Nimbkar Agricultural Research Institute (NARI)

The Institute

The Nimbkar Agricultural Research Institute (NARI) is a private, non-profit research and development institute. It was established in 1968 by Mr. B.V. Nimbkar, who remained its first president till 1990. It is registered under the Societies Registration Act XII of 1860 and the Bombay Public Trust Act of 1950. The Institute undertakes research mainly in agriculture, renewable energy, animal husbandry and sustainable development.

Infrastructure

The Institute is housed in spacious buildings (total covered area is 2000 m^2) and has about 50 hectares of farm with year-round irrigation facilities for research purposes. NARI also has well-equipped laboratories with sophisticated analytical instruments and computational facilities, a full-fledged workshop, an animal pathology laboratory and an excellent chemistry laboratory. Most of the hardware is fabricated in the workshop. The Institute has a small, though well-stocked library with about 5,500 books and subscribes to about 55 periodicals (both national and international) in the areas of agriculture, energy and animal husbandry.

The Institute is recognized by Shivaji University, Kolhapur for the purpose of granting Ph.D. in Energy Studies. The Institute actively collaborates with researchers in other organizations and institutes such as NCL, BARC and BAIF.

Most of the funding for NARI in the past came from sponsored research projects from Govt. of India agencies like MNES, ICAR, CAPART, ICICI, DSIR, KVIC etc. Recently, international agencies like United States Department of Agriculture (USDA), Rockefeller Foundation, European Economic Commission (EEC) and ACIAR (Australia) have or are funding projects at the Institute. NARI also carries out sponsored research projects for private companies and organizations in different areas of agriculture, renewable energy and animal husbandry. **The Institutute has a Tax exempt status under Section 35(1)(ii) of the Income Tax Act which results in contributions and donations to the Institute being 100% tax deductible. NARI is also registered under Foreign Contribution Act and hence can accept foreign contributions.**

The Institute is governed by a Governing Council and is advised by a panel of distinguished scientists.

Chemistry Lab

The Research Programme

The basic philosophy of the Institute is to solve the age old problems of rural India with the use of modern science and technology. Consequently, very innovative research and development programs have been undertaken. Till todate (1999), about 70 funded projects have been undertaken or are underway with total funding of about Rs. 23 million. Project results are published as research papers in national and international scientific journals or in research reports periodically prepared by the Institute.

The major areas of R & D at NARI are as follows :

Agriculture

- High yielding varieties and hybrids of cotton (Nimbkar-1, NH-391 and NH-101), sunflower (NSFH-10), safflower (NARI-SH-1 and Nira), and sweet sorghum (Madhura) have been developed. High quality seeds of safflower and sweet sorghum produced at NARI's own farms are available on commercially attractive terms.

High Yielding Safflower

- NARI is one of the research centers included in the All India Co-ordinated Research Project on Oilseeds for irrigated safflower under the aegis of the Indian Council of Agricultural Research (ICAR), New Delhi. Several varieties/hybrids are being developed and tested. A new safflower variety NARI-2 is expected to be released next year.
- In addition to seed, petal production from safflower is also being promoted. Petals are being collected presently by hand-picking from spiny and non-spiny safflower hybrids. A petal collector is also being developed. These petals are being bought by persons for treatment of essential hypertension and other ailments. A systematic study to test these effects is planned.
- Agrochemical testing for various companies and research laboratories in India is carried out at NARI. Data generated by NARI are acceptable to the Central Insecticides Board for purposes of registration of new agro-chemicals. The clientele has included many reputed companies like NOCIL, Godrej Soaps, Gharda Chemical, Marson, Hoechst Schering Agrevo and Hindustan Lever (all from Mumbai), NCL and Sudarshan Chemicals (Pune), IICT (Hyderabad), EID Parry (Chennai) etc.
- Complete technology for producing jaggery and syrup from sweet sorghum has been developed. The syrup is being marketed under the brand name "MADHURA". Its therapeutic use for treatment of asthma is being investigated.

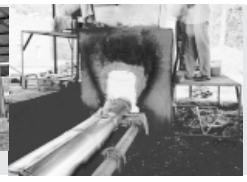
Madhura Sweet Sorghum Syrup

Alternative Energy

- NARI has pioneered the development of an extremely efficient multifuel lantern called Noorie for rural areas. This pressurised mantle lantern produces light output equivalent to that from a 100 W light bulb and can run on ethanol, diesel and kerosine. Market tests by a leading Indian company have been undertaken in rural areas of Gujarat.

