भाकृअनुप
ICAR

Second Annual Report

2010-11

द्वितीय वार्षिक प्रतिवेदन

२०१०-११

राअप्रस
NIASM

राष्ट्रीय अजैविक स्ट्रैस प्रबंधन संस्थान

मालेगांव, बारामती – ४१३ ११५. (पुणे) महाराष्ट्र, भारत

National Institute of Abiotic Stress Management

Malegaon, Baramati - 413 115. (Pune) Maharashtra, India.

NIASM ANNUAL REPORT : 2010-11

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जुलाई २०११

प्रकाशक

के. पी. आर. विठल

निदेशक

संपादन एवं संकलन

बाबासाहेब बी. फंड

वी. गोविंदसामी

एम. पी. ब्राह्मणे

Preface

Our approach was multipronged covering research activities, formulation of training programs, international collaboration, infrastructure development, recruitment and other new initiatives. The Institute proudly presents its achievements in the second year which is largely reflected in the Annual Report (2010-11).

The Institute was proactive with several meetings for gathering information on abiotic stresses in agriculture. The first meets of Farmers' Day, Institute Management Committee (IMC), Research Advisory Committee (RAC), Institute Research Council (IRC), Expert Consultations, Curtain Raiser, etc., are held. Library is in making. A web based surveillance system is in place. The conference hall is having state-of-art facilities with multipurpose LED board. Equipment were procured for a laboratory to start work on biotechnology front. Funding was also received under National Initiative on Climate Resilient Agriculture (NICRA) for establishment of a plant phenomics facility. The India Meteorological Department (IMD), Pune is supporting this Institute by shifting Agro-met Observatory to this campus from another location in Baramati and providing additional devices. I hope this effort will go long way to be a part of national grid of climate change monitoring agencies.

Extensive Geological and mineralogical surveys at Institute site are in progress. Gardens for conservation of bio-diversity and museum for rock material are initiated. Intensive planting of indigenous plants is being started. A forty ha of farm is being developed. A ten ha research farm abutting the southern boundary of the campus up to Nira left Canal was identified for procurement. A new site for quarters will be identified later in new MIDC area. Some staff welfare activities are undertaken. There are several others to be quoted.

The Council was overwhelmingly supportive in approving of institute master plan, sanctioning of additional funds for initiation of works, posting of scientists, increasing the cadre strength, visits by Secretary (DARE) & Director General (ICAR), Additional Secretary (DARE) and others. We are honoured by the presence of Hon' Minister of Agriculture & Consumer Affairs, Food & Public Distribution, GOI, Shri Sharad Chandraji Pawar and Hon' Member of Parliament, Madam Supriya Sule for inaugurating the Engineering workshop. This office is functioning here at present. Both of them and Hon' Deputy Chief Minister of Maharashtra, Shri Ajitji Anantrao Pawar and local guardian of the district, have continued interest in institute activities and development.

Immense help was received from the Sub Divisional Office, Baramati; Krishi Vigyan Kendra; College of Agriculture and Agricultural Development Trust, Shardanagar; Vidhya Prathistan (Biotechnology, Registrar Office, Guest House, College of Engineering, Information Technology, etc.), Baramati; Mahatma Phule Krishi Vidyapeeth, Rahuri; Central Soil and Water Conservation Research & Training Institute (CSWRTI), Dehradun; Central Research Institute for Dryland Agriculture (CRIDA), Hyderabad; Central Arid Zone Research Institute (CAZRI), Jodhpur; National Bureau of Plant Genetic Resources (NBPGR), New Delhi; Pune Irrigation Division; Maharashtra Jeevan Pradhikaran, Pune; Maharastra State Electricity Development Corporation Limited (MSEDCL); Pune Central Public Works Department (CPWD); Baramati Zilla Parishad; Malegaon Gram Panchayat; subject experts from VP College of Engineering, Baramati and several others.

To fulfill the set mission of the Council and to create a brand name among national/ international institutes on frontier research and education at higher end, international exposures and capacity building at various levels is the immediate need along with judicious networking. The geological / seismological surveys, farm development & projects made by the young scientists reflect their spirit. All these are possible only with the support of our regular and contractual staffs, contractors and others. I whole heartedly thank all my colleagues and above mentioned organizations.

(KPR Vittal)
Director

Executive Summary

The National Institute of Abiotic Stress Management (NIASM) is established to tame the abiotic stresses adversely affecting all sectors of agriculture by harnessing the latest developments and tools of frontier sciences cutting across plants, animals, birds, fishes and others. In future, it is expected to acquire a brand name in the international community of scientists working on these stresses. This year the institute is proactive with its multipronged approaches.

On the campus site, an engineering workshop was inaugurated by Hon'Minister of Agriculture & Consumer Affairs, Food & Public Distribution, GOI, Shri. Sharad Chandraji Pawar in the presence of Hon' Member of Parliament, Madam Supriyaji Sule, Dr. S. Ayyappan, Secretary (DARE) & Director General (ICAR), several DDGs, and other distinguished guests from the council, state government and others.

The workshop presently houses the office of NIASM with modular workstations and other facilities. A laboratory is started for biotechnological works. There is a Committee Room with higher end facilities. Electricity and water connections on temporary basis are provided.

The Master Plan of the institute of various buildings is approved. A farm plan complementary to the structures is planned and being executed. The work on compound wall, quarters, etc. is in progress. Other approved items of works are being tendered.

The sanctioned cadre strength consists of one director, 32 scientists, 33 technical staff and 20 in administration.

A few young scientists from the disciplines of Plant Breeding, Agricultural Microbiology, Agricultural Economics, Agricultural Engineering, Agricultural Entomology and Fishery Science had initiated research work along with developing the facilities. A few achievements are district-wise rainfall analysis of the Maharashtra state, acquisition of drought tolerant green gramlines, cacti and seeds of plant species from arid zone, insect population dynamics, fish pond structures, plant biodiversity reserves, geological and seismological surveys, soil sampling for studying metagenomics of microbes, farm planning for abiotic stress research, farmers perception of abiotic stresses and others. External funding is received under NICRA project for establishment of plant phenomics facility. Our scientists proposed projects for external funding. Scientists underwent various schools for training on the frontier sciences and participated in the conferences. A few publications of the institute have come out.

Syllabi for short-term courses on advanced topics in biotechnology are prepared for industry research staff and others.

Farm equipments including tractors and two 2-wheelers were purchased for farm operation. The budget was fully utilized with one hundred per cent expenditure.

This institute received several visitors and needed support from several organizations. Farmers Days, Expert Consultancies, Curtain Raiser Meeting and others including mandate committee meetings were conducted.

संक्षिप्त सारांश

राष्ट्रीय अजैविक स्ट्रेस प्रबंधन संस्थान की स्थापना कृषि के सभी क्षेत्रों में जैसे कि पादप, पशु, पक्षी, मत्स्य तथा अन्य में अजैविक स्ट्रैसों के कारण होने वाले विपरीत प्रभावों के विरूद्ध विज्ञान तथा तकनीक के नवीनतम उपकरणों का उपयोग करने हेतू की गई है, भविष्य में अंतर्राष्ट्रीय स्तर पर कार्य करने वाले वैज्ञानिकों के समाज में यह संस्थान एक ब्रांड के रूप में जाना जाएगा। वर्तमान में यह संस्थान अपने संस्थान के वर्तमान परिसर की स्थापना कृषि एवं उपभोक्ता मामलों, खाद्य एवं जन वितरण भारत सरकार - श्री. शरदचंदजी पवार ने अपने करकमलों से माननीय लोकसभा सदस्य श्रीमति सुप्रिया सुले जी, डॉ. एस. अय्यपन, महानिदेशक, भारतीय कृषि अनुसंधान परिषद व सचिव, कृषि एवं अनुसंधान शिक्षा विभाग, तथा अनेको गणमान्य उपमहानिदेशकों तथा परिषद एवं राज्य सरकार के गणमान्यजनों की उपस्थिति में किया.

बायोटैक्नोलोजी के क्षेत्र में एक प्रयोगशाला की शुरूआत की गई है। संस्थान में आधुनिकतम उपकरणों से सुसज्जित एक समिति कक्ष की स्थापना की गई है। पानी एवं बिजली की व्यवस्था अस्थाई रूप से की गई है।

संस्थान के विभिन्न भवनों के मास्टर प्लान की स्वीकृति हो गई है। भवन के साथ साथ प्रक्षेत्र की योजना बना उसे मूर्तरूप दिया जा रहा है। संस्थान की कम्पाऊन्ड वाले, रहवासी भवनों, आदि का कार्य प्रगति पर है। कार्य में स्वीकृत अन्य मदों का टेण्डर भी किया जा रहा है।

संस्थान में स्वीकृत कैडर क्षमता में १ निदेशक, ३२ वैज्ञानिक, ३३ तकनीकी अधिकारी तथा प्रशासनिक स्टाफ में २० अधिकारी शामिल है।

संस्थान में वैज्ञानिकों के दल में कुछ-युवा वैज्ञानिकों में पादप प्रजनन, कृषि सूक्ष्मजीव विज्ञान, कृषि अर्थशास्त्र, कृषि कीटविज्ञान तथा मात्स्यिकी के क्षेत्रों में उपलब्ध संसाधनों के संसाधनों के साथ शोध कार्य प्रारम्भ किए हैं। कुछ महत्वपूर्ण उपलब्धियों में महाराष्ट्र राज्य का जिलावार वर्षा के आंकडों का विश्लेषण, सुखे के प्रतिरोधी चनें की प्रजातियों का परिग्रहण, शुष्क क्षेत्र से कैक्टस तथा अन्य पादप प्रजातियों का परिग्रहण, कीट जनसंख्या गतिकी का अध्ययन, मत्स्यिकी तालाबों की संरचना का अध्ययन, पादप जैवविविधता आरक्षण, भूवैज्ञानिक तथा भूकम्पविज्ञान सर्वेक्षण, मृदा नमूनों का मेटाजीनोमिक्स अध्ययन, अजैविक तनावों को दृष्टिगत रखते हुए प्रक्षेत्र का योजनाबद्ध तरीके से विकास, अजैविक तनावों के प्रति किसानों की धारणा तथा अन्य संस्थान में बाहर से वित्तपोषित निकरा परियोजना के अंतर्गत पादप फीनोमिक्स सुविधा उपलब्ध कराई जा रही है। विज्ञान के अग्रणीय क्षेत्रों में संस्थान के कई वैज्ञानिकों ने प्रशिक्षण लिया तथा सम्मेलनों में भाग लिया। संस्थान के कुछ प्रकाशन भी प्रकाशित हुए हैं।

बायोटैक्नोलोजी के उन्नत क्षेत्रों में अल्पअवधि के कुछ पाठ्यक्रमों का निर्माण उद्योगों, शोध वैज्ञानिकों तथा अन्य को दृष्टिगत रखते हुए किया गया है।

फार्म उपकरणों में ट्रैक्टरों, दो मोटर साईकिलें तथा अन्य फार्म उपकरण खरीदे गए हैं। संस्थान के बजट का सम्पूर्ण उपयोग कर सौ प्रतिशत व्यय किया गया है।

प्रतिवेदन की अवधि में अनेकों संस्थानों से अनेका आगंतुकों का आगमन हुआ, किसान दिवस, विशेषज्ञ परामर्श उद्घाटन समारोहों तथा अन्य बैठकों का आयोजन किया गया।

Aspiration

SETTING, TAMING THE STRESSES

According to the ancient Indian Philosophy *(Vedas)*, all living or non-living materials on our planet earth arise from interactions of five fundamental abiotic elements called *Panchamahabhutas*, representing elements of matter. These are Air *(Vayu)*, Water *(Jala)*, Earth *(Prithvi)*, Space *(Akasha)* and Fire/ Energy *(Agni/Teja)*. Any roll in the finest balance amongst these elements that impinge primarily on microcosm and the cosmic envelope as a whole, dictates the quality of the environment and in turn life. The great scholar Charaka (600 BC) opined that as time passes, four time zones *(Yuga)* equally deteriorate qualities of Panchamahabhutas.

