# PART III

# INNOVATIONS
## for PUNJAB

This section contains details of national innovations, which are deemed suitable for introduction in Punjab

01

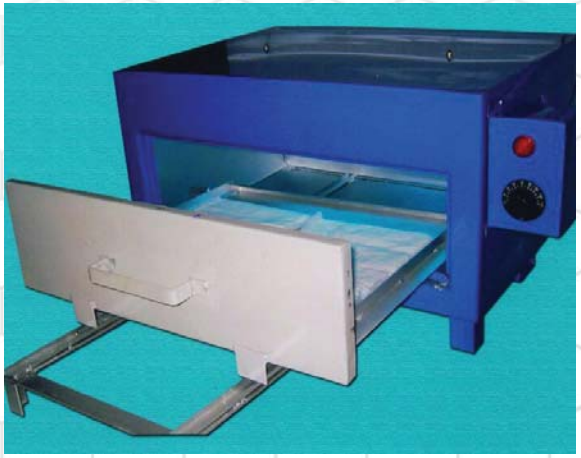
**A. Muruganantham**
Tamil Nadu

# Sanitary napkin making machine: An option for women entrepreneurship

Sanitary napkins, a universally needed product, have a very low penetration in India due to high price and the traditional trend of using cheaper but unhygienic old cloth pieces. The innovator has developed a machine that produces quality sanitary napkins at a low cost.

One can prepare sanitary napkins with industry standard raw materials while cutting down the cost in production. It requires three to four persons to produce two pads per minute. Costing less than half of conventional options, this machine produces sanitary pads @ Rs.1 to Rs. 1.50 per pad approximately.

The innovator prefers to sell the napkin making machinery only to self-help groups of women. He has also designed a napkin vending machine such that one can put a coin and get a pad. With the support from the *Micro Venture Innovation Fund* scheme of NIF, the innovator has been able to install over fifty units in seven states.



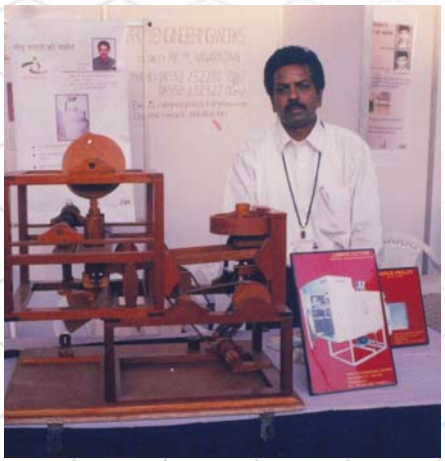
02

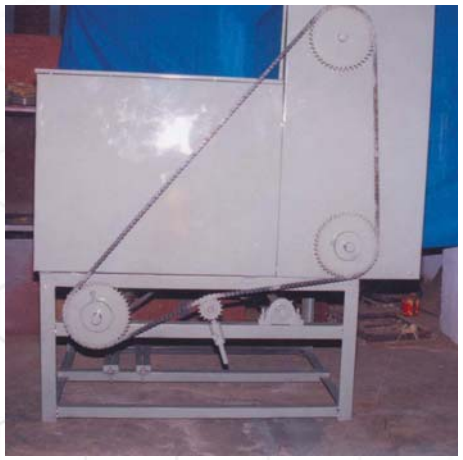
# Garlic peeling & lemon cutting machine

**M. Nagarajan**
Tamil Nadu

Faster peeling of garlic in an effective way is a major requirement in the pickle industry. This product is a food-grade, fully automated machinery designed for bulk quantity peeling of garlic. The machine ensures minimal damage and has wide application in making pickles and herbal medicines. The machine is energy efficient, saves labour, and has low capital and operating cost. It frees the industry from capacity constraints caused by shortage of labour in peak seasons.

The second product is also used in pickle industry, but for cutting lemons. It is a cost effective machine, having innovative design, with continuous feeding system. It performs precise and standard cutting of large quantity of lemons in uniform shape and size. It can be operated by one person and cuts lemon into eight equal pieces. The innovator has been able to run a good business with the financial support of MVIF and marketing effort of NIF.





03

**Raghav Gowda**
Karnataka

# Manual milking machine

Safe milking of cows/buffaloes is a requirement across rural India and this product is an efficient step in that direction. The product is a low cost, manually operated device that helps farmers to milk the animal hygienically and also reduces drudgery in the process.

The machine has simple controls and can be easily operated by women as well. The creation of suction and low vacuum makes it suitable for other applications also. NIF has been giving marketing support to the innovator. As a result, this machine has also been sold to customers in Phillipines, Uganda and Ethiopia apart from India.

