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PROMISING TECHNOLOGY

Community Solar Cooker

The Department of Renewable Energy Sources, CTAE, Udaipur, has designed and developed a community solar cooker, which can cook food for 30-35 persons in a batch. It can be used in hostels, ashrams, army canteens, temples etc. Community solar cooker can save up to 50% of cooking fuel per meal. The cost of one unit is about Rs 5,000. This cooker has been developed through financial support provided by World Food Programme, Forest Department, Udaipur.



Community solar cooker

Domestic Solar Dryer

The Department of Renewable Energy Sources, CTAE, Udaipur, has designed and developed a solar dryer for domestic purpose. It is used for drying vegetables, fruits and other useful domestic products. This dryer can dry 7-8 kg materials in a batch. The cost of the dryer is Rs 2,000.



Domestic solar cooker

(MAHARANA PRATAP UNIVERSITY OF AGRICULTURE AND TECHNOLOGY, UDAIPUR)

Groundnut Harvester

Groundnut harvester to increase pod recovery from soil consists of a main frame, two side flanges, tool-mounting frame, tools, picker conveyor, drive for the conveyor and two depth wheels. Two holes are provided at the main frame to adjust distance between tools and pick-up conveyor mechanism. A semi-circular slot is provided on the side flanges to adjust the rake angle at different levels. A tool of 50 cm length is fixed to tool-mounting frame. The picker conveyor is made of chain and conduit rods as cross-bars. The pick-up pegs are made of mild steel rounds with 1,350 bends at the end. From the rotary gear-box of the power tiller, the power is transmitted to the shaft of the groundnut harvester unit through V-belt and pulley mechanism. Two depth wheels are provided for controlling depth of operation on either side of the unit. The unit is suitable for harvesting different varieties of groundnut. It can be attached to all makes of 10-12 power-tillers. An area of 0.8 ha can be harvested per day. It results in 90% and 30% saving in time and labour respectively. The cost of the unit is Rs 7,000.



Ground nut harvester power-tiller operated

Impact Stripper for Groundnut

A holding-type, powered impact stripper for groundnut has been developed at the College of Agricultural Engineering, Kumulur, which is popular with medium and small farmers. The machine consists of peg-type stripping cylinder fitted with rigid stripping fingers. The cylinder revolves at 200 rpm and is powered by 1.8 Kw petrol - start kerosene-run engine. A feeding platform is provided for operator to conveniently hold and thresh the crop. The vines are held by impact stripper for groundnut operator and the root zone is exposed to beater fingers for stripping pods. The machine is designed for two operators to work simultaneously. The salient feature of this machine is that the vines are not fed into the stripper and hence the fodder value of the vines is maintained.



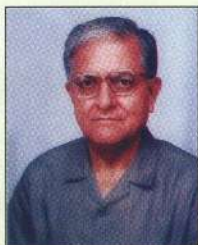
Impact stripper for groundnut

Field trials have shown that this machine can achieve 100% stripping with less than 2% pod damage. The machine can strip the crop grown in 1-acre land in 1 day. The cost of the machine including engine is Rs 19,000. By using this machine 17% of stripping cost and 37% of labour requirement can be reduced.

(TAMIL NADU AGRICULTURAL UNIVERSITY, COIMBATORE)

Dr Jagmohan Singh takes over as VC, Ch. Sarvan Kumar Krishi Vishwavidyalaya, Palampur

An eminent farm scientist, Dr Jagmohan Singh, has joined as Vice-Chancellor of CSKH.P. Agricultural University on 2 July 2004. Prior to his new assignment, he was holding the post of Dean, College of Horticulture and additional charge of Director of Extension Education, Dr Y.S. Parmar University of Horticulture and Forestry, Solan. He is the seventh regular Vice-Chancellor of the university.



Dr Jagmohan Singh

He was born on 11 November 1945 at Bhaira village of tehsil Rajgarh in district Sirmour. He obtained his initial education from Government High School, Rajgarh and did B.Sc. (Agriculture and Animal Husbandry) from Punjab Agricultural University, Ludhiana, in 1966; M.Sc. Horticulture (Pomology) from the College of Agriculture, Solan in 1968 and Ph.D. (Horticulture) from Punjab University, Chandigarh. He also received advanced training in irrigation technology, soil management and plant-water relationship from the United Kingdom.

Dr Singh started his career as Research Assistant at Regional Fruit Research Station, Mashobra, in 1968 and held positions of Assistant Horticulturist at Fruit Research Station, Kandaghat (1973-1976) and Horticulturist at S.N. Stokes Horticulture Complex, Nauni (1976-1984), was elevated to the rank of Professor in 1984 and appointed Head of Pomology Department in 1995. He was Director of Horticulture, Himachal Pradesh, from 1998 to 2001.

Dr Jagmohan Singh has more than 30 years of experience in teaching, research and extension education and is known for development of horticulture in the state. He has published more than 100 research papers and extension articles and has guided 23 post-graduate students, including 11 Ph.Ds. In connection with his professional obligations, he visited several countries including the United Kingdom, the USA, France, Germany, Italy, the USSR, Sweden, Denmark, Spain, Bulgaria, Thailand etc. He is a member of several national and international professional bodies.

