

NARI Annual Report 2001-2002

Report of the President

2001-2002 has been the thirty fifth year of the institute. We are proud of the achievements of our director Dr. Anil K. Rajvanshi. He was given the prestigious 2001 Jamnalal Bajaj Award for application of Science and Technology for rural areas and we congratulate him for being thus honored. Dr. Rajvanshi has been very ably guiding the research programs at NARI as the director for last 20 years.

Many of the areas in which NARI carried out research 20-30 years ago are gaining popularity now, showing how much ahead of time we really were. We can look at just two examples. Due to severe shortage of water for growing sugarcane, sugar factories have started looking at sugarbeet as a complimentary crop which matures in 5-6 months, can grow in saline soils and requires only about 30% of the water that sugarcane needs. NARI carried out research on this crop throughout the decade of the 70s and showed that sugarbeet can be grown successfully in the Nira Canals region. It was not taken up on large scale at that time due to the difficulties in its processing by the factories for sugar production.

Similarly in the decade of the 80s, complete technology for producing alcohol from sweet sorghum was developed at NARI but it could not spread due to the government policies and prevailing excise laws. Now with recent government permission to blend ethanol with petrol in vehicles, there is renewed interest in this crop. Mr. B. V. Nimbkar, the founder and the first president of NARI started work on sweet sorghum for sugar production. Dr. Anil K. Rajvanshi, the director of NARI since 1981 had the vision to start work on this crops for ethanol production. Let us hope that finally their courage of conviction which led them to explore new paths will bear fruit in the coming years.

Two new research projects were sanctioned during this year. Once again we hope that both these projects will help to illuminate new paths. The first project "Biometrical investigation of flower yield and its components and their maximization in safflower" is sponsored by the Indian Council of Agricultural Research, New Delhi. The second entitled "To study the usefulness of petal from Indian cultivars of safflower for developing value added products of edible nature" is sponsored by the Department of Science and Technology, New Delhi. We gratefully acknowledge the grants from these agencies. It is hoped that safflower flower which is an unexploited resource from a crop which presently finds use only as an oilseed crop will become the main product from the crop. This will considerably increase the remuneration obtained by the farmers from safflower.

Ms. Chanda Nimbkar, the honorary director of our Animal Husbandry Division has received the John Allwright Fellowship from the Australian Centre for International Agricultural Research to do a Ph.D. in animal genetics at the University of New England, Armidale, Australia. We congratulate her and wish her all the success in the Ph.D. program.

Our present efforts in R & D could not have been possible without the financial help from the various funding agencies, donations from well-wishers, and dedicated work of all the staff. We owe a great debt to all of them.

We also appeal to all the well-wishers of our Institute to generously contribute to our corpus. Your donations are 100% tax deductible.

Dr. N. Nimbkar

April 2002

Agricultural Research

Our work in agriculture research has focussed on two crops; safflower and sweet sorghum.

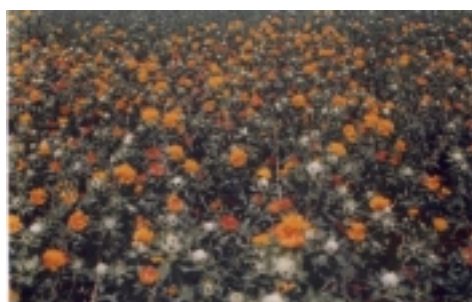
Safflower :

Project 1 : All India Coordinated Research Project (AICRP) on Oilseeds (Safflower) : Funded by Indian Council of Agricultural Research (ICAR), New Delhi.

NARI is one of the All India Coordinated centers of safflower research for limited irrigation since 1980. The major emphasis of this program at the NARI center is on developing high yielding, high oil containing spiny and non-spiny varieties and hybrids. The work also focussed on identifying germ plasm with tolerance to wilt (*Fusarium oxysporum*) under limited irrigation conditions, apart from developing suitable agro-production technology for safflower under such conditions.