04

# Maruti jhoola - the health care chair

**Sakrabhai Prajapati**
Gujarat

Modern life with its fast pace and sedentary lifestyle has created the need for solutions incorporating relaxation and invigoration. Maruti Jhoola is a unique health chair with multiple capabilities, functions and settings for various postures and seating dynamics.

It is ergonomically designed and serves the purpose of seating as well as exercising, with a capacity to accommodate a person weighing upto 120 kgs. It can double up as a hammock or a jhoola. The health chair has established its utility for people suffering from arthritis and joint ailments. NIF through GIAN-West has facilitated licensing of this innovation to two enterprenuers for market expansion.

**Dharamveer**
Haryana

# *Aloe vera* gel Extractor

The innovator has developed an effective multipurpose unit capable of pulverizing, steaming, and extraction of gel for herbal applications.

With this device, the innovator uses the specially designed pressure cooking chamber to extract the essence from *Aloe vera*. Being a compact portable unit, it can be quickly and easily transported and used anywhere even in the fields, to process herbs and deliver on demand. The present machine has a capacity to process 100 kg of *Aloe vera* per hour. The innovator was supported for production and commercialisation through GIAN North . One unit has been sent to Kenya on a pilot basis for application feasibility study in the country. Once the feasibility is confirmed, a contract order from the country is expected for more number of units.

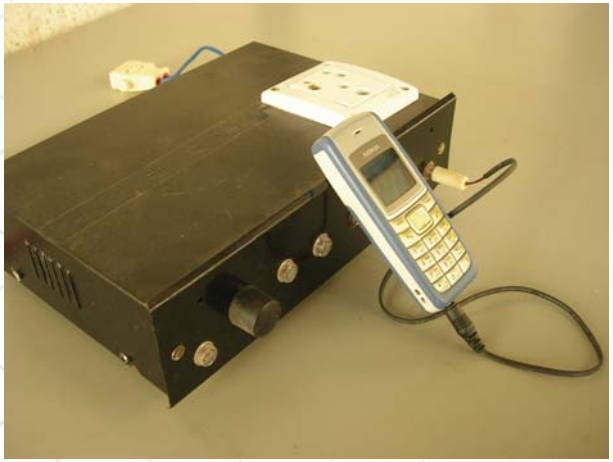
06

# Mobile operated switch and multi-media poster

**Prem Singh Saini**
Haryana

Imagine a village where the farmer has the luxury of being able to stay at home and switch his irrigation pump in the faraway field on or off as required during the day or at night. This is made possible by this innovation, which uses the power of mobile telephony to trigger electrical control switches.

The farmer can remotely know the status of the pump in his cell phone and turn the motor on or off by calling the particular configured number. It activates the switching by certain number of rings and hence incurs no call charges. Prem Singh has developed several other innovations, one of which is the viewer triggered multi-media poster. If any agency wants to communicate some graphic message with different language audios or videos, this multi-media poster can be very useful. NIF facilitated a mumbai based company to purchase two hundred units of the talking poster worth around eight lakh rupees for diffusion in various states. These were made available in five local languages.



**Yusuf Khan**
Rajasthan

# Groundnut digging machine

Harvesting groundnut is a tedious process. While digging nuts, sometimes upto 20 percent of the pods are left underground. Complete digging out of all the groundnut pods from the soil is often not possible as manual labor is scarce, expansive and other means are not available.

The innovator has revolutionized groundnut digging with this sturdy rugged desert unit which is retrofitted on a standard 35HP tractor. As the tractor moves forward, the vanes at the bottom of this unit rotate, digging and scooping out the soil-groundnut mixture and dropping them into a vibrating storage bin. The bin has fine sieves at the bottom which lets out the soil while trapping the individual groundnut pods on the top. The hatch at the back of the unit is used to take out the groundnuts.

The unit consumes four litres of diesel per hour and completes digging of one hectare per day. The unit can run on uneven terrain and can also be used to sift out small stones, solid residue and garbage from fields and country roads.

The innovator has been supported under the *'Micro Venture Innovation Fund'* of NIF for commercialising his innovation. In 2006, the technology was licensed to a Vizag based company, Ardee Hi-Tech Pvt. Ltd. This license was targeted for its application as a sea beach cleaner.

08

# Power generation through sewage / slow moving water

**K. Balakrishna**
Karnataka

There is a search going around the world for solutions that harness alternate energy sources to generate electricity. The innovator has developed a system that achieves energy generation from slow moving sewage or any other source of water.