Dr S.L. Mehta takes over as VC, MPUAT, Udaipur

Dr S.L. Mehta was born on 25 October 1943. He has an outstanding academic record with a gold medal in I.Sc. (Agric.) and first rank in B.Sc. (Agric.). He completed his M.Sc. and Ph.D. from IARI and did 2-year post-doctoral research work at the Department of Plant Science, University of Alberta, Canada. In 1969 he joined IARI and became the youngest professor-grade equivalent Scientist in March 1972 and thereafter occupied the position of Head of the Division of Biochemistry for over 10 years. Before joining ICAR he worked as Dean and Joint Director (Education) for more than 1 year and was instrumental in P.G. teaching improvement at the IARI by innovative approaches. He has striven all along for transparency in the selection and performance. The guidelines developed for best teachers awards in the universities and ICAR bear testimony to this. The all-India competitive examinations for admission to IARI and ICAR have been praised by all for the transparency and proper selection. He has travelled widely to Canada, the USA, Germany, Australia and Philippines for various assignments.



Dr S.L. Mehta

He has received many honours and awards. He is the fellow of National Academy of Agricultural Sciences; Secretary of Society for Plant Biochemistry and Biotechnology and President of Indian Society of Agricultural Biotechnology. He has been conferred D.Sc. (Honoris Causa) by CSAUAT, Kanpur; GBPUAT, Pantnagar and CIFE, Mumbai. He is the youngest B.C. Guha Memorial Lecture Awardee of Indian Science Congress Association, recipient of Vasvik Award in Agriculture for 1992 and Shri Om Prakash Bhasin Award for

1997 in Agriculture. He delivered Convocation addresses at BHU, Varanasi; GAU, Krishinagar and TANUVAS, Chennai. He published more than 150 research papers in national and international journals of repute and has edited several books and manuals. His research contributions in the areas of molecular mechanism of cereal storage protein and starch biosynthesis in the high-lysine cereals, nutritional studies and development of extremely low ODAP *Lathyrus sativus*, and the isolation and characterization of a gene-degrading ODAP have received wide acclaim. Recently one of the somaclone Bio L-212, named Ratan, released for commercial cultivation on account of extremely low ODAP and high yield for NEPZ and CZ. *In-vitro* regeneration protocol in chickpea is another of his major achievements, which will permit development of transgenics.

Dr S.L. Mehta joined as DDG (Edn.) and as National Project Coordinator, AHRD Project, on 10 November 1996. Because of his initiatives and dynamism there has been qualitative improvement in agricultural education. He has put in motion a number of innovative steps including new accreditation process, decentralization of decision making, motivation of faculty, management course for managers of education, strategic plan development for educational institutions, institution of faculty awards for supporting excellence in teaching, development of quality instructional material etc. Everybody in the education system feels impact of these new initiatives and terms this period as revolution in agricultural education. Agricultural Human Resource Development Project (AHRD), funded by World Bank, was monitored by him as National Project Coordinator. As a result of the success of this project, World Bank has now approved AHRD Phase-II for improving agricultural education further. As an institution builder he has developed one of the best facilities for research and education in the Division of Biochemistry as also in the IARI and subsequently in all the state agricultural universities. The attainment of global competitiveness in many areas is mainly on account of his conviction and sincerity in the implementation of reforms and development of necessary infrastructure.

Dr S.L. Mehta had joined as National Director, National Agricultural Technology Project (NATP) on 30 May 2002, and in a short time the partners are feeling the impact of his efforts in streamlining the project and meeting the objectives. Review of various programmes under NATP has led to overall improvement in project execution. World Bank review mission has specially appreciated the progress made since joining of Dr Mehta as National Director. Support was provided to all the scientists for good performance. Close monitoring and evaluation has led to achievement of targets and excellent documentation. He joined Maharana Pratap University of Agriculture and Technology, Udaipur, on 1 October 2004.

Dr N. Balaraman takes over as VC, TANUVAS, Chennai

Dr N. Balaraman, former Joint Director, National Dairy Research Institute, Karnal, was born on 15 October 1944 in Salem district in Tamil Nadu. He did under-graduation in 1966 and post-graduation in 1972 in Veterinary field from Madras Veterinary College, and doctorate in 1987 from National Dairy Research Institute, Karnal. He has a career of 31 years as Veterinary Assistant Surgeon, Animal Husbandry Department, Tamil Nadu Agricultural University, Coimbatore; Senior Scientist, and Head, Division of Dairy Cattle Nutrition and Joint Director at National Dairy Research Institute, Karnal. He is the recipient of ICAR Award for Team Research, Jawaharlal Nehru Award for post-graduate Research (ICAR), Animal Nutrition Society of India Award and Fakhruddin Ali Ahmed Award (ICAR). During his service at the NDRI, he handled 10 projects and organized 10 seminars or workshops. He attended nearly 86 seminars, symposia or workshops. He published 45 research papers, 65 popular articles, 4 scientific reviews and 13 books, book chapters or booklets. He also



Dr N. Balaraman

edited 9 titles and published 59 articles in seminars, symposia, workshops or conference proceedings. On 1 October 2004 he joined as Vice-Chancellor of Tamil Nadu Veterinary and Animal Sciences University, Chennai.