The highlights of safflower research carried out in the AICRP during 2001-2002 are as follows :

1. **Release of non-spiny safflower variety NARI-6 :** NARI released a non-spiny safflower variety NARI-6 for commercial cultivation under rainfed areas of safflower production in the country. It gives an average seed yield of about 1100 Kg/ha and contains about 35% oil in the seed. NARI-6 produces about 150 Kg/ha of bright red flowers, which are expected to be in great demand for color extraction purposes. NARI-6 is becoming very popular among the cultivators due to its non-spiny nature, high seed yield and commercial demand for flowers.
2. **Development of non-spiny safflower hybrid NARI-NH-1 :** NARI has also developed a non-spiny hybrid NARI-NH-1 which has been identified for release for commercial production under limited irrigation condition in safflower growing states of the country. NARI-NH-1 gives an average seed yield of 1990 Kg/ha, which is 10% higher than that of the national check A-1 and contains 35% oil in seeds as compared to 28-30% in those of National check A-1. NARI-NH-1 is resistant to Fusarium wilt and produces about 200 Kg/ha of flowers. The commercialization of NARI-NH-1 is likely to boost safflower area as well as production in the country due to enhanced seed productivity and due to the additional income generated from the harvest of flowers from the crop.



NARI-NH-1

3. **Popularisation of safflower flowers as herbal health tea :** NARI is vigorously popularising safflower flowers as herbal health tea. It test-marketed about 160 Kg of safflower flowers for testing as herbal health tea and for extracting natural food color from them during the year 2001-2002.
4. **Possible detection of apomixis in safflower :** Certain genotypes exhibiting a possible case of apomixis have been identified in safflower. Efforts are being made to confirm the same through cytological means.

5. About 800 advanced generation selections having oil content ranging from 35-40% in addition to high seed yield are under evaluation to develop a high yielding safflower cultivar having about 40% oil in the seed.
6. Three dwarf male sterile-based hybrids giving high seed and oil yield are in pipeline.
7. **Breeding for wilt resistance in safflower :** Safflower wilt is one of the major diseases affecting irrigated safflower and is considered as the major hurdle in popularising safflower in irrigated areas. Therefore, to overcome the wilt problem under irrigated conditions, a breeding program to transfer wilt resistance from a stable source of wilt resistance identified in the AICRP system into a high yielding but wilt susceptible cultivar Nira has been initiated at the institute by following the back cross method of breeding. During 2001-2002, BC₄ was attempted by using wilt susceptible cultivar Nira as the recurrent parent to develop the wilt resistant cultivar. Wilt resistance in safflower as studied at this center appears to be governed by inhibitory gene action.

Project 2 : Identification of early plant growth male sterility marker in existing GMS systems and search for cytoplasmic-genetic male sterility in safflower : Funded by Indian Council of Agricultural Research (ICAR), New Delhi.

The investigations attempted under the scheme during 2001-2002 are described below :

1. **Screening of segregating populations for male sterility and the traits identifiable at early stage of plant growth :** The segregating populations of the crosses made between GMS lines from different sources and the male parents having specific traits detectable at early stage of plant growth have been evaluated to identify a possible linkage between male sterility and early growth traits for their exploitation in rouging out male fertile plants from GMS line in commercial safflower hybrid seed production plot.
2. **Development of cytoplasmic male sterility system in safflower :** NARI has identified the cytoplasm causing male sterility in safflower. The gene imparting fertility to the sterile cytoplasm has also been identified. Currently efforts are underway to identify the fertile genotype capable of maintaining 100% male sterility in the male sterile line.
3. **CMS induction through mutagenesis in safflower :** Induction of cytoplasmic male sterility through chemical mutation has resulted in identification of male sterile plants in M₁ generation. The nature of sterility in the resulting male sterile plants is under investigation in off-season sown trials at the institute.

Project 3 : Biometrical investigations of flower yield and its components and their maximization in safflower : Funded by Indian Council of Agricultural Research (ICAR), New Delhi.

This project has been started recently and efforts are in progress to study the parameters influencing flower yield by altering the plant densities and fertilizer levels, so that the monetary gain per unit area from the crop can be enhanced.

Project 4 : To study the usefulness of petal from Indian cultivars of safflower for developing value added products of edible nature : Funded by Department of Science and Technology (DST), New Delhi.