In the past few decades, global warming phenomenon, akin to '*Teja Mahabhuta Vriddhi*' (increase in temperature of external atmosphere) due to unabated adverse anthropogenic developmental activities have become a serious issue for the existence of life on the earth. Hence, it is the right time to think about *Panchamahabhutas* (analogous to the three natural resource pillars *viz.*, climate, soil and water, supporting the agriculture), their impact on biological systems and ultimately on the human beings. In the context of global climate change, it is an utmost need of hour to address multiple abiotic stresses threatening sustainability of agricultural production systems.

Abiotic Stresses and Agriculture

Abiotic stress can be termed as the negative impact of environmental factors on the living organisms in a specific situation. It is a natural phenomenon that occurs in multiples and interdependent and its impact varies across the sectors of agriculture (crops, horticulture, livestock, birds, fishes). Dealing with the abiotic stresses is in reality a very onerous task owing to their complexity, uncertainty and differential impacts over the time and place. The environmental stresses are the major limiting factors in agricultural production having great influence on crop growth and productivity. According to world estimates, average of 50% yield losses in agricultural crops are caused by abiotic factors mostly shared by high temperature (20%), low temperature (7%), salinity (10%), drought (9%) and other forms of stresses (4%). Being a tropical country, India is more challenged with multiplicity of combinations of several abiotic and biotic stresses. The country is experiencing declining trend of productivity due to frequent droughts, floods, degradation of land, fluctuating temperatures and pest and disease outbreaks. These problems are likely to be aggravated further by changing climate which put forth major challenge to attain the goal of food security for the 21st century.

Establishment of NIASM: First Step in Taming Abiotic Stresses

Sensing the unfavourable environment of increasing abiotic stresses dawning on poverty riddled Indian Agriculture in the scenario of global climate change, the final report of the Moily Oversight Committee (2006) emphasized to focus on abiotic stress management in agriculture like drought, salinity, heat, cold, pollution, etc. with increasing demographic and changing weather calls to meet the cutting across frontal needs of the country. There is urgent need for an early establishment of dedicated research institute on priority.

The Indian Council of Agricultural Research (ICAR) is adequately addressing abiotic stress management issue with frontier science tools. Although several research institutes of ICAR and State Agricultural Universities (SAUs) are working on abiotic stresses, but inter-institutional interactions are not explicitly visible or are almost nil. The isolated efforts made to tackle the problem of abiotic stresses that occur in multiple seem to be too inadequate considering the intensity of the extensive problem. Recognizing the magnitude of influence of climatic change on the already mounting adverse effects of abiotic stress on various sectors of agriculture, horticulture, livestock, fisheries, etc., the Union Cabinet on 19th Jan, 2009, approved the establishment of National Institute of Abiotic Stress Management (NIASM), a Deemed to be

University under ICAR at Malegaon, Baramati, Pune, Maharashtra.

Role of NIASM

The abiotic stresses are becoming major challenges for sustaining agricultural productivity across all sectors of agriculture viz., crop, livestock, fisheries, etc. The existing institutes under ICAR system are not able to address the problem comprehensively in relation to the multiple stresses across the board. The institute will focus mainly on addressing the key challenges of abiotic stresses through its four schools- Drought Stress, Atmospheric Stress, Edaphic Stress and Policy Support Research.

The NIASM will exclusively undertake basic and strategic research on mining, isolating, characterizing and deploying novel genes for abiotic stress tolerance. It will also generate intermediate products for tolerance to multiple stresses such as gene constructs and stress induced promoters, which will be made use of by crop, livestock and fisheries based institutes to develop end products.

The impact of extreme weather events like elevated CO_2, heat and cold waves, freezing injuries, severe sand storms, etc. on major food and horticultural crops, livestock and fisheries will be studied and Decision Support Systems (DSS) will be developed for mitigating the effect of extreme weather events. Understanding the mechanism of drought tolerance including physiological manifestations as well as perception and transduction of stress signals and regulation of stress responsive gene expressions will be dealt by the institute. Studies on genetic and molecular basis of tolerance and ion homeostasis under salinity, nutrient deficiencies and heavy metal excesses, water logging and poor quality water in major food and horticultural crops, animals, microorganisms and fishes, will be carried out. The institute will focus on policy research for promoting the adoption of mitigation/ adaptation strategies for abiotic stresses.

Recently, several new tools like bio-technology, nanotechnology, remote sensing, bioinformatics, phenomics and polymer sciences are available for application in crop improvement, crop production and soil & water management. The challenge ahead is carrying forward the genomic science progress to the whole plant and crop levels in the field. To lead biology, including plants, livestock, birds, fish, etc., into a new era with a focus to mitigate and/or adapt to multiple abiotic stresses, the NIASM will aim to introduce a novel research approach that integrates molecular and structural analysis, information, theory and mathematical analysis on the foundation of frontier sciences. Worldwide, very few studies are done based on understanding of life processes as systems due to the lack of life scientists covering multiple disciplines. Therefore, it is of national importance to initiate not only high quality research programme of global standard but also capture, synthesize, adapt and apply the technological advancements taking place outside the National Agricultural Research System (NARS). Conjunctively, it is also indispensable to build up human resources through education and capacity building to address the challenge of abiotic stress management.

Center of Excellence for Research and Education in Abiotic Stress Management

The NIASM will focus on human resource development (HRD) and capacity building on abiotic stress management. The institute will strongly complement the ongoing research and development (R&D) under NARS without proliferating into other new institutes. An ultimate aim is to develop a "world class super abiotic stress research referral facility cutting across plant, animal, bird and fish where both scientists and farmers can endeavour together" at the institute. It will provide a definite, permanent and economic solution to the farmers on abiotic stress management in agriculture under changed climate scenario. The institute will create its own brand name as a custodian of abiotic stress research, the facility unique to India on full functioning; it will be only one of its kind in the world.

The broader vision is allowing international scientists to work along with national scientists on these premises, enhancing the capacity and capability for abiotic stress management through basic, strategic and policy support research. In near future, NIASM will develop as centre for academic excellence in the area of research, post-graduate education and human resource development in the country with a brand name.

Linkages in Public-Private-Partnership (ICAR-Industry Interface)

Abiotic stresses and its impact on different sectors of agriculture is very complex and intricate, as such the private sector is not enough to handle the issue, unlike biotic stresses. Public support is invariably essential in dealing the issue and hence there is a need of collaborative research efforts by public-private partnership. The NIASM will promote collaborative research endeavours with industries through both forward and backward linkages in Public-Private-Partnership (PPP) mode cutting across all the sectors of agriculture (crops, horticulture, livestock, poultry, fisheries, etc.). This shall also ease the developments in policy support preparations.

What next?

Probably for the first time in the world the natural resource scientists and managers are to define the on-time reality of abiotic stresses and the biotechnologists to utilize the defined goals to regroup the genetic make-up to overcome the adversities. This assemblage will result in faster dissemination of adoptable solutions to the farmers. The establishment of NIASM is the first attempt in an endeavour to consolidate the isolated efforts made all over the country in abiotic stress research. The NIASM will bring both knowledge and workers together to complement the ongoing research work with both forward and backward linkages in Public-Private-Partnership (PPP) mode cutting across all the sectors of agriculture. Apart, the research capacity will be upgraded through education at post-graduate, doctoral and post-doctoral levels, and customized modules of certified courses, trainings, research networks and others. The nation is looking forward for realization of benefits from the institute at the earliest.

Organization

MANDATE, CADRE STRENGTH, ORGANOGRAM

In XI plan, the proposal by Ministry of Agriculture was approved by the Union Cabinet on establishment of "National Institute of Abiotic Stress Management" with a legal status of Deemed-to-be-University under the Indian Council of Agricultural Research at Malegaon, Baramati, Pune, Maharashtra. NIASM concentrates in cutting-edge research in frontier areas to harness real benefit through the associated institutional set up both within country and abroad. The institute conducts research programme through four schools namely Drought Stress Management, Atmospheric Stress Management, Edaphic Stress Management and Policy support Research.

Goal

NIASM is a dream project of ICAR with a goal to develop an insight into background, hypotheses to mitigate, strategies to incorporate with a foresight and constitutionally acceptable policy issues with practice of climatically adaptable farming systems to build sustainable and profitable livelihood in abiotically stressed environments through inter-institutional approach.

Mandate

- To conduct basic and strategic research on abiotic stresses to develop technologies for mitigation and adaptation in crops, horticulture, livestock, fisheries, micro-organisms, etc.
- To develop a Global Centre of Excellence by establishing linkages and networking with national and international institutes / agencies
- To act as repository of information related to abiotic stresses and their management

Being premier institute of abiotic stress research and education, the ultimate aim is to develop as centre for academic excellence in the area of research, post-graduate education and human resource development.