Dr A.T. Sherikar reappointed as VC, MAFSU, Nagpur

Dr A.T. Sherikar has been reappointed as VC of Maharashtra Animal and Fishery Sciences University, Nagpur for another tenure of 3 years. Born on 25 April 1949, he pursued his M.V. Sc. and Ph.D. from Bombay Veterinary College. He joined as the first VC of MAFSU in 2000. In this first tenure he secured its recognition from the central regulatory authorities, viz. ICAR, UGC, VCI, AIU and IAU within a record span of 2 years. He was instrumental in framing the statutes and regulations of the university and establishing various authorities as per the MAFSU Act. Dr Sherikar received various research projects



Dr A.T. Sherikar

worth more than Rs 13 crores during this period. Under his leadership, the university prepared an ambitious perspective plan, VISION 2025, defining the long-term strategic policies and programmes of the university, and organized 6 national level conferences, 16 seminars and workshops and 2 livestock exhibitions.

Dr Sherikar worked as Principal Investigator in seven research projects, costing more than Rs 5 crores, at Bombay Veterinary College. As Head of Department, he handled a number of industry-sponsored projects on development of new products, which included extraction of insulin and heparin from the slaughter-house waste, development of species-specific antisera to heat-stable antigens of adrenal glands for species identification, Neat's foot oil from buffalo hooves and development of carcass-washing unit. He was honoured with fellowships by National Academy of Veterinary Sciences and Indian Association of Advancement in Veterinary Research. He has 88 research papers to his credit and has authored 2 books and 2 bulletins. Considering his dynamic leadership and administrative qualities, he was reappointed as the VC for second successive term on 17 May 2004.

Focus on Universities - Achievements and Events

DEEMED UNIVERSITY

INDIAN AGRICULTURAL RESEARCH INSTITUTE, NEW DELHI

NEW High-yielding Variety of Brinjal

A high-yielding brinjal variety, "DBL-21", has been identified by XXII Group Meeting of AICRP (Vegetable Crops) held at ANGRAU, Rajendranagar, Hyderabad (Andhra Pradesh) from 27 to 30 May 2004. Its fruits are long, dark purple, glossy with partially pigmented calyx and stalk. Maturity (days to first fruit harvest) is 50-55 days after transplanting. Its average fruit yield is 370 q/ha, which is 23% higher than that of the check PPL (300 q/ha).



DBL 21

INDIAN VETERINARY RESEARCH INSTITUTE, IZATNAGAR

Global Action Plan for Tick and Tick-borne Diseases

The Division of Parasitology, Indian Veterinary Research Institute, Izatnagar will soon join the consortium of 55 institutions of 31 countries of sub-Saharan Africa, Latin America, Asia and Europe, as a role partner in the global action plan to tackle problems of ticks and tick-borne diseases, which are responsible for major depression in livestock production due to morbidity and mortality. A recent estimate, shows that 1 billion cattle are at the risk of these diseases in the tropical and subtropical countries.

A programme entitled "Integrated consortium on ticks and tick-borne diseases: a global concerted action plan" has been initiated. This is the first time when an interdisciplinary team of scientists from the IVRI is participating in it, comprising Dr Srikanta Ghosh, Dr D.D. Ray, Dr G.C. Bansal and Dr S.C. Gupta from Parasitology Division; Dr Pallab Chowdhury from National Biotechnology Centre; and Abhijit Mitra and Dr S.M. Deb from Genetics Division.

NATIONAL DAIRY RESEARCH INSTITUTE, KARNAL

Test Tube (IVF) Goat Kids Born at NDRI, Karnal

National Dairy Research Institute, Karnal, that had shot into prominence by producing the world's first buffalo test-tube calf a few years ago, has done it again by producing the test-tube goat kids this time. Dr D. Malakar, Dr S.K. Das and Dr S.L. Goswami at the Animal Biotechnology Centre carried out the work to develop in-house capabilities in IVF, using ovaries of goats collected from slaughter-

houses and transfer of embryos produced in the laboratory to the surrogate mother goats; because goat and sheep are being increasingly used as models for research in advanced areas of transgenic animal production and animal cloning. Goat ovaries were collected from Delhi slaughterhouses and oocytes were isolated from the ovaries. These oocytes were cultured in laboratory for 24 hours in suitable medium and fertilized using sperm from selected bucks. The embryos were grown for the next few days in the laboratory and transferred to surrogate goats using laparoscopy technique. The first male kid was born on 2 February 2004, which was 2.7 kg at the time of birth. The subsequent kids (twin, one male and other female) were born on 4 March 2004, weighing 4.0 and 3.2 kg at birth. The fourth kid (female) was born on 26 March 2004, weighing 3.4 kg at birth. The parentage was confirmed through DNA fingerprinting of surrogate mothers, bucks and kids.

Cottage Cheese

Effects of different acidulants, namely food-grade HCl; glucono-δ-lactone (GDL); and HCl in combination with GDL were studied at different pH levels of coagulation and of coagulants (Meito rennet), different cooking profiles and plain and ripened cream. Direct acidification of skim milk at low temperature with HCl, followed by the addition of GDL decreased the pH of milk to 5.31. Addition of optimized level of rennet at the same temperature led to good gel formation within 43 min, which was suitable for clean and smooth cutting to yield a good-quality cottage cheese. The entire cooking operation was standardized, taking only 25 min to yield satisfactory product in terms of body and texture, with an average curd yield of 12.22%. Dressing of cottage cheese curd with ripened cream (*Lactococcus lactis* subsp. *lactis* biovar. *diacetylactis* @ 5% of curd dressing) produced pleasant overtones of diacetyl flavour over plain cream-dressed cottage cheese. The processing parameters were optimized; based on the time taken for the operation, yield of the cottage cheese curd, and sensory as well as textural properties of cottage cheese curd and the final product. Direct acidified cottage cheese dressed with ripened cream enhanced the sensory characteristics in terms of flavour, body, texture, colour and appearance.