The main objective of this project is to study the suitability of flowers of Indian safflower cultivars for human consumption; development of improved herbal health tea and suitability of safflower color for food colouring. In addition, pharmacological investigations of safflower flowers to cure hypertension are being taken up in association with Dr. S. A. Dahanukar, Dean and Dr. U. M. Thatte, Associate Professor, Dept. of Clinical Pharmacology at BYL Nair Charitable Hospital and TN Medical College, Mumbai.

Extension activities in safflower at NARI :

- NARI supplies high quality seeds of spiny and non-spiny safflower varieties and hybrids for testing purposes in addition to the complete production technology of safflower cultivation.
- NARI also supplies safflower flowers as herbal health tea and for other commercial utilization.

- NARI has also conducted 15 frontline demonstrations in safflower on farmers' fields in district Satara to demonstrate the latest technology developed in the crop for commercial adoption by the farmers.
- Kutch Ecological Research Centre (Division of the Corbett Foundation) situated in Gujarat took NARI's help to find out if safflower can be successfully grown in the Kutch area of Gujarat. We supplied them with seeds of NARI-SH-1, (a spiny hybrid), NARI-2 (a salinity-tolerant variety) and NARI-6, the newly released variety. We helped them to carry out sowing on 2 ha and from time to time advised them on cropping practices to be followed. No major pest or disease incidence was noticed on the crop and climatic conditions appeared to be suitable. Though the growth was good on sandy soils even with saline water, safflower is expected to give a better performance on heavier soils. This year trials will be repeated for further confirmation.

Sweet sorghum :

Project 5 : Developing sorghum as an efficient biomass and bio-energy crop and providing value addition to the rain damaged kharif grain for creating industrial demand : Funded by Indian Council of Agricultural Research (ICAR), New Delhi under National Agricultural Technology Project (NATP).

The sweet sorghum improvement program at NARI is focussed on the aspects described below :

- (1) To develop sweet sorghum cultivars and hybrids giving high grain, fodder and sugar production.
- (2) To develop agroproduction technology for sweet sorghum cultivation.
- (3) To identify sweet sorghum genotypes producing high grain and fodder yields and syrup of very high quality.

Significant achievements in sweet sorghum improvement program :

- (1) NARI has identified four promising sweet sorghum hybrids producing high grain and fodder yields and good quality syrup.
- (2) NARI has also conducted experiments to study the effects of plant spacings and fertilizer applications on yield and quality of syrup from sweet sorghum hybrid "Madhura".
- (3) NARI has supplied seeds of sweet sorghum hybrid "Madhura" developed at the institute for research purposes to Vasantdada Shetkari Sahakari Sakhar Karkhana Ltd., Sangli and to Shree Renuka Sugars Ltd., Belgaum, Karnataka. The seed has been planted on pilot scale for using the crop for alcohol distillation.
- (4) Due to renewed interest in alcohol because of recent government permission to blend it with petrol on 5% basis, alcohol producing crops and especially sweet sorghum has been promoted as a complementary crop to sugarcane. The technologies developed by NARI with regard to sweet sorghum improvement and its utilization for syrup and alcohol production, in addition to the technology of solar distillation of alcohol have started being recognized widely in the country and as a result numerous queries related to sweet sorghum and alcohol production are pouring in.
- (5) NARI has produced about 500 Kg seeds of sweet sorghum hybrid "Madhura" during 2001-2002 for distribution to farmers for popularization of sweet sorghum in the region.
- (6) About 250 bottles of sweet sorghum syrup "Madhura" were given for test marketing during 2001-2002.

Project staff : N. Nimbkar, Ph.D., V. Singh, Ph.D., M. B. Deshpande, M.Sc., S. V. Choudhari, B.Sc., S. R. Deshmukh, M.Sc., N.M. Kolekar, M.Sc., D. R. Rathod, M.Sc., S. P. Patil, M.Sc., A. S. Wadekar, M.Sc., A.S. Shigwan, M.Sc.