The institute is expanding into a Deemed University with time, where in various activities of research, education, linking national and international workers for carrying out the innovative gap based activities, disseminating the knowledge and experience on a faster mode will be carried out. Initiating with five students in each of the schools amounting at least to 20 numbers is expected to expand to 50 post-graduates and doctoral scholars. About twenty Post-doctoral fellows will be in addition to the above. Selection of scholars will be through online tests of international standards with multiple levels of screening. Scientists from outreach will be encouraged to work at NIASM on contract basis with higher remuneration. Needed support is to be received from contractual RAs/ SRFs/ Data Entry Operators. At any given time, it is desired that one-half of the staff equivalent to sanctioned strength shall be on contractual basis for supporting the research activities, training and capacity building. Thus, a floating population of hundred trainees annually with 50 to 70 additional researchers over the sanctioned strength of 33 scientists will be working on campus. The scientists strength is being raised to fifty.

Cadre Strength

The total cadre strength is 85 with one Director, four Heads of Schools, four Professors/Principal Scientists, Associate professors/Senior Scientists and Assistant professors/ Scientists. In this, 71 are approved in the EFC by creation of posts by the Department of Expenditure, Ministry of Finance. Director's post was approved by Union Cabinet. Others are filled on redeployment or Annual Direct Recruitment Plan (ADRP). Presently there is a Director, one Sr. Scientist, one Scientist (Sr. Scale) and four scientists covering the disciplines of Agriculture Engineering (Farm Machinery & Power), Fisheries, Plant Breeding, Microbiology, Agricultural Entomology and Agricultural Economics.

One each of AO, FAO, AAO, UDC, T 7-8 (Documentation Officer), and T-6 (Technical Officer) joined on redeployment along with posts. Three, T-3 (One field and Two Lab Technicians) are recruited (Electrical/ Civil and Computers) under ADRP. AAO to AO and UDC to Assistant are the recent promotions.

A requisition for four Heads, four Principal Scientists, eight Sr. Scientists and sixteen scientists was made to the Council. One each of SAO and Registrar were requested to be filled. One T-1 position reserved under ADRP is processed for Interviews. An advertisement has been sent for sixteen Technical Officers (T-6) and ten Technical Assistants (T-3) covering lab and field / workshop functions. On instruction from the Council, recruitment of T6 position is put under suspension. The roster is in vogue. The Central research Institute for Dryland Agriculture (CRIDA), Hyderabad assisted in the first step of marking candidates for further examination and interview.

Since this is a new Institute a proposal to fill the Personal Secretary-1, Personal Assistants-4 and Office Assistants - 6 are being informed to all the ICAR Institutes for deputation. Out of six Assistants one will be filled by LDCE Quota and remaining through Deputation from ICAR Institutions.

The contract (National Protective Security services (P) Ltd., Nagpur) staff are - four Office Assistants, three Office Boys, five Drivers and three Security Guards.

Scientific Support Services contract (M/s Gyantech Information System (P) Ltd, Hyderabad) is assisting in initiating research management by establishing national/international research linkages, tie-ups with leading Industries, academic pursuits, event management and preparation of road.

From 10th January, 2011 onwards one staff member is placed at NIASM by the company.

Various details on approved cadre strength revised in the scientist cadre strength and recruitment of technical staff are given in the following pages (Table 1 to 3) along with an organogram.

Table 1. Cadre Strength (as on 15.06.2011)

Sl No.	Name of the Post	Grade Pay	EFC	ADRP	Union Cabinet Approved	Mo Finance Approved	Cadre Revision	Re Deployment	Total Strength	In Position	Vacant
1.	Director	Rs. 75,000/- Fixed	1	-	1*	-	-	-	1	1	-
2.	Administrative Officer	GP-5400 in PB-3	-	-	-	-	1	-	1	1	-
3.	Assistant Admin Officer	GP-4600 in PB-2	-	-	-	-	2	-	2	0	2
4.	Assistant	GP-4200 in PB-2	6	-	-	4	2	-	6	0	6
5.	UDC	GP-2400 in PB-1	-	-	-	-	1	-	1	1	-
2.	Head of Schools	GP-10,000 in PB-4	4	-	-	4	-	-	4	4	4
3.	Principal Scientists / Prof.	GP-10,000 in PB-4	4	-	-	4	-	-	4	4	4
4.	Senior Scientist / Associate Po	GP-9,000 in PB-4	8	-	-	8	-	-	8	1	7
5.	Scientists / Associate Prof.	GP-6,000 in PB-3	16	-	-	16	-	-	16	5	11
6.	Personal Secretary	GP-4600 in PB-2	1	-	-	1	-	-	1	-	1
7.	Personal Assistant	GP-4200 in PB-2	4	-	-	4	-	-	4	-	4
8.	Librarian	GP-5400 in PB-3	1	-	-	1	-	-	1	-	1
9.	Comptroller	GP-10,000 in PB-4	1	-	-	-	-	-	-	-	-
10.	Registrar	GP-10,000 in PB-4	1	-	-	1	-	-	1	-	1
11.	Technical Staff	T-6 GP-5400 in PB-3	16	-	-	16	-	2*	18	2	16
		T-3 GP-2800 in PB-1	10	3	-	10	-	-	13	3	10
		T-1 GP-2000 in PB-1	10	1	-	-	-	-	1	1	0
12.	Sr. Adminnistrative Officer	GP-6600 in PB-3	1	-	-	1	-	-	1	1	0
13.	Finance & Account Officer	GP-5400 in PB-3	1	-	-	1	1	-	2	1	1
14.	Stenographer	GP-2400 in PB-1	-	-	-	-	1	-	1	-	1
		Total	**85**	**4@**	**1**	**71****	**8***	**2##**	**86**	**17**	**69**

** EFC approved post for NIAM Baramati, vide F.No.:13/2008-IA-II dtd. 6th March, 2009

* Further to creation from MoF, approved by the DARE vide no. 13-1/2008-IA-II dtd. 19th Feb, 2009.as per the EFC

*** Sanctioned in XI Plan EFC have been---- vide ICAR letter No. 22-1/2009.IA.II, dt. 24.9.2010

Cadre Strength ICAR Letter F No. 33-12/2010-Estt.I, dt. 24th August, 2010

@ ADRP Vide Council Letter F No.1-46/2007-I.A.II dt. 16.9.2009

Dr. A. K. Sharma, DO (T-7) from IISS, Bhopal has been transfer along with post in public interest to NIAM, Baramati Vide Council Letter F No. 22(4)/2009-I.A.II (pt), dt.13.1.2010.
Dr. U. K. Maurya, Technical Officer (T-6), NBSS & LUP, Nagpur has been transfer along with post in public interest to NIAM, Baramati Vide Council Letter F No. 22(5)/2009-I.A.II, 11.8.2009.