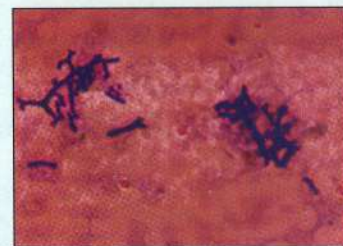
Direct acidified cottage cheese

Lyophilized Synbiotic Preparation Containing Bifidobacterium Species and Inulin

A study was undertaken to select a *Bifidobacterium* culture based on the probiotic attributes and prepare a lyophilized synbiotic product, incorporating selected *Bifidobacterium* culture and inulin and to determine

the effect of each factor (*Bifidobacterium*, inulin and their combination) on microecology of murine gut. Of the cultures tested, *Bifidobacterium lactis* Bb - 12 (Bb - 12), *Bifidobacterium* species 420 (B - 420) and *Bifidobacterium* (ABT - 5) gave positive tests for key enzyme of bifid shunt, fructose-6-phosphate phosphoketolase. These cultures were screened for probiotic attributes like cell-surface hydrophobicity, antimicrobial activity, ability to utilize inulin and tolerance to acid, bile and lysozyme. Based on these attributes, *Bifidobacterium* species 420 was selected for the development of the lyophilized synbiotic preparation incorporating inulin and using skim milk as the base material. During refrigerated storage, viability of the probiotic bacteria in the product remained in the range of 10^8 to 10^9 cfu / g even after 60 days, and drastic reduction in cell number was observed on storage at room

temperature. A feeding trial carried out in male albino mice showed significant differences in faecal clostridial count, bifidobacterial count, coliform count and β -glucuronidase activity of probiotic, prebiotic and synbiotic groups compared with the control. Among the different dietary strategies tested, the synbiotic treatment was found most effective, validating improved benefits attributed to the consumption of a combination of probiotics and prebiotics rather than that of either of them.



Bifidobacterium species 420 (B-420)

UNIVERSITIES

A Profile

DR BALASAHEB SAWANT KONKAN KRISHI VIDYAPEETH, DAPOLI

The Konkan Krishi Vidyapeeth was established on 18 May 1972 to cater to the needs of teaching, research and extension education in agriculture and allied sectors of the Konkan region. The university has been renamed Dr Balasaheb Sawant Konkan Krishi Vidyapeeth on 12 February 2001 in the name of late Dr P.K. alias Balasaheb Sawant, a great social reformer and the then Minister of Agriculture, Government of Maharashtra. The headquarters of the university is located at Dapoli, whereas the central farm at Wakwali, 13 km from the headquarters, which comprises 769 ha. Besides, the university encompasses an area of 537.64 ha under 17 research stations. The Konkan region of Maharashtra falls under west-coast plains and ghat region (Zone XII). The region comprises Greater Mumbai, Thane, Raigad, Ratnagiri and Sindhudurg districts of Maharashtra. It has hilly terrain and receives heavy rainfall, ranging from 3,000 to 4,000 mm, mostly during June to September. The climate is warm and humid almost throughout the year. The soils are mainly lateritic and medium black. The Konkan region shows variation in agro-climatic features, soil types, and crops and cropping patterns. Based on these variations, the region is broadly divided into two agro-climatic zones, viz. South Konkan Coastal Zone and North Konkan Coastal Zone. The South zone includes Ratnagiri and Sindhudurg districts, and the North zone includes Raigad and Thane districts.

Main Objectives

- To provide education in agriculture and allied sciences.
- To have further advancement of learning and research in agriculture and allied sciences.



University administration building

- To undertake and guide extension education programmes.
- To integrate and co-ordinate teaching of the subjects in different faculties of the university.
- To co-ordinate education, research and extension education activities for augmentation of agricultural production.
- To provide integrated agricultural education activities at all levels for maximum effectiveness and at a minimum cost.

Education

The university has its main campus at Dapoli. The instructional programmes at main campus are conducted in four colleges: College of Agriculture, College of Agricultural Engineering and Technology, College of Forestry and College of Horticulture. The university has its College of Fisheries at Ratnagiri. Moreover, there are seven colleges affiliated to it, consisting of three colleges of Agriculture located at Saralgaon, (dist. Thane), Mandki-Palvan (dist. Ratnagiri) and Kirlos (dist. Sindhudurg); one College of Horticulture at Kharavate (dist. Ratnagiri); one College of Agricultural Marketing and Business Management at Panvel (dist. Raigad); one College of Agricultural Technology (Food Science) at Kharavate (dist. Ratnagiri); and one College of Agricultural Engineering and Technology at Mandki-Palwan (dist. Ratnagiri).