Renewable Energy Research

Project 1 : Development, demonstration and performance evaluation of battery-operated cycle rickshaw. (Concluded on 31st March 2002) : Funded by Ministry of Non-conventional Energy Sources (MNES), New Delhi.

Twenty motor assisted battery rickshaws (MAPRA) have been fabricated. Five of these are being run in Pune University campus. There has been an excellent response from the students and staff of the University. There is a fairly good demand for these MAPRAs in such campuses. Efforts are also underway to do a similar demonstration experiment at Hampi in Karnataka (World Heritage site) and at I.I.T., Kanpur.



Complete designing and fabrication of MAPRA was done at NARI. Recently a tie up with a manufacturer in Pune has been done for manufacturing these rickshaws on large scale.

- 1.1 The work on MAPRAs has been extensively carried in mass media. Hence news stories have appeared in Times of India ([1](#), [2](#), [3](#)), Indian Express and other local news papers.
- 1.2 NARI's article on cycle rickshaw has been published (by invitation) on various internet sites. They are : www.Pointfusion.com; www.worldsustainablejournal.com (Vol. 5, No. 5, December 2001); www.workbike.org/comment/index.html. The internet exposure has resulted in a large number of purchase inquiries for MAPRAs from all over the world.

Project 2 : Technology development for safflower petal collection (ongoing project) : Funded by Indian Council of Agricultural Research (ICAR), New Delhi.



The objectives of the proposal are :

- a) To develop a suitable technology for safflower petal collection.
- b) To study the economics of mechanized petal harvesting in comparison to manual harvesting.
- c) To establish safflower petal collection as an economically feasible proposition for the farmers.

Five PVC knapsack-type, battery-operated petal collectors were fabricated. They are being field tested. These petal collectors run on batteries powered by a stand-alone Solar PV unit. The battery-powered petal collector costs Rs. 2,600/- and the cost of petal collection is Rs. 140-

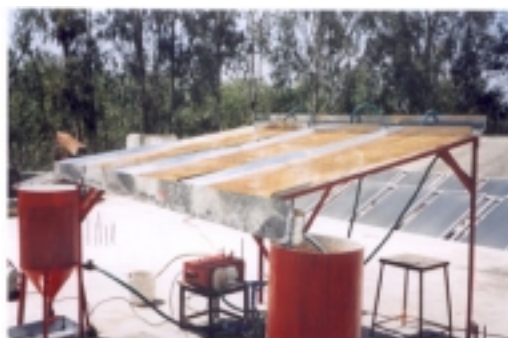
160/Kg. A person can collect, from a spiny safflower variety, almost twice the amount of petals using the petal collector than he could by hand.

An I.C. engine-powered collector with 8-10 collection snouts is also undergoing testing. This project showed that safflower petal collector can help tremendously in collecting petals from spiny safflower. With the petal selling as herbal tea at Rs. 300-400/Kg on an average, petal collection via the petal collector can become a very economically viable venture.

Project 3 : Solar-catalyzed chemo-oxidation of distillery waste (ongoing project) : Funded by MNES, New Delhi.

The main objective of the project is to set up a pilot plant so that 100 l/day of diluted anaerobically digested distillery effluent can be cleaned. The distillery effluent, which is polluting the rural areas of India, has high Chemical Oxygen Demand (COD) of 30-40,000 mg/L, is black in color and has foul odour. Secondary and tertiary treatments of this effluent have not succeeded in removing the color.

NARI has therefore developed a technology, which uses solar energy in conjunction with chemicals/catalysts to detoxify this effluent. Tests have shown that, in two days, by using solar energy, COD is reduced to < 250 mg/L; transmittance is increased to ~ 90% and the foul odour is removed. The pilot plant has been set up and is undergoing preliminary testing. Efforts are also underway to use this treated water as irrigation water for crops.



Project staff : A. K. Rajvanshi, Ph.D., S. C. Chilekar, B.Tech. (Consultant), V. S. Katore, M.Sc., S. M. Gadekar, B.E., K. R. Khan, B.E. (Trainee), S. M. Patil, D. B. Jadhav, A. M. Pawar, D. B. Gadhawe

Animal Husbandry Research

Project 1 : Prolific worm-resistant meat sheep for Maharashtra, India (ongoing project) : Funded by Australian Centre for International Agricultural Research (ACIAR) and AusAID (the Australian Government aid agency).