In this arrangement, electricity is generated when the slow moving sewage / water is passed through a cylindrical drum. The helical blades inside the cylindrical drum provide desired efficiency to the system in generating power. The capacity of the existing pilot unit is 30 KVA. This technology can have a tremendous impact on the generation of power from low velocity, high volume discharge of effluents from industries and civil sewage processing plants. NIF has been actively following up with national and international entities for partnership in this innovation.


**Madanlal Kumawat**
Rajasthan

# Improved multicrop thresher

Farmers across India require a reliable machine that achieves threshing with minimal grain breakage, clean output for a variety of crops. The innovator has developed a versatile thresher that can meet these needs.

The modified farm implement reduces setup time to less than 15 minutes to switch over from one crop to another, and achieves minimal breakage. Its latest variant can also handle groundnut apart from threshing other cereals and pulses.

The innovator has been supported with working capital needs of his enterprise under the *Micro Venture Innovation Fund* of NIF. More than a hundred farmers have bought his thresher.

10

# Trench digging machine

**Radhey Shyam Tailor**
**Nathulal Jangid**
**Yusuf Khan**
Rajasthan

While on a trip, the innovators noticed laborers manually digging the ground to make long trenches to lay telephone cables, taking months to complete the work. This inspired the innovators to build a mechanized equipment to dig trenches rapidly.

The trench digging unit developed by the innovators can be fitted to any tractor. The modified unit has a hydraulic lever to adjust digging depth and to maneuver the running unit, a planetary gear system and motion converter unit to achieve speed reduction and deliver power from the tractor.

The compact machine can dig narrow and deep channels evenly, on hard and soft soil conditions. In one hour, it can dig a pit 65 meters long, 5 feet deep and 14 inches wide, while consuming only 2.5 liters of diesel per hour. The equipment costs less than half that of imported models. It is even used by the local telephone department to lay cables.

11

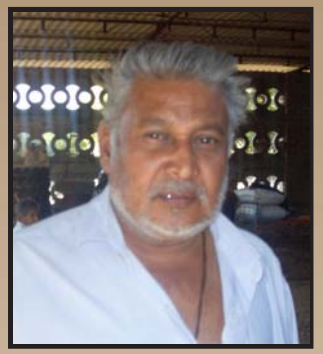
**Sheikh Jahangir Sheikh Usman**
Maharashtra

# Two-wheeler based spray painting device

The innovation is a painting device that can be easily mounted on a two-wheeler scooter and carried to a customer's place. Deriving power from the two-wheeler's engine to run the compressor, this device lends flexibility of usage to the painter. This innovation won Sheikh Jahangir, a consolation prize in NIF's Fourth National Competition. NIF has also filed a patent application for the same and has supported him through the Micro Venture Innovation Fund. He has also made a scooter based washing machine and a scooter mounted flour mill.

12

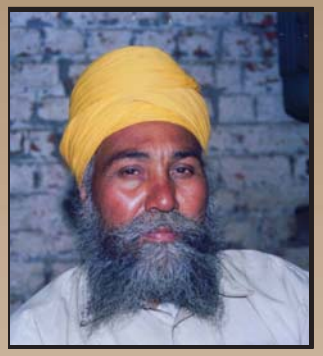
# Jayant sprayer



**Rameshbhai Bhalala**
Gujarat

Cotton crop requires continuous spraying of insecticides during vegetative and reproductive growth to protect against the various pests. As plant height is more in cotton as compared to other crops during ball formation stage, it is very difficult to spray the field with conventional sprayers. The crop also requires high volume of insecticides, which with knapsack sprayer is tiresome and a time consuming process.

As a solution for the problems faced, Shri Rameshbhai Bhalala has developed a sprayer cum inter-culturing equipment especially for cotton crops. A 10 HP diesel engine and three-piston sprayer pump is mounted at a height of 5 feet on the self-designed iron chassis. A flexible sprayer boom assembly of 15 ft length on each side having a total of 15 nozzles is provided to facilitate the spray. Provision has also been made to mount a small size harrow behind the rear wheels, which can be used for inter-culturing by attaching the harrow behind it. The machine costs Rs. 1.65 lakhs.



**Chinder Singh**
Uttaranchal

# Multicrop combine unit

Harvesting of wheat and collection of chaff for feeding the animals is a time consuming process. The existing combines are fitted to tractors and need separate units to be fitted for harvesting of wheat and then for cutting of straw. Few farmers have the dual tractor-combine units and most small farmers have to wait for combine units to be available and pay necessary hire charges.