The university offers five first degree programmes, viz. B.Sc. (Agriculture), B.Tech. (Agriculture Engineering), B.Sc. (Horticulture), B.Sc. (Forestry) and B.F.Sc. (Fisheries). The master's degree programme is offered in 9 disciplines in faculty of Agriculture and three disciplines in the faculty of Fisheries, whereas doctorate degree (Ph.D.) programme is offered in 9 disciplines in the faculty of Agriculture and one discipline in faculty of Fisheries. Admissions to all the degree, post-graduate and doctoral degree programmes are made through Maharashtra Council for Agricultural Education and Research, Pune.



College of Agriculture, Dapoli



College of Fisheries, Shigaon (Ratnagiri)



College of Agric. Engineering and Technology, Dapoli



Dr S.S. Magar, VC, receiving 'ICAR Best Institute Award'



Dr A.G. Sawant, ex VC, receiving 'Indra Priyadarshini Award'

Undergraduate programmes	
Faculty of Agriculture	B.Sc. (Agric.), B.Sc. (Hort.). B. Sc. (Forestry). B.F.Sc. B. Tech. (Agric. Engng).
Faculty of Fisheries	
Faculty of Agricultural Engineering and Technology	
Post-graduate programmes	
Faculty of Agriculture	M.Sc.: Agronomy, Genetics and Plant Breeding, Plant Physiology, Agric.Economics, Extension Education, Animal Husbandry, Dairy Science, Agric. Entomology, Horticulture, Plant Pathology, Soil Science and Agric.Chemistry Ph.D.: Agronomy, Genetics and Plant Breeding, Agric. Economics, Extension Education, Animal Husbandry and Dairy Sciences, Agric. Entomology, Horticulture, Plant Pathology, Agric. Chemistry and Soil Science
Faculty of Fisheries	M.F.Sc.: Aquaculture, Fish Processing Technology, Fisheries Resource Management and Extension Education Ph.D.: Aquaculture
Faculty of Agricultural Engineering and Technology	M.Tech.: Agric. Process Engng, Farm Power and Machinery, Irrigation and Drainage Engng, Soil and Water Conservation, Renewable Energy Sources.

Intake and turn-out of students in the university

Faculty degree programme		Enrolment		Total pass out
		Initial	2003-2004	
Agriculture	B. Sc. (Agric.)	52	146	1768
	B. Sc. (Hort)	20	37	280
	B. Sc. (Forestry)	20	35	208
	M. Sc. (Agric.)	8	86	805
	Ph. D. (Agric.)	8	18	14
Fisheries	B.F.Sc.	20	45	494
	M.F.Sc.	12	18	35
	Ph. D. (Fisheries)	3	3	-
Agric. Engineering	B.Tech. (Agric. Engng)	32	32	51

The university has two agricultural schools at Lanja (dist. Ratnagiri) and Roha (dist. Raigad). Also, it offers 1 year certificate course in Mali Training. Besides, 18 more affiliated agricultural schools have been working in the region.

Library

The university has an excellent library at the main campus with more than 30,000 books, and it is subscribing 100 national and international periodicals. The library has a special collection of books on Konkan-its history, culture, literature and socio-economic aspects. There is a separate section of books for preparation of competitive examinations. The library is also provided with cubical and internet facilities.



Library Building

Computer Facilities

The computer centre of the university provides scientific data-

processing facility to scientists and students, apart from being engaged in activities like monitoring and management information and maintenance of databases, and provides E-mail facility. Separate students' computer laboratory is also established at Dapoli.

Research

Directorate of Research was established in 1984-85. The research programmes carried out at 19 research stations in the areas of Agriculture, Agric. Engineering and Fishery Sciences are regularly monitored by Director of Research. The technologies developed at the research stations are being included in the package of practices of respective zones for adoption.



Innovative concept of Lakhi Baug

New Initiatives

Unique example of the University and Bank partnership mode has been initiated. The Ratnagiri District Central Co-operative Bank (RDCC) has provided financial support to launch mobile crop dispensary van project for technology transfer. Moreover, its use for surveillance, soil and water testing, and on-spot guidance to the farmers of Ratnagiri district. Further, the university has taken initiatives for public-private partnership mode and market-led extension.

These initiatives include consultancy to Rashtriya Chemicals and Fertilizers Ltd, Thal (dist. Raigad) and ISPAT Industries Ltd, Dolvi (dist. Raigad) for land development through horticultural plantation; mega mango festival for direct marketing of mangoes from mango producer to consumer, an ideal venture of co-operative floriculture from production to marketing, agro tourism for marketing of the value-added products; and development of database for frequently asked questions (FAQ) for Kisan Call Centre.

Perspective Plan (Vision 2020)

Areas are to be strengthened such as plant biotechnology, integrated pest and disease management, informatics in agricultural sciences, agricultural microbiology, environmental science and renewable and non-conventional sources of energy. The university intends to reorient its educational programme to meet the challenges like globalization of agriculture and absolute commercialization of agriculture. It also intends to start a degree course in agri-business. In Agricultural Engineering faculty, Ph.D. programme in the areas of Soil and water conservation engineering, Irrigation and drainage engineering, Farm machinery and power and Agricultural process engineering are to be initiated. Post-graduate diploma in Post-harvest technology in horticultural crops is to be initiated to develop trained manpower.