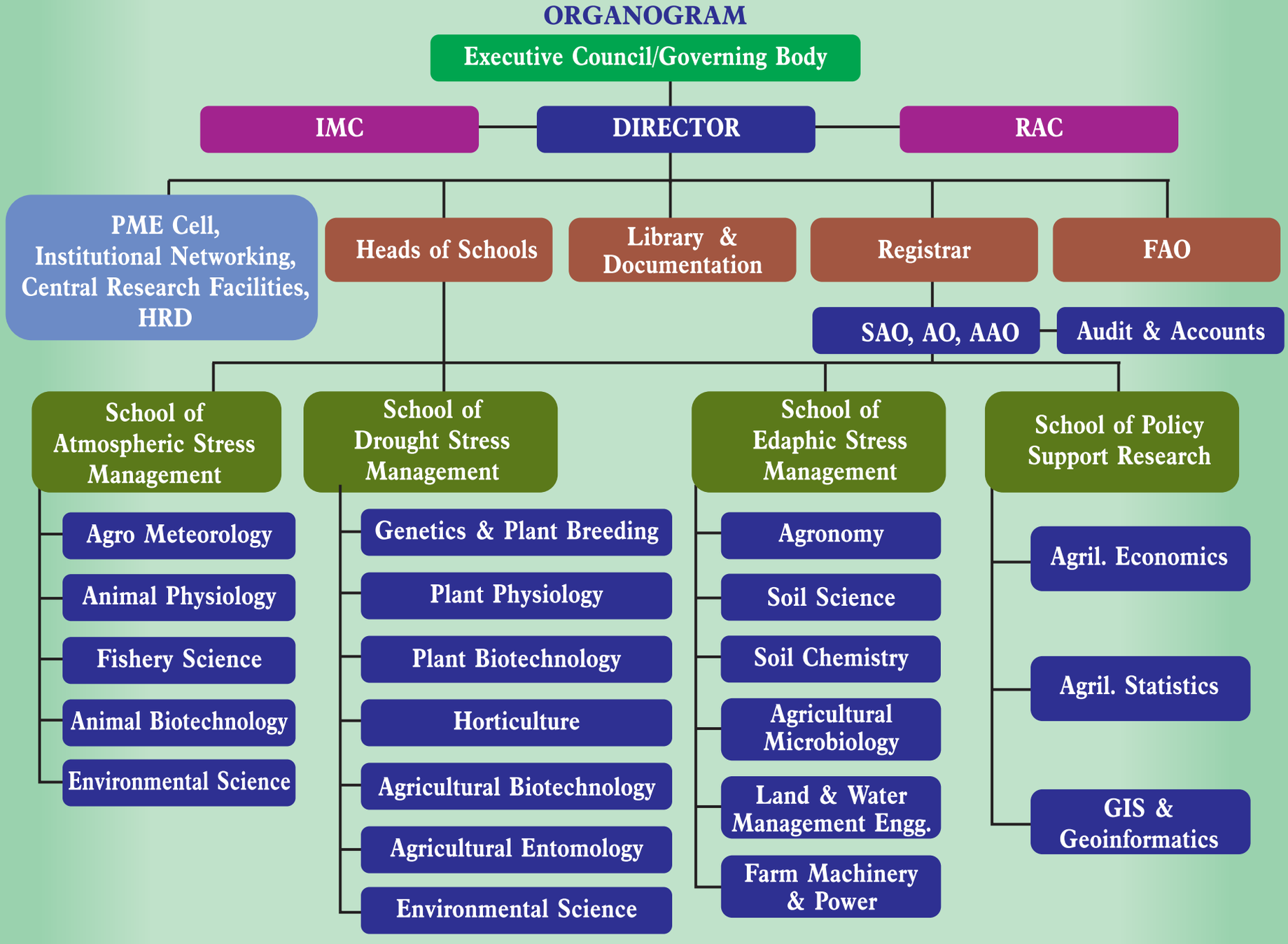
Table 2. Cadre Strength of Scientists

Sl. No.	Revised Discipline	Existing			Total	Revised (09.05.2011)			Total	Revised (14.06.2011)			Total
		S	SS	PS		S	SS	PS		S	SS	PS	
1.	Head(s) for four (4)									-	-	4	4
	Schools (Multi discipline)	-	-	4	4	-	-	4	4				
2.	Agricultural									1	-	1	2
	Economics	-	-	1	1	-	-	1	1				
3.	Agrticultural			-				-		1	1	-	2
	Engineering / FM & P	-	1		1	-	1		1				
4.	Agri-Meteorology	1	-	1	2	1	-	1	2	1	1	1	3
5.	Agronomy	1	1	-	2	1	1	-	2	1	1	-	2
6.	Animal	1		-		1		-		2	1	-	3
	Biotechnology		1		2		1		2				
7.	Environmental Science		-	-			-	-		1	-	-	1
	(Animal Ecology)	1			1	1			1				
8.	Animal Physiology	1	-	-	1	1	-	-	1	2	-	-	2
9.	Plant Biochemistry	1	-	-	1	1	-	-	1	1	1	-	2
10.	Agricultural		-	-			-	-	1	1	-	-	1
	Statistics	1			1	1			1				
11.	Fishery Science	1	-	-	1	1	-	-	1	1	2	-	3
12.	GIS/Geo Informatics		1	-			1*	-		1	1	-	2
	Specialist	1			2	-			1*				
13.	Horticulture (FS/VS/FI./Med &				1					1	1	1	-2
	Agro. Plts.)	1	-	-		1	-	-					
14.	Agricultural	-			1	-			1	1	1	-	2
	Microbiology		1	-		1	-						
15.	Agricultural	-			1	-			1	1	1	-	2
	Biotechnology		1	-			1	-					
16.	Genetics & Plant	-		-		-		-		2	1	1	4
	Breeding		1		1		1		1				
17.	Environmental Science		-	-			-	-		1	-	-	1
	(Plant Ecology)	1			1	2			2				
18.	Plant Physiology	1	-	1	2	1	-	1	2	1	1	1	3
19.	Land and Water Management			-				-		1	1	-	2
	Engineering	1	1		2	1	1		2				
20.	Soil Chemistry	1	-	1	2	-	-	-	-	1	-	1	2
21.	Soil Science	1	-	-	1	2	-	1	3	1	1	1	3
22.	Agricultural Entomology	1			1	1			1				
	Total	16	8	8	32	16	8	8	32	24	16	10	50

Table 3. Sanctioned Cadre Strength of Technical Staff

Particulars	Laboratory	Field/Farm	Workshop
T-6	3	12	1
T-3	2	7	1

ORGANOGRAM


Executive Council/Governing Body
IMC
DIRECTOR
RAC
PME Cell, Institutional Networking, Central Research Facilities, HRD
Heads of Schools
Library & Documentation
Registrar
FAO
SAO, AO, AAO
Audit & Accounts
School of Atmospheric Stress Management
School of Drought Stress Management
School of Edaphic Stress Management
School of Policy Support Research
Agro Meteorology
Animal Physiology
Fishery Science
Animal Biotechnology
Environmental Science
Genetics & Plant Breeding
Plant Physiology
Plant Biotechnology
Horticulture
Agricultural Biotechnology
Agricultural Entomology
Environmental Science
Agronomy
Soil Science
Soil Chemistry
Agricultural Microbiology
Land & Water Management Engg.
Farm Machinery & Power
Agril. Economics
Agril. Statistics
GIS & Geoinformatics

Master Plan of the NIASM Campus

BUILDINGS, APPROVALS, FARM

NIASM is proposed for enhancing the capacity and capability for Abiotic Stress Management, through basic, strategic and policy support research. It is to fulfil its mandate through four schools with laboratories having frontier science tools, administration building, central lab, library, auditorium, on farm laboratories, hostels, staff quarters, guest houses, farm offices, fish ponds, water harvesting and storage structures, irrigation systems, livestock houses, ATIC, industry interface halls, security, etc. The strength including the families and contractual staffs may reach to 500 in half a decade. The working arrangements and stay are aimed at international standard.

Laboratories are spread over different schools sharing the earmarked lab areas. These are Agromet and Climate Change, Agronomy & Soils, Animal Physiology & Nutrition, Avian Physiology & Nutrition, Fisheries Physiology & Nutrition, Genomic Research with Cold Rooms, Microbial Diversity & Physiology, Nano-Biotechnology, Cold Banks, Plant Physiology & Biochemistry, and others. Sophisticated Instruments(s) facilities will be housed in a Central Laboratory like ICPMS with advanced microwave digestion system, Digestion Room with CHNSO analyzers, Environmental Shakers, IAAS, Liquid Scintillation Counters and other radioactive requirements, Macro Array Hybridization System with image analysis, MALDI-TOF – Mass Spectrometer, NMR, Ratio Mass Spectrometer, Refrigerated Centrifuges including vertical low temperature freezers, Scanning Electron Microscope, X-Ray Diffractometer and others. Similarly there are few Data Centers both for common and specialized data bases. These will be also housed in the lab and other areas. These will be Policy Support, Bioinformatics Center, Database Center, GIS Lab, ARIS and others. Specialized on-farm Research Laboratories will also be developed like Animal Respiratory Chambers, FACE facility for climate change studies, Green/ Glass Houses, Lysimeter, Open Top Chambers, Phenotorium with Plant Imaging System, Phytotron with Ozone Equipment, Rainfall Simulator, Rhizotron, Temperature Gradient Tunnels and others.

Buildings

For calculating the sitting area for office/lab building, norms of Ministry of Urban Development is adopted as per the entitlement for various categories. The laboratory and class room requirement is computed based on the requirement of typical scientific institute. Internal partitions and arrangements shall be the responsibility of respective scientist/officials. The residential area is also finalized as per the Ministry of Urban Development norms for residential area for different categories of quarters. The laboratories and class room requirement are of National Scientific Research. Keeping in view the research cum teaching requirement of the institute, an auditorium is added. These are not planned at that time of EFC preparation. As the sizes were not computed and ad hoc provisions were only made in EFC. The details are available in the ICAR letter enclosed The master plan of the institute (Fig.1) prepared by M/s. Hospitech Management Con. Pvt. Ltd, New Delhi was approved (ICAR vide F. No. 2(83)/2007-EC dated 3rd March, 2011). The priority of works is identified.

The Master Plan of the Institute including all the buildings (G+1) has been cleared by the Town Planner, Baramati on 25th January 2011. It is proposed to take up the works of following buildings on priority from master plan: Administrative Block, One school, Guest House, Boys hostel, Girls hostel, Residence Quarters.

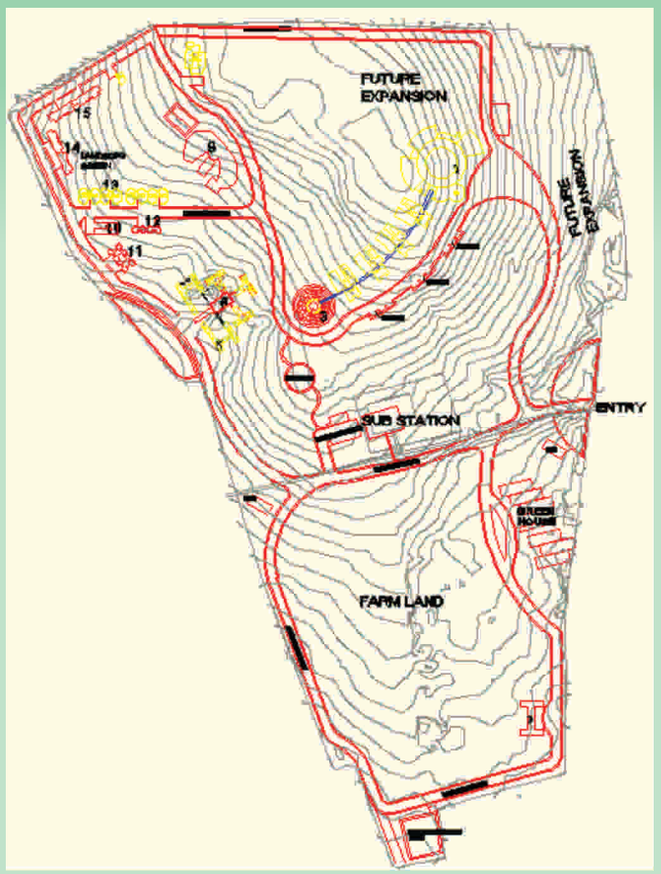


Fig. 1 Master plan of the institute

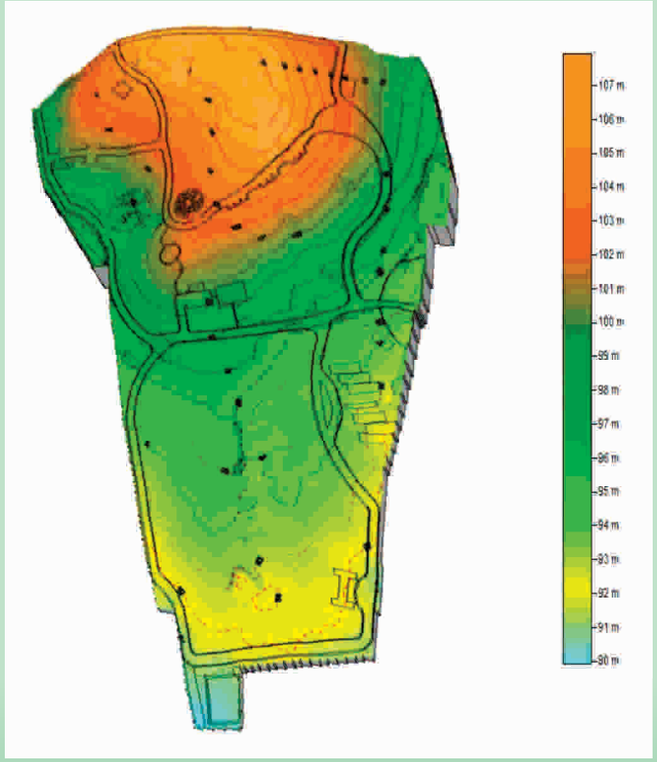


Fig. 2. Elevation map of NIASM

(Type VII – one, Type IV – six, Type III – four).

On Campus Farm

The NIASM is vested with responsibility of conducting research in complimentary mode for mitigating atmospheric, edaphic and water related stresses in crops, trees, animals, birds and fishery. The degree of severity and extent of various stresses need to be developed using modern scientific tools for testing the developed material. This synthesis is to be finally integrated into a farming system almost neutral to increasing intensity of abiotic stresses under climate change. The scientists need on-farm abiotic stress bench for primary screening or prototype testing of the material under synthesis, before going to the actual site at the research farm. Efforts are on for providing the same.