The innovator has developed a dedicated single unit which can simultaneously do both harvesting of wheat and generating the straw and depositing them in two separate tanks on either side. The machine also cleans grains, pulses and oilseed crops without breakage.

Using an Ashok Leyland engine, with a compact footprint, it is a versatile option that can maneuver in tight zones with narrow plant interspacing.The machine can harvest wheat at the rate of one acre per hour.

14

# Bullet Santi-motocycle based multipurpose plough

**Mansukhbhai Jagani**
Gujarat

For small farms that lack acess to tractors and can't keep bullocks, motorcycle driven plough, also called '*Bullet Santi*' is a low cost alternative.

Using the chassis, drive and power of an Enfield Bullet motorcycle in front, the innovator has retrofitted an attachment with two wheels at the rear with a tool bar to fit various farm implements. This meets various needs such as plouging, weeding and sowing seeds. Being a unique local solution, the machine has proved to be cost effective and fuel efficient. Bullet Santi can plough an acre of land in half an hour consuming only two litres of fuel. Innovator has got a patent in India and USA. Given the fact, many other users and innovators copied this technology, he willingly accepted the concept of '**Technology Commons**' implying no restrictions for other innovators to copy and adapt. But commercial firms will need license from members of the '**Technology Commons**'.

15

**Imli Toshi Namo**
Nagaland

# Hydro generator using bamboo composite

Energy generation and pumping water for irrigation is a widespread rural need.

The innovator has used the bamboo powder, a by-product from the bamboo lathe machine invented by him, and mixed it with a resin to create a strong composite to fabricate the lightweight hydro turbine for generation of energy.

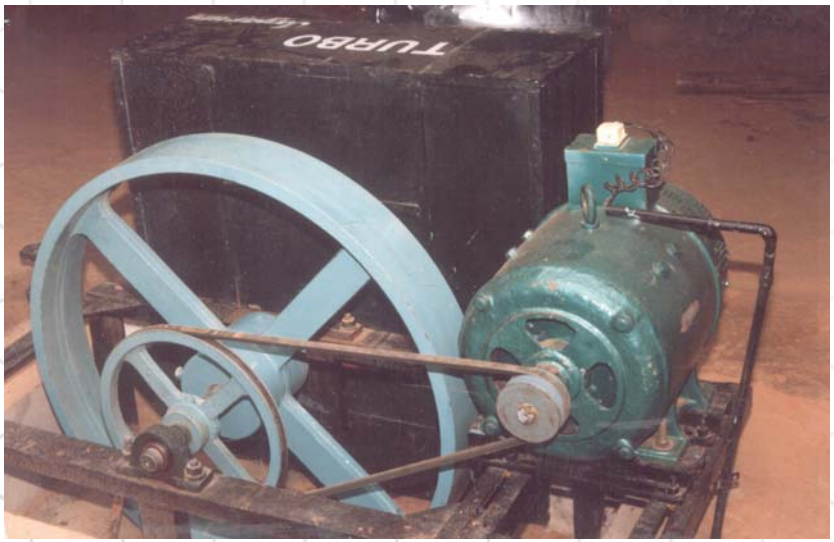
16

# Modified hydro electricity turbine

**G. K. Ratnakar**
Karnataka

Electricity supply in the hills is always a problem with either the difficulty of access or distribution or disruption.

Hydro electric turbine is specifically designed for the hills. It costs Rs.30,000 and meets the individual electric needs of a rural household. The innovator has installed a few of these turbines in the hilly villages of Karnataka.



**Thomson Augustine**
Kerala

# Cost effective tyre re-treading

Usually tyre re-treading is done using steam based heating system which needs about 1.5 tons of firewood to cure a 14 kg of matrix. Proper vulcanizing requires about 150° C temperature and 80 psi steam pressure. The tyres are directly exposed to heat which results in reduction in life also.

The innovator has developed an electrically heated matrix system for tyre re-treading. The system has coil heaters with ceramic beads, digital thermostat control and timer to maintain constant temperature throughout the process for balanced curing.

One can complete the operation in 18-20% of the cost of the conventional process by using the innovation. The innovator has been supported through MVIF of NIF. He has been granted an Indian Patent and has also sold over 100 machines throughout the country. NIF facilitated the technology licensing to Eastern Threads, a group company of Eastern Masalas.

18

# Biomass gasification system

**Rai Singh Dahiya**
Rajasthan

There are lots of villages in the country which are still not electrified or are receiving power erratically. Crude oil is not a very likely solution as it is depleting and the price is also going higher day by day. Use of biomass as a fuel therefore appears to be a good solution!