Varieties of different crops developed and released by the university

Crop	Varieties developed and released	Crop	Varieties developed and released
Cereals			
Rice	Karjat 184, Ratnagiri 24, Karjat 14-7, Ratnagiri 68-1, Ratnagiri 711, Ratnagiri 73, Panve II, Karjat 1, Ratnagiri 1, Ratnagiri 2, Panvel 2, Palghar 1, Karjat 2, Karjat 3, Ratnagiri 3, Karjat 4, Sahyadri, Phondaghat 1, Panvel 3, Palghar 2, Sahyadri 2	Chilli	Konkan Kirti
Finger millet	Dapoli 1	Dolichos bean	Konkan Bhushan
Pulses			
Lablab bean	Konkan Wal 1, Konkan Wal 2	Yard long bean	Konkan Wali
Horsegram	Dapoli Kulthi 1	Cucumber	Sheetal
Pigeonpea	Konkan Tur	Snake gourd	Konkan Shweta
Cowpea	Konkan Sadabahar, Konkan Safed, Konkan Fodder Cowpea 1	Bitter gourd	Konkan Tara
Fodder rice bean	Konkan Rice Bean 1	Ridge Gourd	Konkan Harita
Oilseeds			
Groundnut	Konkan Gourav, Trombay Konkan Groundnut (bold)	Amaranthus	Konkan Durangi
Tuber Crops			
Lesser yam	Konkan Kanchan	Drumstick	Konkan Ruchira
Greater yam	Konkan Ghorkand	Xanthosoma	Konkan Haritparni
Sweet potato	Konkan Ashwini	Spices	
Fruit Crops			
Mango	Ratna, Sindhu, Konkan Ruchi, Alphonso	Cinnamon	Konkan Tej
Cashewnut	Vegurla 1, Vegurla 2, Vegurla 3, Vegurla 4, Vegurla 5, Vegurla 6, Vegurla 7, Vegurla 8	Nutmeg	Konkan Sugandha, Konkan Swad
Coconut	Pratap, Banawali, D x T	Kokum	Konkan Amruta
Arecanut	Shriwardhanee	Jackfruit	Konkan Prolific Jackfruit
Vegetables			
	Tomato	Jamun	Konkan Bahadoli Jamun
		Karonda	Konkan Karonda



Tomato var. Sonali



Parthenocarpic mango var. Sindhu



Cashew var. Vengurla6

The faculty of Agricultural Engineering has designed, developed and supplied various tools and implements such as Vaibhav sickle, Punkaj puddler, Ankur toothed spade, Swastic groundnut earthing- up hoe, Nutan mango harvester, Atul sapota harvester, Sulabh contour marker, dryland weeder, Rakshak pheromone trap for fruitfly control etc. The Konkan region is endowed with sea coast of 720 km, providing occupation and food to a sizeable population. The faculty of Fisheries has been working on various aspects of marine fisheries, brackish-water fisheries and freshwater aquaculture.

Extension Education

For effective dissemination of technology, the university established a Communication Centre in 1995. Later on, the ICAR sanctioned Agricultural Technology Information Centre (ATIC) in 1998-99 under the NATP with financial assistance from World Bank. This centre publishes extension publications on agriculture, animal husbandry, dairy, fisheries, agricultural engineering as well as agriculture diary every year. It aims to provide single-window delivery system for products and species available from the university to the farmers and other interested groups as a process of innovativeness in technology dissemination. Besides, initiative for establishing a Mini ATIC has been made at the holy place Shri Kshetra

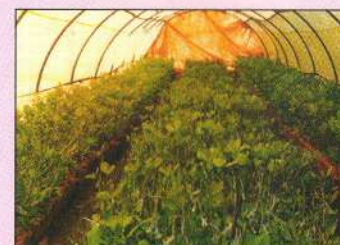


Atul sapota harvester

Ganpatipule in Ratnagiri district in May 2004. The university has started on-line telephone service through Kisan Call Centre Project and e-mail facility to render advisory service to farmers in relation to their problems. It has also launched its own website www.dbskkv.org. The central sector scheme; 'Use of print media in technology transfer, financed by the Directorate of Extension Education, Department of Agriculture and Cooperation, Government of India, New Delhi, is in operation at ATIC since 1 October 1999. Its object is to popularize improved technologies developed by the university among farming community of the region through print media, mainly local newspapers. It includes a monthly calendar of agricultural operations, considering major crops of the region, question-answer sessions to understand queries and giving proper solutions to the farmers, production of leaflets on location specific problems etc. There are two Krishi Vigyan Kendras



Rakshak fruitfly trap



Polyshed for nursery

located at Shirgaon (dist. Ratnagiri) and Karjat (dist. Raigad) for imparting training to the farmer's and conducting frontline demonstrations on the farmer's fields for transfer of improved technology.

The university is implementing a project on Technology Assessment and Refinement through Institutional Village Linkage Programme (TAR-IVLP), sponsored by NATP, ICAR, New Delhi at Hodawade in Vengurle tahsil of



ATIC building

Sindhudurg district. Under this programme, 1,000 farm families have been adopted. The technologies developed by the university are being assessed on the farmers' fields under the project. The university, in collaboration with Yashwantrao Chavan Maharashtra Open University, Nasik, has started six study centres since August 2001 in the region to provide an opportunity to school dropouts to complete their higher education.



Mobile crop dispensary van

Awards

The university has received the following awards or honours for its outstanding work in various spheres.

