and Unnati of Rapeseed; Kalyan and Prateekchha of Greengram/Moongbean and Baidehi and Rajarshi of Groundnut. Many pipeline varieties of different crops to be released are identified.
2. So far, 213 varieties with package of cultivation practices of 43 different crops have been released within the span of 47 years. It took 8-12 years for releasing one crop variety. The area coverage by improved seeds/ varieties of the three main crops rice, maize and wheat is 85%, 86% and 96% respectively.
3. Review of the past 13 years balance sheet of food grains shows positive indication for the last six years ranging from 68,496 to 2,13,027 metric tones but for last 7 years, there was negative food balance ranging from 34,351 to 4,85,000 metric tones. The recent negative balance of 21,553 and 1,79,910 mt for the fiscal 2005/2006 and 2006/2007 respectively indicates need of National Food Security Mission in the country.
4. Crosses of wild rice and edible rice became successful.
5. Solarization technique for rice nursery developed.
6. The package of practices for Boro or winter rice is developed.
7. Rice genotypes were analyzed for physical and physicochemical characteristics, milling recovery, protein and ash content for development of fine and aromatic rice varieties.
8. NR-10285, NR-10274 and NR-10219 showed good milling quality having higher head rice content.
9. There is no difference in rice yield between transplanting and directed seeded one if weed is managed well. The yield of wheat after direct seeded rice was more by 55% as compared to transplanted rice plus water saving in direct seeded rice.
10. Bavistin @ 3 g/kg rice seeds is found to be effective for managing foot rot disease of Khumal 4 variety. ?
11. System of rice intensification (SRI) is identified as pipeline technology.
12. Leaf color chart (LCC) found useful for assessing nitrogen requirement of rice.?
13. Gray leaf spot disease of maize identified for the first time in the high hills of Nepal?.
14. Wheat rust disease screening became successful under poly-house condition.
15. Product diversification of finger millet and buckwheat by preparing cookies, bread, noodle etc. Quality noodle can be prepared from finger millet and buckwheat with addition of gluten at about 13% and water at 55% by the weight of flour.
16. Community-based seed production (CBSP) program found useful for the supply of source seeds to the users clients locally.
17. Resource conservation technologies (RCTs) like zero-till, minimum/reduced-till, surface seeding, bed-planting, direct seeding technologies developed.
18. Integrated crop management (ICM) found effective.
19. Package of practices for Tori and Mustard identified. It includes appropriate rate of fertilizers, manure, weed control, disease and pest management, irrigation.

Horticulture

1. Hybrid tomatoes are developed.
2. Tomato farming in pots is developed.
3. Off-season vegetables cultivation technique by using plastic houses is developed.
4. Off-season onion production technology is developed.
5. Organic vegetables farming techniques are developed.
6. Technologies like true potato seed (TPS) and viral disease-free potato seed production by using tissue-culture technique developed and are in use.
7. Potato tuber moth (PTM) resistant lines are identified.
8. Chips prepared from the stored potato of 30 days and 60 days were found acceptable except Khumal Seto.
9. Grafting technique/ propagation developed for jackfruit.
10. One-hour fermentation time found appropriate for good quality tea which has low caffeine and high water
11. Late variety of sweet orange ' Valencia' identified.
12. Culturing technique for Gyanoderma (Red Mushroom) is developed.

Agri-engineering

1. Jab seeder/Dibbler is developed.
2. Drum Seeder technonology developed for Rice.
3. Low-cost Solar Dryer developed.
4. Hand and Paddle-operated Corn Shellers developed.
5. Paddle and Electric-operated Millet Thresher and Pearling Machine developed.

Livestock

1. Milk yield of native buffalo breeds varied from 300 to 2000 lit per lactation with the mean lactation yield of 1000 lit. Some 25% of the recorded population have average yield of 1200 lit, which shows the possibility of selection and upgrading.
2. An average increase in 2.23 liter per day of milk was recorded in animals supplemented with plastic bag silage @ 12 kg/day than in the control group.
3. Growth rate in the indigenous male buffalo calves could be achieved up to 575 g/day with 40% concentrate in daily DM requirement in on-farm condition, but with 60% DM from concentrate, this growth could be increased up to 747g /day.
4. 40. Embryo transfer (ET) has been initiated in the country in cattle using Jersey frozen embryo imported from New Zealand for the first time in 2003. A total of 130 cattle were embryo transferred. The results showed low (11%) conception rate from ET.
5. Jersey crossbred cows with steaming up diet with 2-2.5 kg/day/cow for two months at advanced pregnancy produced 21 % more milk than the cows with traditional feeding management system.
6. Giriraja poultry gained popularity among the rural farmers in the Eastern and Central regions due to its high carcass yield as well as egg laying capacity with hardiness. The average body weight of Giriraja at 8th, 12th, 16th week was recorded 1471, 2552 and 3012 g respectively with average egg laying performance of 160-180 eggs/hen/year.