People using the biomass gas (producer gas) as a fuel generally complains of choking in the engine after running for a certain period of time. The innovator has changed the conventional design of gasifiers especially the filters and cooling unit to get clean gas, ensuring smooth operation of engine at low operational cost. On an average the biomass requirement is one kg/kW-h and the costs of 10 kW, 25 kW, 30 kW and 35 kW biomass gasifier system are Rs. 1, 25,000, Rs. 2,00,000, Rs. 3,00,000 and Rs. 3,25,000, respectively.

Scientists from TERI (Tata Energy and Environment Research Institute) has confirmed the uniqueness and over fifty users have confirmed its operational practicability. The innovator has sold over fifty units after getting *MVIF* Support from national Innovation Foundation through GIAN North.

19

**Ishwar Singh Kundu**
Haryana

# Herbal growth promoter

A herbal plant growth promoter, which is effective in protecting the plants from a broad spectrum of pests apart from providing necessary nutrition has been developed. It is named as "*Kamaal*" meaning wonderful, due to its performance. It is effective in field crops as well as in vegetable crops.

The main ingredients of the product are "*aak"* (*Calotropis gigantea*), "*reetha*" (*Sapindus trifoliatus*), "*dhatura*" (*Datura metel*), "*neem"* (*Azadirachta indica*), Tobacco (*Nicotiana tabacum*), and "*bhang*" (*Cannabis sativa*), etc.

The innovator won a consolation award in NIF's Fourth National Biennial Competition. He has also been supported under the *Micro Venture Innovation Fund* of NIF for commercialising "*Kamaal*". The product is a good hit in the local market and is fetching steady income for the innovator. This product has also been supplied for use in the gardens in the Rashtrapati Bhavan with encouraging results.

20

# Mango nipper

**Madhav Mahajan**
Maharashtra

Farmers all over India need a simple device that can reach tall branches of trees to cut and harvest thousands of fruits per day. This innovative device with unique shape and cutting action can be used to harvest fruits quickly, saving time and increasing output.

The novelty lies in the design of replaceable cutting blades and hooking angle given to the oval shaped ring that assists in harvesting the fruits on upright branches. It is light weight, durable and suitable for harvesting fruits like mango, safota, guava, orange, etc.

**Jai Prakash Singh**
Uttar Pradesh

# Virat (JP-6): An improved variety of pigeon pea

This new variety has coloured flowers, long leaves and bunchy type pods bearing at the top. The seed weight (19 – 20 gram/ 100 seeds), number of pods / plant (500 - 600), big size pods (3 – 5 inch), number of seeds/pod (5 – 6) and perennial yield (1st year 12 -14 quintal/ acre and 2nd year 14 – 15 quintal/ acre) is higher as compared to the local popular variety. This variety requires less quantity of seed (4 – 5 kg/acre) and maintenance as compared to other varieties grown in the region.

22

# Richa 2000: An improved variety of pigeon pea

**Rajkumar Rathore**
Madhya Pradesh

This variety has big flowers, long leaves and bunchy type pod bearing at the top. Topping is done periodically, which results in bushy growth. This variety has synchronous maturity with higher yield (24 quintals/acre), more branches / plant (12-14) and more pods/plant (700 – 800) than other local popular varieties of the region. Rathore was given a consolation award in NIF's Fourth National Biennial Competition.

23

**Balasaheb Patil**
Maharashtra

# Sushil Laxmi: An improved dual pod variety of chick pea

The most distinctive feature of the variety is that it bears two pods per axil as compared to single pod per axil, which is a common feature of most varieties that are available in the market. The plant variety is tall (50-60cm), spreading and has bushy type growth habit. The foliage is dark green and seeds are attractive, bold (25-30 gram/ 100 seeds) and brown in colour. The variety has been reported to be tolerant to wilting and insect pest attack in farmer's field, yielding on an average 14 - 16 quintals per acre under irrigated conditions and 12 - 13 quintal per acre in unirrigated conditions.

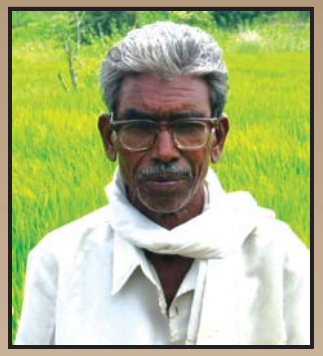
24

# Improved varieties of chilli and onion

**Balwan Singh**
Haryana

An improved variety of chilli named Alakhpura selection has been developed, the seed quality of which is claimed to be very good with 95% germination. The fruit size is 6-9 inches, and it is said to be somewhat hot and pungent with thick skin texture. The powdered dried chilli imparts bright red colour. This variety grows well in sandy loam soil and the innovator has sold it to farmers throughout Haryana.