Award	Year	Achievement
ICAR Award	1979-80	Isolation of insulin and heparin from buffalo pancreas and lungs respectively
Dr J. S. Patel Award	1981	Standardization of stone grafting technique in mango
Parkhe Award	1984	Development of Vaibhav sickle
Krishi Bhushan Award	1988	Outstanding performance in horticultural research and development work
All India Mango Show Award	1992	For various mango entries
Hari Malini Joshi Award	1993	Development of Nutan mango harvester
FIE Foundation Award	1993	For development of Sindhu, first parthenocarpic variety of mango
All India Radio, Ratnagiri Station's Award	1993	Radio Farm School on watershed management
State level 'Vanashri' Award	1994	Afforestation and environment enrichment
Indira Priyadarshini Vrikshamitra Award	1994	Afforestation and environment enrichment
Award at International Symposium on Hybrid Rice	1996	Best research in hybrid rice production and its extension in Maharashtra
ICAR Best Institution Award	1997	Noteworthy contribution in education, research, extension education and development activities

DR BALASAHEB SAWANT KONKAN KRISHI VIDYAPEETH, DAPOLI

Honorary Rank of Colonel Commandant, NCC to Dr S.S. Magar

Dr S.S. Magar, Vice-Chancellor, DBS KKV, Dapoli was bestowed with Honorary Rank of Colonel Commandant, NCC, by the Directorate General, National Cadet Corps, Ministry of Defence, Government of India, New Delhi. This rank was conferred upon him by Captain B. K. Patnaik (Indian Navy), Officiating Deputy Director-General, NCC, Government of Maharashtra, Mumbai, in the investiture ceremony held at Dapoli on 10 September 2004. The senior NCC officers as well as officers, staff and students of the university were present at the ceremony in a large number. In his acceptance speech Dr Magar stated that this honour belonged to all the components of the university. He remembered the slogans 'Jai Jawan, Jai Kisan' and 'Jai Vigyan' given by the Prime Minister of India and stated that as the Vice-Chancellor of an agricultural university, he belongs to Kisan and Vigyan and the rank of Colonel Commandant had made him 'Jawan'. He assured his patronage and purposeful association for the furtherance of NCC activities and enhancement of corps.



Colonel (Dr) S.S. Magar, VC, DBSKKV, Dapoli as Colonel Commandant, National Cadet Corps

Marketing Officer; Mr Choifel, Liaison Officer and Mr Pelzang Wangchuk, PPD, Ministry of Agriculture, visited the university on 25 August 2004. Mr Lyonpo Sangay Negdup said that the agro-climatic conditions of Himachal Pradesh were similar to those of Bhutan and coming there was like home-coming for the delegation. He added that Bhutan would like to collaborate with Dr Y.S. Parmar University for the exchange of technical know-how and scientists.



Dr S.S. Negi, VC, explaining university's activities to the Hon'ble Minister of Bhutan

MAHARANA PRATAP UNIVERSITY OF AGRICULTURE AND TECHNOLOGY, UDAIPUR

College of Agriculture and Forestry at Jhalawar

- In view of tremendous scope in Horticulture and Forestry products in Rajasthan, MPUAT, Udaipur has initiated a programme of education in forestry and horticulture from July 2004. This is the first college of Rajasthan that will cater to the needs of human resource development in Horticulture and Forestry.
- The college is offering 4-year programme leading to B.Sc. (Horticulture) and B.Sc. (Forestry). The intake of the College in Horticulture is 20 students and in Forestry 10 students.
- The Government of Rajasthan has allotted 125 ha land for infrastructure development and research in Horticulture and Forestry.

DR Y. S. PARMAR UNIVERSITY OF HORTICULTURE AND FORESTRY, NAUNI

Visit of Agriculture Minister of Bhutan

The Agriculture Minister of Royal Government of Bhutan, Shri Lyonpo Sangay Ngedup along with a high-level delegation of eight senior officers, viz. Mr Sherulb Gyattshen, Director (Agriculture), Mr Tenzin Dhendup, Director (Livestock); Dr Pemachoepphyel, Director, CORRB; Dr Tashi Sandrup, Chief Livestock Production Officer; Mr Lobzang Dorje, DFO, Thimpu Division; Mr Sanjay Chewang, Chief

PUNJAB AGRICULTURAL UNIVERSITY, LUDHIANA

Resist Insecticides use for Boosting Cotton Production

The Ministry of Agriculture, Government of India and Department of International Development, U.K. organized a street play contest at CICR, Nagpur, during 24-26 June 2004, in which nine teams from cotton-growing states participated. The PAU team led by Dr A.K. Dhawan, State Coordinator, IRM project presented street play entitled **Sambal samaj kar hee keet nashak ka upyog: ek mukti marg**, directed by Mr Anil Sharma. The PAU won the first prize of Rs 40,000. Mr Anil Sharma also won the best Director award.

Dr Kimmins, Director, Plant Protection advocated the use of street-play as a medium for transfer of technology. It was decided that the play presented by the Punjab team will be translated in all regional languages of cotton-growing states.