The broad aim of this project is to improve the profitability and sustainability of sheep production in Maharashtra by the formation of a suitable composite meat sheep breed for Maharashtra conditions. The project also has an extension component to disseminate the results of the project and other important extension messages among the local shepherd community.

The systematic sheep breeding program being carried out under this project aims to introduce the prolificacy of the Garole sheep of Sunderban, West Bengal and the high milk yield of the Israeli dairy type Awassi breed into the local Deccani breed so as to improve its productivity. Through NARI's collaboration with AgResearch, New Zealand it was confirmed that Garole sheep carry the well

known Booroola or FecB (fecundity B) gene and were probably the source of the gene in the Booroola Merino sheep of Australia. A PCR-RFLP test to detect the Booroola gene was standardized by Dr. Jill Maddox of University of Melbourne and will be used at the National Chemical Laboratory, Pune to detect Booroola genotypes in NARI's breeding sheep. This will help to decide which animals to use for further breeding, while they are still lambs.



The project has successfully combined research with extension into the shepherd community and therefore has substantially improved project scientists' appreciation of shepherds' problems and conditions. Further research strategy and extension activities will be planned accordingly.

Collaborators : University of New England, Armidale, Australia; University of Melbourne, Australia, National Chemical Laboratory, Pune, India; CSIRO Livestock Industries, Australia.

Project 2 : To determine the deworming action, if any, of pod trichomes of the herb Mucuna pruriens in sheep. (Concluded). Funded by Anthra (A Pune and Hyderabad-based NGO).

In this trial which was conducted on Deccani sheep, three groups of 15 ewes each were formed. One was treated with Mucuna pruriens, second was placebo control and the third was anthelmintic (Albendazole) control. No deworming action of herb was seen. The geometric mean FEC of the group given the herb was seen to have increased from 558 to 702 epg over the duration of the trial.

Other activities : Seven illustrated posters were prepared with the aim to improve the awareness of shepherds. The posters were presented in several gatherings of shepherds either in their villages or at the Vadjal farm. They were also displayed at different meetings and workshops.

Crossbreeding of local goats with the Boer breed to improve liveweights of kids, oestrus synchronization and artificial insemination and sustainable endoparasite control in goats were some of the goat-related activities, which were carried out in cooperation with a sister organization, the Maharashtra Goat and Sheep Research and Development Institute. The aim of these activities is to develop technologies for making organized goat farming profitable and to increase incomes of local goatkeepers.

Project staff : B. V. Nimbkar, M.Sc., C. Nimbkar, M.A., M.Sc., P. M. Ghalsasi, B.V.Sc. & A.H., P. P. Ghalsasi, B.Sc., S. P. Deshmukh, M.V.Sc.

Articles, conference papers and reports published (author's name in alphabetical order)