The onion variety developed by the innovator is commonly known in the innovator's village and neighbouring area as *"Balwan Singh ka pyaj".* It can be stored for around one year and the germination capacity of its seeds is claimed to be 98 per cent.



**Dadaji Ramaji Khobragade**
Maharashtra

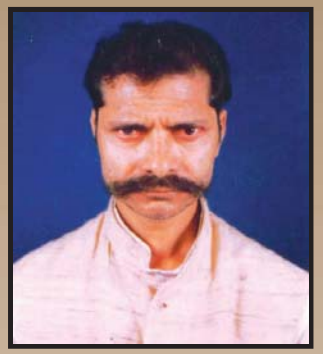
# HMT: An improved paddy variety

Khobragade selected and bred the HMT rice variety from the conventional 'Patel 3', a popular variety developed by Dr. J. P. Patel, JNKV Agriculture University, Jabalpur. He succeeded after five years of continuous study and research on a small farm owned by him without any support from the scientific community. This varierty has an average yield of 40 – 45 quintals per hectare with short grains, high rice recovery (80 %), better aroma and cooking quality in comparison with the parent ones. Most remarkable feature of the variety is the thinness of grain. It has been included as a standard reference for thinness by Protection of Plant Variety and Farmers' Right Authority (PPVFRA).

He won the National Award in NIF's Third National Competition. NIF has filed an application under PPVFRA 2001 to register his variety. Apart from HMT he has also developed six other paddy varieties namely DRK, Vijay Anand, Nanded Chinur, Nanded 92, Deepak Ratna and Nanded Hira. He regrets that local agricultural university took the credit merely for purifying the seeds and did not give him the due honour. HMT has diffused in more than one lakh acres in five states.


26

# Kudrat 9: An improved variety of wheat



**Prakash Singh Raghuvanshi**
Uttar Pradesh

The innovator believes that every farmer should get good quality seeds to deliver high yielding varieties of crops. He has developed a number of improved wheat, paddy, mustard and pigeon pea varieties, which are high yielding, robust stem, having bold seeds with good smell, taste and which are resistant to major pests & diseases.

"*Kudrat 9*", an improved wheat variety, developed by him using simple selection is quite popular among the farmers in different parts of Uttar Pradesh, Madhya Pradesh, Chattisgarh, Maharashtra, Rajasthan, Gujarat and some parts of Bihar, Haryana and Punjab. This variety bears large number of ear bearing tillers with lengthy spikes and has a hardy stem. The grain has a good taste. The average yield of this variety is 55-60 quintals / hectares.

**M. Lingamadaiah**
Karnataka

# Mysore Mallige: A unique paddy variety

Shri Lingamadaiah, a graduate in law, is known for his variety '*Mysore Malligae*' in Karnataka, Tamil Nadu and parts of Andhra Pradesh. *Mysore Malligae*' developed through systematic recurrent selection by the innovator. It is an early bearing variety with a yield of about 36 quintals per acre (9000kg/ha). The innovator was facing pest and disease problem in paddy for many years and also getting low milling recovery. He started multiplying the new paddy variety by selection procedure to get pest and disease free variety with higher milling recovery. It yields more even without any extra input and is of short duration, resistant to lodging and milling recovery is about 80 percent. If grown organically, hardly any pest and disease attack is observed. He is growing this variety since 1994. It has covered 25-30% of paddy growing area in the region.

He won the first national award in the second national competition of National Innovation Foundation and was also honored with Beeja Mitra award from GREEN Foundation.