Wheat Varieties Recommended

The PAU has recommended two wheat varieties, PBW 502 and PBW 509, and one triticale TL 2908, developed by the scientists of the Plant Breeding Department for sowing in the Punjab. Wheat PBW 502 is good for timely-sown, irrigated conditions. It is resistant to yellow and brown rusts, less susceptible to Karnal bunt but susceptible to loose smut disease. It matures in 150 days, giving average yield of 20.4 q/acre. PBW 509 is recommended for late-sown, irrigated conditions and for cultivation in Punjab except sub-mountainous regions and is also resistant to yellow and brown rusts but susceptible to Karnal bunt and loose smut diseases. Its average yield is 15.8 q/acre, and it takes 130 days to mature. Triticale TL 2908 has been recommended for timely-sown, irrigated conditions. This can be used for poultry as well as animal feed. Its grains are amber, medium hard and bold. It takes 153 days to mature and its average yield is 16.4 q/acre.

Australian High Commissioner visits PAU

Mrs Penelope Wensley, Australian High Commissioner to India, visited the PAU on 9 September 2004 and held a meeting with Dr K.S. Aulakh, Vice-Chancellor, and all Deans and Directors of PAU.



Dr Aulakh honoured Mrs Penelope Wensley, the Australian High Commissioner to India, by presenting Phulkari

ICAR Accreditation to College of Agriculture

The College of Agriculture, PAU, Ludhiana has been accredited by the Indian Council of Agricultural Research, New Delhi.

RAJASTHAN AGRICULTURAL UNIVERSITY, BIKANER

All Pressurized Irrigation at ARS, Beechwal

Agricultural Research Station, Beechwal of RAU, Bikaner has come up as a precision irrigation centre in this hyper-arid, partially irrigated zone of Rajasthan. Sustainability of agriculture in this zone was threatened by scarcity of water, coupled with high infiltration rate (18-20 cm/hr), wind velocity and temperature, erratic and unevenly distributed precipitation and poor soil fertility. The centre has adopted pressurized irrigation practices like sprinkler, micro-sprinkler and drip irrigation system for efficient use of water and has developed irrigation network by laying underground pipelines to minimize conveyance losses from reservoir to field head. Major losses



Water reservoir (digg) for pressurized irrigation practices



Sprinkler irrigation in groundnut

of irrigation water have been observed during application of water from the field head to the plant root zone in surface method due to poor water-holding capacity of soil and undulated soil surface. To reduce these losses the centre has created water-storage capacity of 90 lakh litres by constructing two water reservoirs (digg) of 40 and 50 lakh litres capacity and has brought 50 ha farm area under sprinkler irrigation in crops like *bajra*, *moth*, *guar*, cotton, wheat, barley, cumin and fenugreek and 7 ha area under drip irrigation in fruit crops, vegetables and seed spices. Research trials conducted on these irrigation methods revealed that 30 to 40% water can be saved by adopting sprinkler and drip irrigation over surface method of irrigation, which in turn may be utilized to increase the cultivable area by 40 to 60% if

irrigated through these practices. Prof. Parmatma Singh, VC, RAU, Bikaner, is of the opinion that now we must think about agricultural economy in terms of net income per unit quantity (mm) of irrigation water applied, because saving of water means saving energy, which has been in great demand in the country. At present agriculture sector draws about 85% of total water used. But it is estimated that the allocation of water to agriculture will reduce to about 70% in the next 25 years, because its demand for industries and municipal purposes is also increasing. According to Dr A.S. Rathore, Associate Director of Research, these improved irrigation practices are not only beneficial in saving of water but also give higher yields than surface irrigation method. These methods also enable efficient use of fertilizers and pesticides along with irrigation water, thus reducing the cost of labour for applying these inputs. He hoped that the increase in irrigated area by efficient water-management practices can bring all the 65 ha research land under cultivation at ARS farm under pressurized irrigation, making it the first research farm of the university that is totally under this system.



Tomato cultivation under drip system

AWARDS AND RECOGNITION

KERALA AGRICULTURAL UNIVERSITY, THRISSUR

KAU bags Sardar Patel Award

The Kerala Agricultural University (KAU) has been chosen for the prestigious Sardar Patel Outstanding Institution Award, instituted by the ICAR. The award was presented to the university at a function held at New Delhi on 19 October 2004. As per the citation, among the 34 state agricultural universities (SAUs) in India, the KAU secured the first position in the All-India examinations held in agriculture and allied subjects for the junior and senior research fellowships conducted by the ICAR in 2001 and 2002. It also stood first in the national-level Agricultural University Youth Festival in which 12 SAUs participated, implying its eminence in co-curricular activities too. It further indicates that the Centre for Plant Biotechnology and Molecular Biology of the KAU's College of Horticulture was awarded the Biotech Product and Process Development and Commercialization Award for 2003.

PUNJAB AGRICULTURAL UNIVERSITY, LUDHIANA

Life-time Achievement Award

Dr G.S. Dhaliwal, Professor of Ecology, PAU, Ludhiana, has been chosen for the Life-time Achievement Award by the International Allelopathy Foundation, for his outstanding contributions to pest management. Dr Dhaliwal is one of the pioneering scientists to discover widespread contamination of milk and milk products with organo-chlorine pesticides in India. He is credited with elucidation of mechanisms of resistance in rice and cotton against insect pests. He has also exploited the potential of bio-pesticides and other eco-friendly approaches for management of major insect-pests of rice, cotton, vegetable and oilseed crops. He has authored or edited more than 30 books on different aspects of pest management, environment and sustainable agriculture, some of which have been recommended as advance text and reference books in many developing countries.

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