7. Study on Marek's disease control in commercial poultry could be effective if first vaccine be made with Rispens cell associated vaccine on day one and second vaccinations with HVT on day seven.
8. Nettle powder feeding of broiler chicken at 0.7% daily, 5% and 10% weekly showed that nettle powder could be supplemented weekly at 3-5% of feed to enhance growth and maintain protective level of antibody against new castle disease. Better growth response in Pakhribas pig was found when fed @ 30% green nettle leaves.
9. Antihelmintic treated lambs and kids under the migratory management showed significantly higher weight gain than traditionally managed animals under farmer's management with the weight difference of 3.8 kg in lambs and 2.2 kg in kids respectively within the period of 7-8 months.
10. Sodium thiosulphate @ 5g/ young animal and 10g/ animal as oral drench was found highly effective (more than 90%) to protect the animals from the poisoning effects of aconite leaves and flowers under natural poisoning in migratory sheep and goats.
11. Lighting with solar lamps and nylon net enclosure was found to be effective against predation in the migratory sheep and goats.
12. Cuscutta is successfully controlled by the use of herbicide Pendimethalin 30% (Stomp 30 EC @ 0.5 kg a.i./ha) and Fluchloralin (45 EC @ 0.75 kg a.i./ha) as pre-emergence. The other precautionary method is to grow berseem from cuscutta free seed.
13. Seed production in oats was high (3.5mt/ha) in zero cut, followed by one cut (2.6mt/ ha) and two cut (2.2mt/ ha).

Fisheries

1. Trout breeding technology has been successfully demonstrated in farmers'fields, especially in Nuwakot, Rasuwa and Sindhupalcholk districts. At present, there are 17 small and big private trout farms scattered in six hill districts.
2. The community based rice-fish farming has been successful in achieving the rice and fish production from the same plot of rice field with better turn over. The rice-fish integration can increase nearly 12% of additional rice yield, and 300-514 kg fish production per hectare within a rice crop cycle.
3. African cat-fish and its hybrid have been used for the homestead fish farming in small pits and ponds. The air breathing catfish which grow considerably at high rate, accept any supplementary feed, require low oxygen and are resistant to many diseases.
4. Recently, cage fish culture of grass carp (*C. idella*) in lakes has been developed as one of the low cost production technology. In cage fish culture, advanced fingerlings of about 20-30 g individual body weight are stocked and fed with aquatic weeds available in surrounding water bodies.
5. Substantial achievements in breeding, seed rearing and feed formulation techniques of Sahar (*Tor putitora*) have been recorded. In pond condition, fry could be reared successfully with more than 60% of survivability from hatchlings.
6. Technological package of fancy carp culture is ready for dissemination.
7. Genetic diversity of Sahar has been studied using allozyme markers. Results revealed that Sahar from Kali Gandaki, Trishuli and Koshi rivers and Phewa lake are con-specific. Translocations of Sahar (for rehabilitation of degraded stock) among these water bodies found possible with minimum genetic risk.

8. Successful breeding of indigenous Gardi fish and production of about 1,700,000 fingerlings of Sahar, Asala, Katle and Gardi have been released in Kaligandaki 'A' dam.
9. Breeding success of Aquarium fishes Guppy, Platy, Swordtail, Goldfish and Fancy Carp
10. Technology exchange on fisheries between Nepal (Rainbow Trout) and Thailand (Fresh Water Prawn) have been agreed.

Agroforestry, Fodder and Pasture

1. Effects of different promising fodder trees on the growth and yields of maize and millet in the mid-hill condition identified
2. Innovative model of agri-silvo pastoral system, i.e. terrace riser based agroforestry for the mid and high hills developed
3. Farming of recommended tree fodders and ground fodder/forages species was successful in the cropping land terrace riser
4. Propagation of Allo nettle through nursery raising technique and stem cutting found successful for its domestication. Cuttings saplings are vigourous.
5. Cost effective and environmentally sustainable processing technique of allo bast (Lokta fibre) found effective using caustic soda instead of wood ash.
6. Propagation of Chiraito through seed and seedling nursering techniques identified. Average germination was 1000-2000 seedlings from 1 g of seed. It can be direct seeded in the terrace riser and flat land by mixing into dung slurry
7. Chiraito cultivation technology/package of practices identified such as transplanting, planting distance, rate of FYM and chemical fertilizer, manuring, weeding, harvesting, seed production/selection.

Communications/Promotions

1. Updated the Essential Electronic Agricultural Library (TEEAL: 1993 to 2006).
2. On-line service of Nepal Rice/Cereal Knowledge Bank initiated.
3. The generated agro-technologies were communicated to the clients.
4. NARC participated in Exhibitions of International Mountain Day, World Environment Day, Regional Agricultural Machinery Fair with latest developed varieties and technologies.
5. Second National Rice Day observed at Khumaltar on 15th Ashad, 2063 (June 29, 2006) in connection with the International Year of Rice declared by UNO in 2004 with the theme: "Rice is Life".
6. Researchers used as resource persons in trainings.