A plan for research farm development of NIASM has been prepared by scientists at the Institute led by Dr. S. V. Ghadge, Sr. Scientist (FMP). Dr. V. N. Sharda, Director, Central Soil & Water Conservation Research & Training Institute (SWLRII), Dehradun was requested for help. After studying the google earth imagery of the site, Dr. R. S. Kurothe, Head, CSWCR & TI Research Centre, Vasad and Dr Sena, CSWCR & TI Research Centre, Vasad visited the institute. The institute master plan was superimposed on the 3D contour map (Fig 2 & 3).

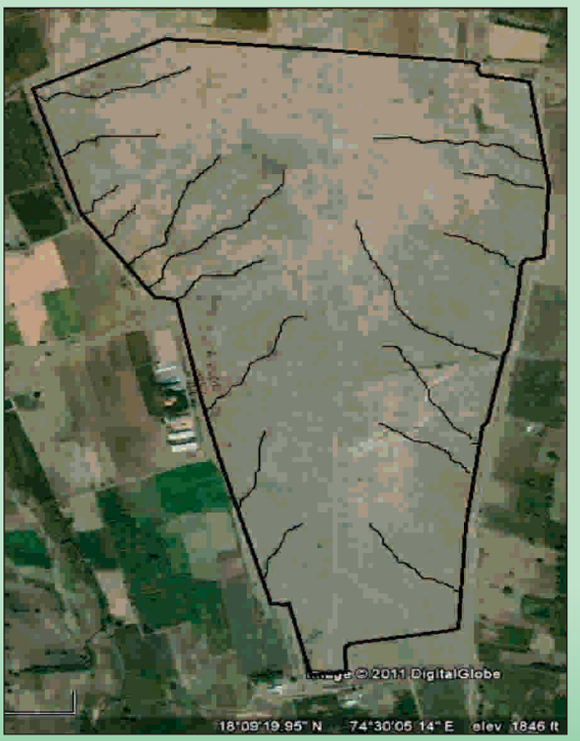


Fig. 3. Natural drainage map of NIASM site

Natural drainage map has been generated based on a google map on 56.49 ha area inside the boundary (Fig. 3). It may be observed that a centrally running north-south ridge line is dividing the whole area into two parts and drainage lines are crossing the institute boundary on east and west sides. The area has a elevation difference of 17 m from north to south end. The approach to design of research farm layout is based on the following considerations- The plot layout should be based on contours and watersheds for soil and water conservation. The plot size should be large enough to be mechanized using tractor drawn implements and small enough for better management. Further, it should be in multiples of standard measurement units. Thus, plot size is kept between 0.2–1.0 ha. The shape should preferably be square or rectangular to enable straight row or bed planting in line using tractor drawn implements. Every plot should have farm path on all sides for easy access and movement of machine and materials, layout of irrigation and drainage network. The farm roads are also required as open utility spaces for various post-harvest operations like threshing, winnowing, etc. The research farm area has to be adjusted between various buildings of Master Plan and facilities of the institute.

Using total station data taken at 5x5 m grid interval, a contour map of the area was generated for a 0.5 m interval. Ridge lines are marked to delineate three watersheds and water harvesting ponds (Fig. 4). These are north-east (1), north-west (2), and south (3) watersheds. The south watershed was quarried for sand in more than 70-80% of area over time severely and extensively. Remaining area of the watersheds is degraded due to natural processes exposing Zeolites rocks throughout. As the ridge line travels from north to south centrally, there is no complete watershed except a valley line created by peripheral road on the boundary. This helps to harvest the entire runoff. However, it needs stone pitching to avoid erosion. A drainage trench along the peripheral boundary line shall help divert excess runoff after harvesting in east and west ponds to south pond.

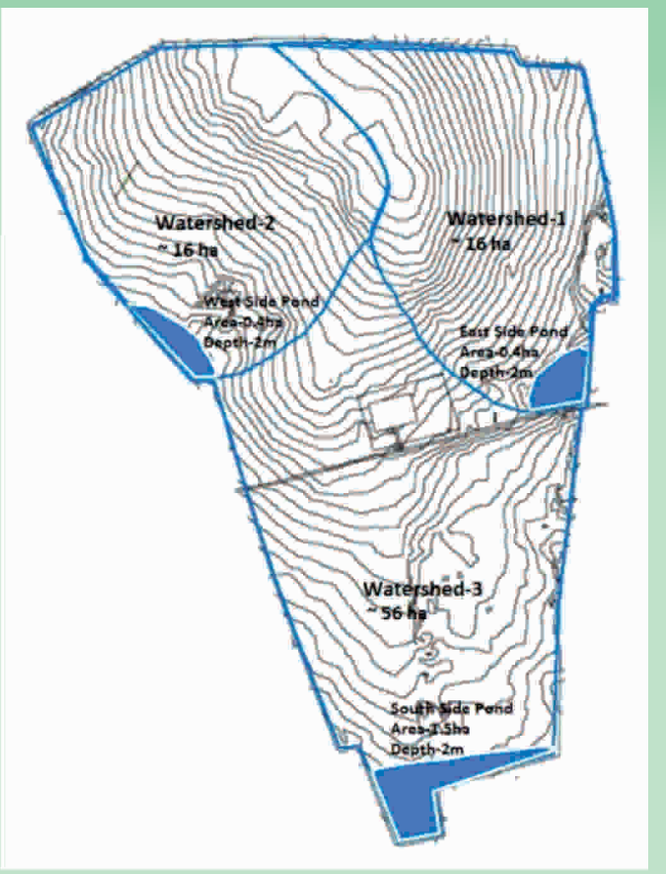


Fig. 4. Delineation of watersheds and ponds

The mean annual rainfall of Baramati is 560 mm. Peak daily rainfalls of 180 mm (100 years) and 20% runoff was considered due to steep slopes for design of three ponds located within each watershed. Ponds in east and west side may have 0.8 ha-m each while on south side 3 ha-m. A 6:1 Murrum + cement lining for the pond is recommended. Shaping of the ponds is in progress. The details are given in Table 1.

Table 1. Water Harvesting Ponds

Item	East Pond	West Pond	South Pond
Latitude (N)	18° 09' 21.45"	18° 09' 24.78"	18° 09' 03.72"
Longitude (E)	74° 30' 10.24"	74° 29' 51.71"	74° 30' 01.30"
Elevation (m)	559	563	556
Catchment (ha)	16	16	56
Pond Size (ha)	0.4	0.4	1.5
Average Pond Depth (m)	2	2	2
Pond Lining (Murrum+Cement)	6:1	6:1	6:1

The soil suitability map prepared by NBSS&LUP, Nagpur of the campus site in 2009 was superimposed on drainage map and Master Plan. The buildings are concentrated in North-east and North-west watersheds. The institute research farm is proposed to be developed on an approximate 40 ha area out of the total 56.49 ha allotted for NIASM at Malegaon near Baramati, leaving aside remaining area for buildings, roads, compound wall, water harvesting ponds, sports complex, Ecological Reserve, Water Treatment Plant, Landscaping and future expansion, etc., based upon land capability.

The campus is divided by existing East-west approach road into two zones, which is taken as dividing line between south side farms and north side farm for the time being and convenience. The south side farm is generally sloping from north to south with a gentle slope of less than two per cent whereas the north side farm has greater than two per cent slope on multiple sides (Fig. 5). It is proposed to take up livestock, fish and bird related works in the south watershed and to develop to meet their entire requirement in a farming system approach. Due to steep slope in the northeast watershed development of horticulture crops is envisaged to reduce on costly leveling. The farm will also station a Rare Endangered Threatened and Endemic Species (RET&ES) Park, an eco-reserve and Rock & Mineral museum along with farm buildings and animal related research sheds. It is proposed to get the RET&ES material collected and planted by outsourcing to experts.

Green/Glass Houses, Agro-met Laboratory, Lysimeter, Rhizotron, Phenotorium and other on-farm research facilities will be located more near to the schools.

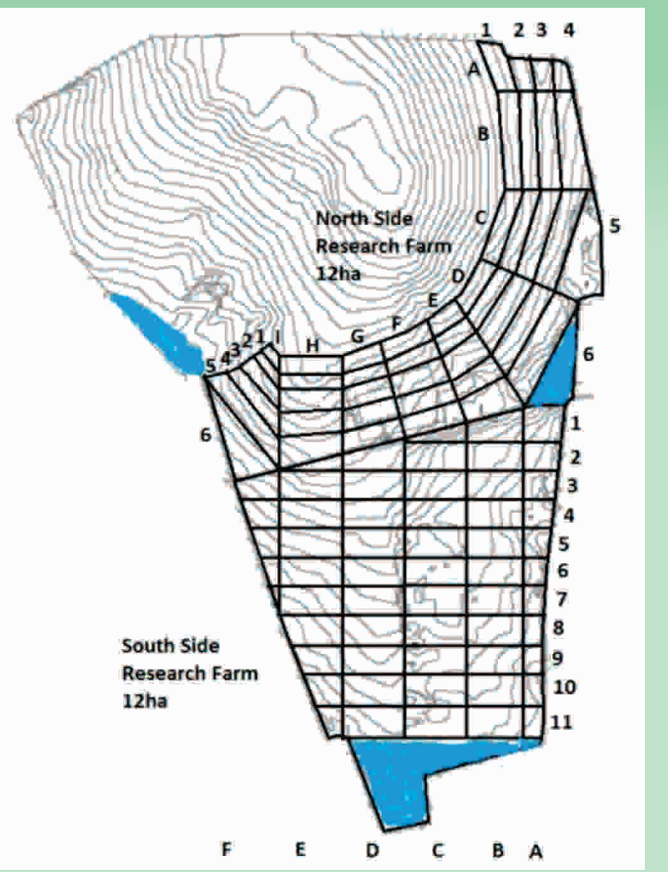


Fig. 5. Design of NIASM Research Farm

The approximate area under each plot is 2500 m2 with roads on all sides. In the three watersheds land is opened by ploughing intensively. In the south watershed leveling, ripping and ploughing are in progress. It is proposed to overlay with black, light/ red, saline and sandy soils. In the remaining area, land was opened by ploughing.

Aquaculture

Central Institute of Fisheries Education (CIFE), Mumbai was visited by Dr. M. P. Brahmane, Scientist (SS) for interaction on the aquaculture farm planning, design and layout finalization of fish farm to be developed at NIASM, Baramati. Discussion on the farm pond design was held with the Scientists and Technical

Officers of the CIFE regional centre at Powarkheda and Kolkata. CIFE was requested to provide consultancy on development of aquaculture farm for carp culture. The FRP portable hatchery is ordered from Central Institute of Freshwater Aquaculture, Bhubaneswar. Complimentary Master Plan of the Institute is given as Fig. 6.