28

# New cultivars of lemon grass – "Hunar"

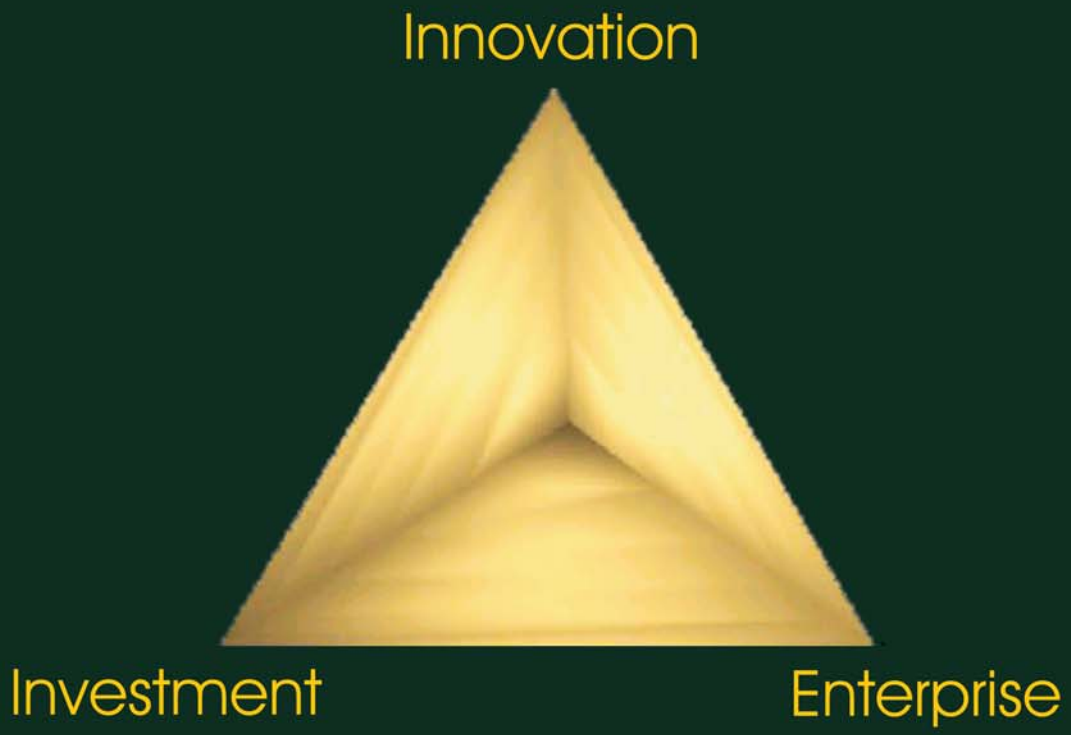
**Gurpreet Singh**
Uttaranchal

Shri Gurpreet Singh is an innovative farmer from Uttaranchal. He is a St Stephens graduate. He has cultivated a new variety of lemon grass with high citral content and also improvised on its extraction process making it efficient and purer. He worked in the tea industry for 10 years. His farming background, along with his experience in Tea industry provided him a mechanism of Scientific Agriculture, which was instrumental in this process of selection. SRISTI (Society for Research and Initiatives for Sustainable Technologies & Institutions), Ahmedabad has honored him with SRISTI SAMMAN -2007 for his outstanding contribution.

*As per its mandate, NIF does not consider such professionals for awards or financial support, but only helps in providing visibility or linkages.