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2. Davis, G. H., Galloway, S. M., Ross, I. K., Gregan, S., Ward, J., Nimbkar, B. V., Ghalsasi, P. M., Nimbkar, C., Gray, G. D., Subandriyo, Inounu, I. Tiesnamurti, B., Martyniuk, E., Eythorsdottir, E., Mulsant, P., Lecerf, F., Hanrahan, J. P., Bradford, G. E. and Wilson, T. 2002. "DNA tests in prolific sheep from eight countries provide new evidence on origin of the Booroola (FecB) mutation". *Biology of Reproduction*. In Press.
3. Nimbkar, B. V., C. Nimbkar and P. M. Ghalsasi. 2001. "Urea-processing of wheat straw to improve its nutritive value as a cheap maintenance ration". Pamphlet in Marathi.
4. Nimbkar, C., P. P. Ghalsasi and P. M. Ghalsasi. 2001. Worms in small ruminants and effective measures to control them. NARI Animal Husbandry Division Extension Paper No. 1.
5. Nimbkar, C. "Prolific Worm-resistant Meat Sheep for Maharashtra, India". Fourth Annual Report Submitted to Australian Centre for International Agricultural Research (ACIAR), Australia. November 2001. (Pgs. 46).
6. Nimbkar, N. "Sendriya Shetibaddalchya Dantakatha", *Baliraja* 32 (10) : 28-32 [October 2001] (From "Urban myths of organic farming by Anthony Trewavas. *Nature* Vol. 410, 22 March 2001).
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8. Rajvanshi, A. K., "Ethanol from Alternative Sources", *Ethanol* Vol. 2 : 12. August 2001 (Published by Winrock International India, New Delhi).
9. Rajvanshi, A. K., "Sustainable Development – A Gandhian Approach", Acceptance Speech for 2001 Jannalal Bajaj Award, given at Y. B. Chavan Pratishthan, Mumbai on 6 November, 2001.
10. Rajvanshi, A. K., "Gandhivadi Margane Shashwat Vikas", Lead Article in *Sakal*, 19 December 2001.
11. Rajvanshi, A. K., "[A High Tech Route to Reach Nirvana](#)", Editorial article in *Times of India*, 25 January 2002.
12. Rajvanshi, A. K., "Tantradnyan Ani Adhyatm yanchi Ekatra Vatchal", Editorial article in *Sakal*, 12 February 2002.
13. Rajvanshi, A. K., "[Talukas can provide critical mass for India's sustainable development](#)", *Current Science*, 82 (6) : 632-637. 25 March 2002.
14. Rajvanshi, A. K., "Technology Development for Safflower Petal Collection", Annual Project Report submitted to Indian Council of Agricultural Research (ICAR), New Delhi, March 2002. (Pgs. 54).
15. Singh Vrijendra, Annual Progress Report of All India Coordinated Research Project on Oilseeds (Safflower) 2001. Submitted to DOR, Hyderabad. June 2001. (pgs. 105).
16. Singh Vrijendra, Annual Progress Report of Frontline Demonstrations in Safflower. Submitted to DOR, Hyderabad. June 2001.
17. Singh Vrijendra, Half-yearly progress report (January to June) of All India Coordinated Research Project on Oilseeds, Submitted to DOR, Hyderabad. July 2001. (pgs. 6).
18. Singh Vrijendra, Annual Progress Report of Ad-hoc Project on "Identification of Early Plant Growth Male Sterility Marker in Existing GMS Systems and Search for Cytoplasmic Genetic Source of Sterility in Safflower. Submitted to ICAR, New Delhi. August 2001. (pgs. 15).
19. Singh Vrijendra, Half-yearly Progress Report (July to December) of All India Coordinated Research Project on Oilseeds (Safflower), Submitted to DOR, Hyderabad. Feb. 2002. (pgs. 5).
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23. Singh Vrijendra, N. Nimbkar and A. K. Rajvanshi. 2001. "Safflower research and development at Nimbkar Agricultural Research Institute". In : *Proceedings Vth International Safflower Conference*, Williston, North Dakota and Sidney, Montana, U.S.A., July 23-27, 2001. PP. 117-121.