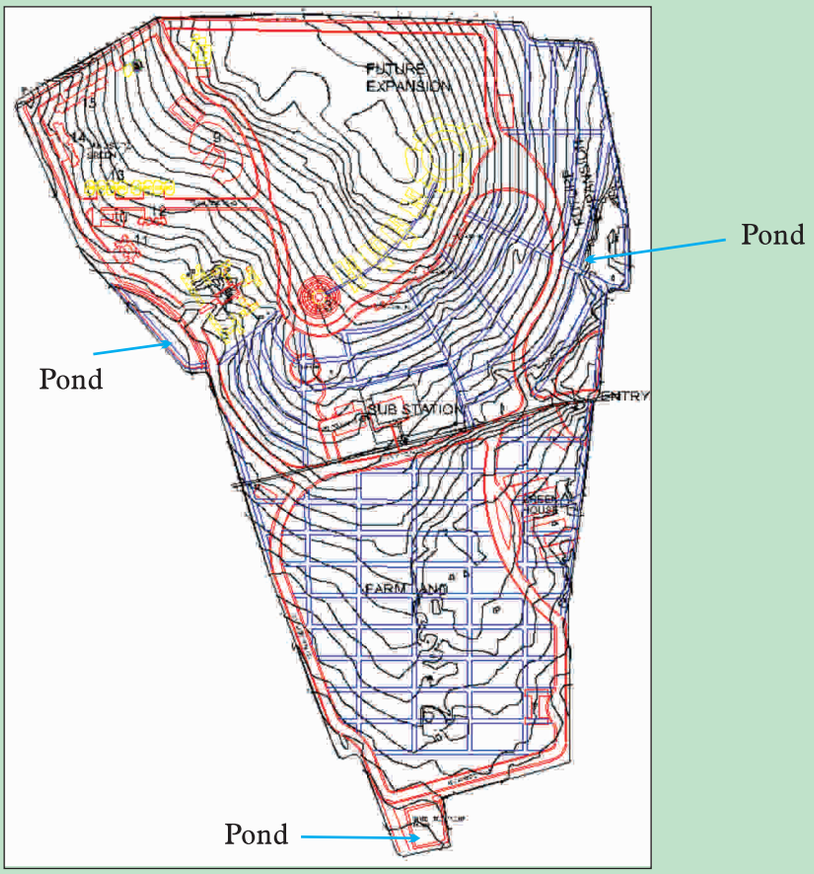


Fig. 6. Complimentary Master Plan of Building, Roads and Research Farm

Approval of Master Plan by Town Planner, Baramati

वाचले - १) संचालक राष्ट्रीय अजैविक स्ट्रेस प्रबंधक संस्थान, द्वारा भारतीय कृषि अनुसंधान परिषद, माळेगांव खु.ा ता. बारामती जि.पुणे यांचा दि. १८/११/२०१० रोजीचा अर्ज
२) नगररचना आणि मुल्यनिर्धारण विभाग बारामती शाखा, बारामती यांचेकडील जा.क्र. एनएबीपी/ मौजे- माळेगांव (खु.)/ता.बारामती /गट नं. ३५पैकी/ नरबा/ १५४, दि. १८/०१/२०११
३) महाराष्ट्र जमिन महसूल अधिनियम १९६६ चे कलम ४४

उपविभागीय अधिकारी बारामती
उपविभाग बारामती यांचे कार्यालय
क्र.एनअे/एसआर/३३६/२०११
बारामती दिनांक २५/०१/२०११

विषय - मौजे माळेगांव खु.ा ता. बारामती जि.पुणे येथील गट नं. ३५ पैकी ५६४९०० चौ.मी. क्षेत्रामध्ये केंद्र शासनाच्या भारतीय कृषि अनुसंधान परिषदेस पर्यावरण संशोधन या शैंक्षणिक वापरासाठी अकृषीक परवानगी व बांधकाम परवानगी मिळणेबाबत.
संचालक राष्ट्रीय अजैविक स्ट्रेस प्रबंधक संस्थान, द्वारा भारतीय कृषि अनुसंधान परिषद, माळेगांव खु.ा यांचा अर्ज.

आदेश

मौजे माळेगांव खु.ा ता. बारामती येथील गट नंबर ३५ पैकी ५६४९०० चौ.मी. क्षेत्रामध्ये केंद्र शासनाच्या भारतीय कृषि अनुसंधान परिषदेस पर्यावरण संशोधन या शैंक्षणिक वापरासाठी अकृषीक परवानगी व बांधकाम परवानगी मिळणेबाबत. संचालक राष्ट्रीय अजैविक स्ट्रेस प्रबंधक संस्थान, द्वारा भारतीय कृषि अनुसंधान परिषद, माळेगांव खु.ा यांनी या कार्यालयास अर्ज केलेला आहे.

अर्जदार यांनी धारण केलेली जमीन ही नगरपालिका हद्दीतील नसल्याने प्रस्तुत जमीनीचे रेखांकन आराखडे नगररचनाकार बारामती शाखा बारामती यांचेकडे अभिप्रयासाठी पाठविण्यात आलेले होते त्यांनी जा.क्र. एनएबीपी/ मौजे- माळेगांव (खु)/ता.बारामती /गट नं. ३५/ नरबा/ १५४, दि. १८/०१/२०११ अन्वये रेखांकन मंजूरीची शिफारस केलेली आहे.

अर्जदार यांनी धारण केलेली जमीन ही मूळची गायरान संवर्गातील असून सदरची जमीन ही मा. जिल्हाधिकारी पुणे (महसूल शाखा) यांचेकडील आदेश क्र. सीआर/०२/२००९ दिनांक १९/०१/२००९ अन्वये मौजे माळेगांव खु.ा ता. बारामती येथील जमीन गट नंबर ३५ मधील ५६ हेक्टर ४९ आर भाडेपट्टयाने भारतीय कृषि अनुसंधान परिषद माळेगांव खु.ा यांना दिलेली आहे. त्याबाबत फेरफार नोंद नं. ३९८५ अन्वये अर्जदार यांचे नावे दाखल झालेली आहे. त्यानुसार अर्जदार हे मालक झालेले आहेत.

वरील सर्व बाबी विचारात घेवून मी उपविभागीय अधिकारी, बारामती उपविभाग बारामती मला प्रदान करण्यात आलेल्या अधिकाराच्या अधिन राहून महाराष्ट्र जमीन महसूल अधिनियम १९६६ चे कलम ४४ मधील तरतुदीनुसार मौजे माळेगांव खु.ा ता. बारामती येथील गट नंबर ३५ पैकी ५६४९०० चौ. मी. क्षेत्रास संचालक राष्ट्रीय अजैविक स्ट्रेस प्रबंधक संस्थान, द्वारा भारतीय कृषि अनुसंधान परिषद, माळेगांव खु.ा यांना केंद्र शासनाच्या भारतीय कृषि अनुसंधान परिषदेस पर्यावरण संशोधन या शैंक्षणिक वापरासाठी अकृषीक परवानगी व बांधकाम परवानगी खालील अटी व शर्तीवर देण्यात येत आहे.

अटी व शर्ती

१) वरिल जागेचा व नियोजित इमारतीचा वापर फक्त पर्यावरण विषयक संशोधन व तदनुषंगिक वापरासाठी करण्यात यावा व बांधकाम मंजूर नकाशाप्रमाणे असावे.

२) स्थलदर्शक नकाशावर दर्शविल्याप्रमाणे नियोजित बांधकामापासून पुढील, मागिल व बाजूची अंतरे प्रत्यक्षात जागेवर असली पाहीजेत व त्याखालील जागा कायम खुली ठेवावी.

३) नियोजित बांधकामाचे एकूण क्षेत्र नकाशात दर्शविल्याप्रमाणे प्रत्यक्ष जागेवर कमाल राहिले पाहिजे.

४) नियोजित बांधकामातील मजल्यांची संख्या नकाशावर दर्शविल्याप्रमाणे तळ + १ मजला यापेक्षा जास्त असू नये.

५) नियोजीत इमारतीसाठी आवश्यक असणा-या पाण्याची सोय व सांडपाण्याची व मैला निर्मुलनाची व्यवस्था नसल्यास, प्रत्यक्ष वापरापूर्वी अर्जदाराने केली पाहीजे.

६) नियोजित बांधकामात मंजुरीपेक्षा वेगळा बदल करावयाचा असल्यास किंवा वापर बदलावयाचा असल्यास या कार्यालयाची पूर्व परवानगी घेणे आवश्यक आहे.

७) जमीनीची मालकी, हद्दी, वहिवाट इत्यादीबाबत काही वाद उत्पन्न झाल्यास त्यास अर्जदार जबाबदार राहतील.

८) प्रकाश व वायुविजन यासाठी ठेवलेल्या खिडक्यांचे क्षेत्र हे त्या संबंधित खोलीच्या क्षेत्राच्या १/८ पेक्षा कमी असू नये.

९) नियोजित बांधकामामुळे भुखंडावर असलेल्या कोणाच्याही वहिवाटीच्या हक्काचा भंग होणार नाही याची जबाबदारी अर्जदार / मालकाने घेतली पाहिजे.

१०) सदरची बांधकाम परवानगी ही शेती व नाविकास विभागात अनुज्ञेय होणा-या शैक्षणिक वापरासाठी असून तळ +१ मजला अनुज्ञेय मर्यादेत बांधकाम करणे आवश्यक आहे.

११) सदरचे बांधकाम हे शेती क्षेत्र विभागात असल्याने भूखंड क्षेत्राच्या २० % मर्यादेत बांधकाम अनुज्ञेय आहे. त्यामुळे या मर्यादेत बांधकाम करणे आवश्यक आहे.

१२) शैक्षणिक व संशोधन कारणासाठीच्या वापराच्या भूखंडामध्ये वन विभागाने मान्य केलेल्या प्रजातीची ५०० झाडे प्रति हेक्टरी या प्रमाणात लावून त्यांचे संगोपन करणे बंधनकारक आहे.

१३) शैक्षणिक व संशोधन वापरासाठीच्या भूखंडास उपलब्ध होणारा पोहचमार्ग १२.०० मी. रुंदीपेक्षा कमी असणार नाही.

१४) विषयांकीत बांधकाम नकाशाची छाननी, अनुज्ञेय चटई क्षेत्र, भुव्याप्त क्षेत्र याबाबतीत केलेली आहे. बांधकाम नकाशातील गणितीय चुका वा जागेवर बांधकाम नकाशावर नमुद केल्याव्यतीरीक्त जादा बांधकाम असल्यास त्यास संबंधित वास्तूशिल्पी व अर्जदार जबाबदार राहील.