# End Notes & References


1. Anis, M. and Iqbal, M. 1994. Medicinal plantlore of Aligarh, India. *Int. J. Pharmacog.* 32 (1): 59-64.
2. Prajapati, N.D., Purohit, S.S., Sharma, A.K. and Kumar, T. 2007. *A Handbook of Medicinal Plants*. Jodhpur, Agrobios (India), Section-II, pp. 1-554.
3. Jain, S.K. 1991. *Dictionary of Indian Folk Medicine and Ethnobotany*. New Delhi, Deep Publications, pp. 1-311.
4. Jain, S.R. and Sharma, S.N. 1967. Hypoglycaemic drugs of Indian indigenous origin. *Planta. Med.* 15 (4): 439-442.
5. Himalaya healthcare products, http://www.himalayahealthcare.com/products.htm dt.02.07.2008.
6. Behl, H.M., Sidhu, O.P., Mehrotra, S., Pushpangadan, P. and Singh, S.C. 2006. *Nontoxic dental care herbal formulation for preventing dental plaque and gingivitis.* CSIR, New Delhi. (United States Patent No.7083779 dt. 01.08.2006; http://patft.uspto.gov, dt. 21.11.08).
7. Al-Yahya, M.A. 1986. Phytochemical studies of the plants used in traditional medicine of Saudi Arabia. *Fitoterapia*. 57 (3): 179-182.
8. Anis, M. and Iqbal, M. 1986. Antipyretic utility of some Indian plants in traditional medicine. *Fitoterapia*. 57 (1): 52-55.
9. Sebastian, M.K. and Bhandari, M.M. 1984. Medico-ethno botany of Mount Abu, Rajasthan, India. *J. Ethnopharmacol*. 12 (2): 223-230.
10. Herbalcureindia, http://www.herbalcureindia.com/herbs/arka.htm, dt.17.11.2008
11. Kiss, R. 2005.*Extract with anti-tumor and anti-poisonous activity*. Unibioscreen S.A., Belgium (Pub no MXPA05003634 (A) dt. 14.12.2005; http://v3.espacenet.com, dt. 21.11.08)
12. Muthuswamy, M.P. 2003. *Polyherbal composition for the treatment of bronchial asthma and the process*. Dalmia Centre for Research and Development, India (Pub noWO03055558 (A1) dt. 10.07.2003; http://v3.espacenet.com, dt. 21.11.08)
13. Reddy, M.B., Reddy, K.R. and Reddy, M.N. 1989. A survey of plant crude drugs of Anantapur district, Andhra Pradesh, India. *Int. J. Crude Drug Res.* 27 (3): 145-155.
14. Bellakhdar, J., Claisse, R., Fleurentin, J. and Younos, C. 1991. Repertory of standard herbal drugs in the Moroccan pharmagopoea. *J. Ethnopharmacol.* 35 (2): 123-143.
15. Al-khalil, S. 1995. A Survey of plants used in Jordanian traditional medicine. *Int. J. Pharmacog*. 33 (4): 317-323.
16. Beneforce-Holistic Medicine, Alternative Health and Complementary Alternative Medicine, http://beneforce.com/informationfaq/homeopathic/citrulluscolocynthis.htm dt.29.06.2008.
17. Duke, J.A. and Ayensu, E.S. 1985. *Medicinal plants of China.* Reference publications, Inc. Algonac. Michigan Book. 1 (4): 52-361.
18. Singh, V.P., Sharma, S.K. and Khare, V.S. 1980. Medicinal plants from Ujjain district Madhya Pradesh – Part-II, *Indian Drugs Pharm. Ind*. 5: 7-12.
19. Mossa, J.S. 1985. A study on the crude antidiabetic drugs used in Arabian folk medicine. *Int. J. Crude Drug Res.* 23 (3): 137-145.
20. Rao, J. M. *et al*. 2005. *A novel herbal composition for the treatment of gastric ulcer.* CSIR, New Delhi and Arya Vadiya Sala, Kerala (Pat no. WO2005039611 (A1) dt.06.05.2005; http://v3.espacenet.com, dt. 24.11.2008)
21. Omer, O.S., Glomski, P., and Borah, K. 2001. *Herbal compositions and their use as anti-inflammatory agents for alleviation of arthritis and gout.* Chromak Res. Inc., USA (Pat no. US6274176 (B1) dt.14.08.2001; http://v3.espacenet.com, dt. 24.11.2008)
22. Parrotta, J.A. 2001. *Healing of plants of Peninsular India.* New York, USA, CABI publishing, pp. 01-730.
23. Artemis herbs, http://www.artemisherbs.co.uk /info /eucalyptus _leaf _aromatic _water.html dt.17.11.2008
24. http://www.greatestherbsonearth.com/nsp/herbaltrim_skin_cream.htm dt.27.11.2008.
25. Nino, S. and Zurab, D.1997. *Green ointment*. Shikhashvili Nino and Darsavelidze Zurab. (Pat no. WO/1997/042963 dt.20.11.1997; http://www.freepatentsonline.com, dt.28.11.2008)
26. Quezada, R.S. 2002.*Therapeutic oil composition.* Kelly Bauersfeld Lowry & Kelley, Llp, California, USA. (Pat. No. 20020136788 dt.26.09.2002; http://www.freepatentsonline.com, dt.28.11.2008)
27. Wikipedia, http://en.wikipedia.org/wiki/Phoenix_dactylifera dt 28.11.2008.
28. Mitra, S.K., Ranganna, M.V., Santhanamoorthy, G., Sundaram, R., Kolhapure, S.A. and Babu, U.V. 2006. *Herbal formulation capable of preventing alcohol-induced hangover, methods of preparing the same and use thereof*. MMI, India. (Pub no. WO2006131932 (A1) dt. 14.12.2006; http://v3.espacenet.com, 28.11.2008)




**Honey Bee Network**
**SRISTI**
P.O. Box : 15050,Ambavadi P.O.
Ahmedabad 380015, Gujarat, India
Phone: (91-79) 27912792, 27913293
E-mail: honeybee@sristi.org
www.sristi.org/honeybee.html

**National Innovation Foundation**
Bungalow 1, Satellite Complex
Premchand Nagar Road
Vastrapur
Ahmedabad 380 015, Gujarat
Telephone: +91-79-2673 2456/2095
www.nifindia.org