General

1. The Institute was very much in the news recently because its Director Dr. Anil K. Rajvanshi received the prestigious [2001 Jannalal Bajaj Award](#) for Application of Science and Technology for Rural Areas. The Award was given to Dr. Rajvanshi on November 6, 2001 by Dr. Manmohan Singh (former Finance Minister of India) at a glittering ceremony in Mumbai. After receiving the award, Dr. Rajvanshi also gave an acceptance speech.
2. Dr. Rajvanshi was publicly felicitated in September 2001 by Lions Club, Phaltan for winning the Jannalal Bajaj Award. The felicitation was done by Shri Ramraje Naik Nimbalkar, local MLA and State Minister, Government of Maharashtra.
3. Our work on rickshaws was covered on BBC News, Star News, Zee News and Doordarshan. Dr. Rajvanshi's half hour interview was also broadcast on Akashwani in October 2001.
4. Dr. Anil K. Rajvanshi was publicly felicitated by the Vice-Chancellor of Pune University, Dr. Ashok Kolaskar, at a function to mark the handing over of five MAPRAs to Pune University for trials. The function was held on 10 February 2002 (Founders day of Pune University). The inauguration of rickshaws was done at the hands of Mr. Madhur Bajaj, the Vice-chairman of Bajaj Auto Ltd., Pune.
5. Dr. Anil K. Rajvanshi was invited as an expert to the national workshop "Hybrid Energy Systems" held at I.I.T., Mumbai on 4-5 February, 2002. The participation in this workshop was by invitation only. The mandate of this workshop was to prepare a national plan for hybrid energy systems to be undertaken by the Ministry of Non-conventional Energy Sources, New Delhi.
6. Dr. Anil K. Rajvanshi has been nominated by IREDA on the board of Rajaram Solvex Ltd., Sangli. The company is in the business of solvent extraction and has recently entered into renewable energy business.
7. NARI was invited to display their rickshaws at the International Symposium on Alternative Vehicles in November 2001. The symposium was held in I.I.T., Kanpur and NARI was the only organization to be paid full fare for transporting the rickshaws from Phaltan to Kanpur and back. Besides NARI, there were booths of Bajaj Auto Ltd., Mahindra and Mahindra, Scooters India, Reva Electric Car Company, LML etc., where these companies displayed their electric vehicles. NARI rickshaws were very much liked by the visitors and a lot of mass media coverage was given to them in Lucknow and Kanpur.
8. NARI's lanterns were sent to California, U.S.A. for market testing. Some inquiries have also been received from other rural areas of U.S.A. In India they are being test marketed in and near Phaltan area.
9. Dr. Nandini Nimbkar, the President of the Institute inaugurated a two day workshop on "Restructuring of F.Y.B.Sc. (Pune University) Syllabus in Botany" and delivered the inaugural address. The workshop was held at the Shardabai Pawar Mahila College, Shardanagar, Malegaon (Bk.), Tal. Baramati.
10. Dr. Vrijendra Singh, Safflower Breeder visited USA for attending the Vth International Safflower Conference held in Williston, North Dakota and Sidney, Montana from July 23-27, 2001. Dr. Singh chaired the session on "Animal feeding and safflower products" in the conference and delivered a keynote address on "Safflower Research and Development at Nimbkar Agricultural Research Institute (NARI)" in the session on Breeding/Genetics/ Diseases. During the conference, Dr. Vrijendra Singh was selected as one of the members of the "International Safflower Scientific Committee" and also as an Indian representative member of the International Safflower Cooperative Trial Committee.
11. Ms. Chanda Nimbkar, Honorary Director, Animal Husbandry Division of NARI has received a John Allwright Fellowship from ACIAR to do a Ph.D. in animal genetics at the University of New England, Armidale, Australia. She will do the fieldwork in India and spend 6 months every year in Australia for the next 3 years. In her absence, Mr. B. V. Nimbkar will take over charge as Honorary Director.

12. Ms. Chanda Nimbkar was invited to participate in the review of ACIAR project 97133 “Sustainable endoparasite control of small ruminants in southeast Asia from May 22-30, 2001 held in the Philippines. This visit was funded by International Livestock Research Institute (ILRI) in Makati, Philippines.
13. Ms. Chanda Nimbkar was invited to take part in the meeting of the Planning Commission’s Sub-group on “Development of Small ruminants” to work out a strategy for the Tenth Five Year Plan on 4 June 2001 at Jaipur.
14. Ms. Chanda Nimbkar was invited to participate in ACIAR-India country consultation on agricultural research and development priorities, held in New Delhi from September 9-12, 2001.
15. Mr. B. V. Nimbkar and Dr. P. M. Ghalsasi were invited to lecture to the students of the two-year diploma course in agriculture at the Padmashri Dr. Appasaheb Pawar Agricultural School at Baramati under the aegis of the Mahatma Phule Agricultural University, Rahuri.
16. Dr. P. M. Ghalsasi was invited to participate as a subject matter specialist, in the preparation of a “Prevocational module on sheep and goat rearing” for high school students of classes IX and X from March 30-April 3, 2001 at Bhopal.

[HOME](#)