१५) जागेतील /जागेलगतच्या नाल्याच्या नैसर्गिक प्रवाहास अडथळा येईल असे कोणतेही बांधकाम करता येणार नाही व नाल्यास सुयोग्य मजबुतीकरण करणे आवश्यक राहील.

१६) विषयांकित जागेतून उच्च दाबाची विद्युत वाहिनी जात असल्यास संबंधित वाहिनीपासून सोडावयाच्या सुरक्षा अंतराबाबत संबंधित खात्याचा सक्षम प्राधिका-याचा नाहरकत दाखला घेण्यात यावा व त्याप्रमाणे आवश्यक ते सुरक्षा अंतर सोडण्यात यावे.

१७) स्टिल्ट भविष्यात बंदिस्त करण्यात येवू नये. तसेच स्टिल्टचा वापर फक्त पार्किंगसाठीच करण्यात यावा.

१८) महाराष्ट्र जमीन महसुल (जमीनीच्या वापरात बदल व अकृषिक आकारणी) नियम १९६९ मधील नियम ४ (क) मधील तरतुदीनुसार अर्जदार यांनी सदर आदेश दिलेल्या तारखेपासुन एका वर्षाच्या आत अकृषिक वापर करणे आवश्यक आहे व त्याप्रमाणे त्यांनी अकृषिक वापर सुरू केलेबाबत गाव कामगार तलाठी यांना लेखी कळविणे बंधनकारक राहील. तसेच सदर नियमामधील इतर अटी व शर्ती अर्जदार यांचेवर बंधनकारक राहतील.

या प्रमाणे नमुद केलेल्या अटीपैकी कोणत्याही अटीचे किंवा शर्तीचे पालन न केल्यास तसेच अर्जदार यांनी सादर केलेली कोणतीही माहिती अथवा कागदपत्रे चुकीची व दिशाभुल करणारी निदर्शनास आल्यास अथवा वेळोवेळी अस्तित्वात असलेल्या कायद्यांचा भंग झालेस सदरची परवानगी रद्द समजण्यात यावी. वरील बाबी अवलोकनात घेवून मौजे माळेगांव खु.ा ता. बारामती येथील जमीन गट नं. ३५ पैकी एकूण क्षेत्र ५६४९०० चौ.मी. क्षेत्रामध्ये केंद्र शासनाच्या भारतीय कृषि अनुसंधान परिषदेस पर्यावरण संशोधन या शैक्षणिक वापरासाठी अकृषीक परवानगी व बांधकाम परवानगी संचालक राष्ट्रीय अजैविक स्ट्रेस प्रबंधक संस्थान, द्वारा भारतीय कृषि अनुसंधान परिषद, माळेगांव खु.ा यांना देणेत येत आहे.

उपविभागीय अधिकारी, बारामती

(विजयसिंह देशमुख)
उपविभागीय अधिकारी
बारामती उपविभाग बारामती

प्रति - संचालक, राष्ट्रीय अजैविक स्ट्रेस प्रबंधक संस्थान, द्वारा भारतीय कृषि अनुसंधान परिषद, माळेगांव खु.ा ता. बारामती जि.पुणे

प्रत - १) तहसिलदार बारामती

२/- वरीलप्रमाणे अटींचे व शर्तीचे पालन अर्जदार करतात अगर कसे याबाबत खात्री करावी. त्याचप्रमाणे या आदेशाची नोंद तालुका नं. २ मध्ये घेण्यात यावी.

२) गाव कामगार तलाठी माळेगांव खु.ा ता. बारामती जि.पुणे

२/- सदर आदेशाची नोंद गाव नमुना नं. २ मध्ये घेण्यात यावी.

३) उप अधिक्षक भुमी - अभिलेख बारामती

२/- सोबत रेखांकनाची प्रत जोडलेली आहे. अर्जदार यांचेकडून आवश्यक ती मोजणी फी वसुल करून मोजणीची कार्यवाही करण्यात यावी.

४) नगररचनाकार बारामती शाखा बारामती यांना माहितीसाठी व पुढील आवश्यक त्या कार्यवाहीसाठी

उपविभागीय अधिकारी
बारामती उपविभाग बारामती

Type-V Qtrs. (Typical cluster plan for 2 qtrs. In each floor	163 sq.m. per unit
Type-VI Qtrs. (Typical cluster plan of 2 Qtrs. In each floor	209 sq.m. per unit
Type-VII	298 Sq.m.

Since the estimated cost of buildings in the Master Plan are exceeding, the EFC provision, will be examined separately for revision of EFC.

Yours faithfully,

(V.P. Kothiyal)
Director (Works)

Copy for information to :

1. Sr.PPS to DG, ICAR, Krihsi Bhavan, New Delhi.
2. PPS to Secretary, ICAR, Krishi Bhavan, New Delhi.
3. PPS to DDG (NRM), ICAR, KAB-II, Pusa, New Delhi.

(V.P. Kothiyal)
Director (Works)

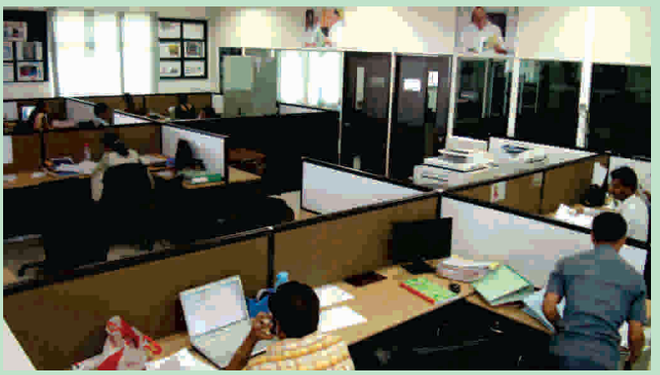
Infrastructure

OFFICE, LABORATORY, LIBRARY, FARM

The camp office of the NIASM at KVK, Sharadanagar, Baramatiwas shifted to the present campus site, Gat No. 35, Malegaon Khurd, Baramati on 1st November, 2010 after inauguration of Engineering Workshop by Hon'ble Union Minister of Agriculture & Consumer Affairs, Food & Public Distribution, Shri. Sharad Pawar on 30th October, 2010. Presently, modular office, laboratory, committee room, etc. are housed in this 300 m^2 air conditioned workshop. The construction of other buildings including administrative block and staff quarters is in progress.

Office

An office with modular furniture has been built with about 40 workstations, Director's chamber etc., with office facilities for photocopying, fax, telephone, etc.



Modular Office

Committee Room

A well-equipped committee room with all the facilities for presentations is developed. The room has latest projection facilities with LED projector, modular sitting arrangement, etc.There is a tie-up audio-video recording camera installed with centrally networked web camera system. A touch screen LED monitor/ Projector (60") for multimedia presentation is installed. The Committee Room is also being equipped with a Conference System with recording facility. This facilitates in future afford for online transactions in real-time over internet.

Research Laboratory

A well-furnished modular research laboratory with granite tops has been established toinitiate the planned research activities. The equipment procured are- Gel Documentation System, Horizontal Gel Electrophoresis System, Vertical Protein Gel Electrophoresis, Microbiological Incubator, Centrifuge, Circulating Water Bath,Vortex Mixer, Water purification unit, Laminar Air Flow Chamber, Deep Freezer, Orbital Shaker, Liquid Nitrogen Transfer Vessel, BOD Incubator, Insect Collection Boxes and Nets, Insect Rearing Cages, aspirators and stretching boards. In addition, various laboratory chemicals, glassware and plastic wares are also procured.

Laboratory

Agro-meteorological Observatory

India Meteorological Department (IMD), Pune identified the following instruments along with vendors list. This are- Wind vane, Cup Anemometer, Stevenson screen, Sunshine recorder, Soil thermometers, Dew Gauge, Pan Evaporimeter, Rain gauge and Self-recording rain gauge. The site for the proposed agro-met observatory isidentified at the NIASM campus with guidance of IMD. The IMD is also shifting and merging their local Met observatory at MES High School, Baramati with the NIASM observatory. The levelling and fencing work is being given to CPWD, Pune. It is expected that the IMD may reinforce this facility further and add to national grid in time to come.

Library

The library is maintained with the facilities of Document Lending Service, Reference Service, and Reprographic Services. The Institute library added two Xerox machines – one coloured with black and white and other with Black and white having sorting facility. These facilities are available online with password. Library has procured library management software TLSS and the documents are being bar coded for issue &return and stock verification. The resources of CeRA (Consortium of e-Resources in Agriculture) and KrishiPrabha are being made available through online to the institute scientists. The open source documents database NIASM (developed on UNESCO's database WINISIS) is being updated continuously and the data are being appended regularly (Table 1). A portal of library is under development to give access to the library e-resources and OPAC through the Institute webpage.

Table 1. Number of acquisitions in 2010-11

Documents	Addition During 2010-11	Total Holding
Books	170	170
Annual Reports of ICAR Institutes	40	40
Articles (WINSIS)	72	125

Canteen

A dining facility for the employees of the institute is provided with a refrigerator, kitchen platform, three stainless steel tables and wash basins. This is under further improvement.

Vehicles

Two motor cycles are acquired for farm and other uses.

Farm Equipment

One tractor with agricultural implements, trailerand tanker and another one with bucket and loader for digging and levelling are purchased.

Additional Research Farm

Additional 10ha land for research farm is offered by the SDO, Baramati (letter no: Kavi/2311/2010 dated 30.12.2010).The land is identified abutting to south boundary of the institute extending up to Nira canal (500X200 m) covering Gat no.17 & 18 of Village Malegaon Kh.

Soil Fertility Evaluation

Before the site is put under plough, soil fertility evaluation of 62 plots covering 40 hawas outsourced to KVK, Baramati of pH, EC, OC, N, K, exchangeable Na, Mn, Zn and Cu.P and Fe analysis is in progress. The range and mean are given in Table 2. The soil is neutral to slightly alkaline with low electrical conductivity. In general organic carbon is almost normal for this kind of barren open grazing land. The available nitrogen is low while potassium is reaching to the high level. The sodium content is high while calcium is within the optimum level. Micronutrients are above critical limits. At some points they are toxic to plants.