Noorie Lantern

- Complete technology for producing ethanol from sweet sorghum has been developed. A number of high ethanol yielding varieties have been produced. A pilot plant capable of producing 50 lpd of 95% v/v ethanol using only solar energy for distillation was set up and tested at NARI.



Gasification Plant

- NARI has pioneered the development of technology for gasification of loose leafy biomass fuels like sugarcane leaves and bagasse, sweet sorghum stalks and bagasse, different types of grasses etc. A 500 kW (thermal) gasifier has been successfully tested in an actual user-industry in India. The gasification technology for thermal applications

(upto 1 MW thermal output) is ready for commercialization.

- NARI has pioneered the program of Energy Self-Sufficient Talukas. This was a concept proposed by the Director of NARI, Dr. A.K. Rajvanshi and is the basis of National policy and program being implemented by Ministry of Non-conventional Energy Sources (MNES), Govt. of India, New Delhi.
- A techno-economic feasibility report for setting up a 10 MW biomass-based power plant in rural Maharashtra has been prepared. NARI can undertake to do such studies for other locations also.
- A novel technology to increase survival of tree seedlings in arid regions has been developed. Solar energy is used to collect water from soil which is then fed to the seedlings. Data for the last 5 years has shown 100% seedling survival. NARI is on the lookout for interested agencies/NGOs who can take this up on a large scale.

Solar Powered Alcohol Plant

- NARI has pioneered technology for Solar detoxification of distillery waste using photocatalysts. The obnoxious distillery waste is made odourless and completely colourless. The chemical oxygen demand (COD) is also reduced drastically. Efforts are underway to set up a pilot scale plant.
- NARI has pioneered the development of electric and improved cycle rickshaws. Consequently three rickshaws have been developed: a) **improved cycle rickshaws** with five speed gears, back wheel braking and better suspension b) **motor assisted cycle rickshaws** where a small PMDC motor powered by batteries helps the rickshaw puller to go over slopes and take load easily and c) **completely battery driven rickshaw ELECSHA™** which can take two passengers at 30 km/hr. In one battery charge this rickshaw can travel 80 km distance. Efforts are on to market these rickshaws.

Animal Husbandry

The research activity in animal husbandry has focussed on all aspects of sheep and goat production. Its initial project was the importation of a herd of 30 improved dairy type sheep of the fat-tailed Awassi breed from Israel. The objective was to improve the milk production and growth rates of the local Deccani Sheep through crossbreeding. Pure Awassi ewes at NARI have given upto 475 kg milk (fat content 7 to 9 per cent) in 238 days.

- The biggest crossbreeding project of its type undertaken in India was funded by CAPART, New Delhi. Under this project 40 improved bucks of the Sirohi breed from Rajasthan were kept with villagers in 40 villages of Phaltan Taluka. It demonstrated a unique method of introducing a new breed for upgrading local animals, as well as improvement of goat husbandry and health care.
- New technologies such as oestrus synchronisation, insemination with fresh neat or diluted and frozen semen and laparoscopic intrauterine insemination are being successfully used under field conditions to achieve significantly higher conception rates.

Improved Goats and Sheep

- A project funded by ACIAR, Australia has been undertaken to evaluate lamb production of three Indian breeds of meat sheep: Deccani, Bannur and Garole, including their resistance to parasites. This project also aims to determine the genetic basis of prolificacy in the Garole breed. Garole breed appears to have some resistance to gastrointestinal parasites, while Bannur breed is also promising with low lamb mortality and low disease incidence among adults.

Improved pedal and Electric Rickshaws

Services Offered

- Testing of pesticides and growth promoters on different crops.
- Crop varietal evaluation.
- Sale of improved breeds of goats and sheep.
- Consultancy on setting up sheep and goat farms.
- Consultancy in biomass based power systems.
- Technology transfer for commercialization of the following:
  1. Biomass gasification system.
  2. Efficient lantern.
  3. Electric and improved cycle rickshaws.
  4. Sweet sorghum syrup.
  5. Battery powered safflower petal collector.
- Sponsored research and conducting workshops in agriculture, renewable energy and animal husbandry.

Sustainable Rural Development

Madhura Syrup making

Solar powered ethanol plant

NARI farm

through Application of Science

The Institute is located about 4 km outside Phaltan town on Lonand-Phaltan Road. Phaltan town is the taluka headquarters. It is 100 km southeast of Pune and can be reached by road in 2 hrs.

For further information on the above or for giving **your contributions/donations** please contact:

Dr. N. Nimbkar, President
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NARI

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