Table 2. Soil fertility of the farm and non-farm area

Parameter	South side of South Watershed		Northwest side of South Watershed		Northeast Watershed		Uncultivated buildings area		Overall	
	Range	Mean (SD)	Range	Mean (SD)	Range	Mean (SD)	Range	Mean (SD)	Range	Mean (SD)
*p*H	7.29 8.29	8.02 (0.209)	7.39 8.29	8.02 (0.495)	7.52-8.08	7.87 (0.138)	7.80-8.97	8.38 (0.501)	7.29-8.97	8.12 (0.379)
EC dsm/m	0.14(1.5	0.31 (0.299)	0.11-0.29	0.20 (0.050)	0.14-0.45	0.29 (0.074)	0.14-0.27	0.18 (0.050)	0.11-1.5	0.26 (0.196)
OC %	0.15 1.76	0.68 (0.387)	0.15-0.71	0.37 (0.180)	0.2-1.49	0.80 (0.460)	0.15-0.68	0.43 (0.258)	0.15-1.76	0.58 (0.384)
N kg/ha	36-424	162.83 (93.125)	36-171	87.81 (43.348)	2.67-310	147.38 (114.353)	36.00-136.00	102.20 (61.836)	2.67-424	129.26 (89.330)
K kg/ha	92-435	192.58 (76.410)	87-1317	154.4 (57.327)	2.67-320	200.83 (80.331)	170.00-984.00	460.20 (317.267)	2.67-984	209.26 (129.554)
Na+ meq/lit	0.92-3	1.43 (0.462)	0.73 1.19	0.95 (0.124)	0.72-2.31	1.50 (0.461)	0.68-1.01	0.85 (0.145)	0.68-3	1.25 (0.442)
$CaCO_3$	4.24	12.99 (6.047)	2.4-9.6	4.29 (2.165)	1-18	7.25 (5.169)	4.80-6.24	5.57 (0.644)	1-24	8.52 (5.852)
Mn	0-6.21	2.31 (1.619)	0-4.85	2.86 (1.539)	0-6.96	2.84 (2.337)	0.00-2.57	1.26 (1.200)	0-6.96	2.47 (1.749)
Zn	0U29-71.11	23.03 (25.316)	26.12-72.13	42.73 (12.992)	1 . 1 - 37.16	7.90 (10.659)	25.73-51.12	38.10 (10.482	0.29-72.13	26.57 (21.715)
Cu	0-8.95	4.09 (3.523)	6.03-9.75	7.64 (1.224)	0-7.81	1.72 (2.405)	5.16-7.19	6.08 (0.785)	9-9.75	4.69 (3.289)

Farm Development

Pre-development stage of the farm

Identification of hard pans

Fist ploughing

Blasting of hard pans

Intense levelling

Fine levelling

Application of Spent Wash to The Farm Soil

Raw Spent wash from Sugarcane factory is rich in micronutrients. Spent Wash from Malegaon Sugar Factory was applied in the farm on beds with effluent pipe. Care is taken being highly alkaline in nature. Chemical analysis of spent wash is in progress. It has weathered the zeolites to a good extent on drying. Further ploughing was very effective in loosening sub-soil to a depth of 20-30 cm. On this, black soil collected from check dams is being laid. The changes in physico-chemical properties of soil and engineering properties are planned. For the present this exercise is limited to south watershed.

Analysis of the Spent wash has been got done by the Institute from Vasundhara Sugar Institute, Pune on 11th February, 2011 and contents of the Spents wash are given in Table 3.

Table 3: Analysis of spent wash

Sl. No.	Parameter	Spent Wash Value		
		Raw	Reactor 1	Reactor 2
1.	pH	3.9	8.2	8.2
2.	EC (m-S)	31	30	30
3.	COD (mg/lit)	1,12,000	51,000	50,000
4.	BOD (mg/lit)	50.400	22.950	22.500
5.	Total Dissolved Solids (mg/lit)	1,12,200	51,880	51,230
6.	Total Suspended Solids (mg/lit)	4,566	4,620	4,588
7.	Total Solids (mg/lit)	1,16,766	56,500	55,818
8.	Sulphate (mg/lit.)	21,368	1,964	2,066
9.	Brix°	14	7.4	7.4

*(**Source :** Malegaon SSK Ltd., Shivnagar, BARAMATI- 413 113; Analysed by: Deptt. Of Environmental Sciences, Vasantdada Sugar Institute, Manjari (Bk)- 412 307, Haveli, Pune dated 2nd February, 2011)*

Application of spent wash to the soil in bunded lanes

Drying of spent wash

Effect of spent wash on rocky boulders

Subsoiling

Soil after second spent wash application

Field transformation with spent wash application

Application of black soil after ploughing, spent wash application and ploughing

Water harvesting on laying peripheral roads

The Master plan for the buildings and farm plan are fully complementary. An intensive planting will be undertaken once the roads are marked on the ground from the plan by CPWD, Pune.

The Secretary (DARE) and Director General (ICAR), New Delhi vide his letter F No. DO NO. Secretary (Dare) (DG ICAR)/ 2010/ 1083-84, dated 26/08/2010 requested the ICRISAT for providing machinery for the farm development. The council sponsored Dr SV Ghadge, Sr. Scientist (FMP), for training on Farm Management at ICRISAT, Patancheru.

Provision of Water Supply

The Institute requires about one million litres per day (MLD) of water for irrigation and drinking purpose. The Secretary, ICAR vide D.O. No. 22-16/10- IA-II dated 19th May, 2011 to the Secretary, water resources division, GoM requested for grant of permission to use 1MLD water from Niraleft canal at 61-70 km which is 0.5-1.0 km away from the institute. This is under consideration. A plan for lifting, balancing reservoir and treating the water is under preparation by the Maharashtra Jeevan Pradhikarn (MJP) at on estimated budget of Rs.1000 lakhs. Presently, the MJP is laying pipes and making overhead storage of 0.1 MLD of untreated water from Malegaon (Bk) balancing tank located 3.4 km away from the institute at a cost of Rs. 47 lakhs, which is expected to be commissioned before the end of 2011.

Aquaculture Pond

An experimental pond of 10' x 12' x 8' was excavated to analyse the water retention capacity in the pond constructed at the NIASM site. Total

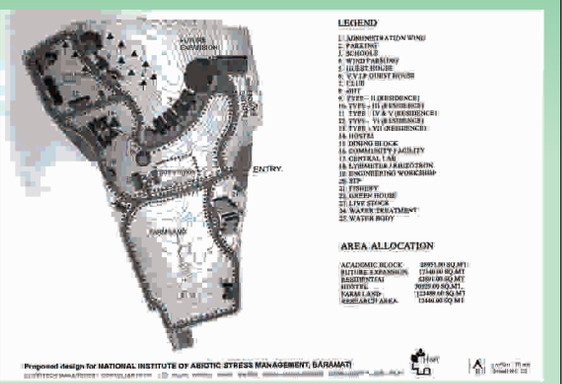
loss of water through seepage was observed within 24 hours indicating requirement of application of a sealant to enhance water retention. The Zebra fish circulatory hatchery is also ordered for comparative genomic studies for abiotic stress management.

Status of Works

The details of various works in progress under Pune CPWD are given in Table 4.

Table 4. Status of Various Works

Sl. No.	Name of the Work	Present status	
1.	Construction of Boundary Wall Rs. lakhs 248.60	A 1/3portion of various works of Compound Wall construction is completed. The work on gate was held back in view of road widening as desired by Town Planner, Baramati. Land acquisition for widening road by ZP Baramati is in progress	
2.	Engineering Workshop Shed Rs. lakhs 59.86	The CPWD has constructed the Pre-Engineering Workshop. Presently the NIASM office is functioning from here with modular office, lab, committee room, etc.	
3.	Internal Roads Rs. lakhs 100.00	Work of Peripheral roads is completed. This year it helped in retaining runoff within campus.	
4.	Drilling of bore well Rs. lakhs 50.00	Two attempts were not successful up to a depth of 350	

Sl. No.	Name of the Work	Present status	
5.	Architect Consultancy, Soil investigation, site survey charges. To be adjusted as %age in total cost	On CPWD demand of 01% of total estimated project cost of Rs. 166 lakhs. Soil survey of foundation is completed and reported. The master plan is approved and freezed.	
			
6.	Residential Quarters Rs. lakhs 238.23	Work on quarters (Type VII- 1 no. and Type IV- 6 no.) is started. Excavation for foundation laying is complete. Footing is underway	
7.	Office cum Administrative Building Rs. lakhs 2093	Tendering is done.	
8.	Guest House Rs. lakhs 398.00	Work is awarded.	

Scientific Activities

ACHIEVEMENTS, SURVEYS, PROPOSALS

With the entry of young scientists from disciplines of Plant Breeding, Microbiology, Fisheries, Agricultural Entomology, Agricultural Economics and Agricultural Engineering And bludgeoning of series of meetings, research efforts are initiated. Important research achievements andproposed activities at the institute follow.

Research Achievements

Vulnerability of Districts to Rainfall in Maharashtra

Sensitivity analysis of various districts in Maharashtra to rainfall variability is most urgent need to understand to formulate the adaptation policy at district and farm level. The actual rainfall data of 29 districts for the period 1989 to 2010 were compiled from the statistics released by Directorate of Economics and Statistics, Govt. of Maharashtra. The others districts could not be included for want of longterm data. The simple statistical tools like Trend Analysis, Standard Deviation, Coefficient of Variation (%), Matrix Analysis were used to analyze the extent of rainfall variation across the districts in Maharashtra.

The Trend Analysis of rainfall shows that Ratnagiri, Sindhudurg, Dhule, Pune, Satara, Beed, Nanded, Yeotmal, Bhandara, Gadchiroli and Akola districts observed negative trend in rainfall in last 22 years. The districts like Thane, Raigad, Nasik, Jalgaon, Ahmednagar, Solapur, Sangli, Kolhapur, Aurangabad, Parbhani, Osmanabad, Latur, Buldhana, Amaravati, Wardha, Nagpur, Chandrapur and Jalna showed positive trend in rainfall during the study period. The trend analysis indicates that the even in high rainfall and drought districts, some districts showed positive trend and some districts showed negative rainfall trend. This proved that the rainfall distribution, intensity, periodicity is changing in districts of Maharashtra, indicating variability in rainfall at district level.

Year to year variation in rainfall for the study period were analysed by Coefficient of Variation (CV) method and is represented in Table 1 & Fig. 1. It was observed that inter-year variation in rainfall in study period was highest in Marathwada region and western Maharashtra region districts and lowest in Konkan region and Vidarbha region districts. Beed followed by Solapur, Sangli, Osmanabad, Pune, Ahmednagar, Satara, Nanded, Latur, Sindhudurg districts observed high variation in rainfall. Jalgaon, Gadchiroli, Chandrapur, Bhandara, Aurangabad, Dhule, Amravati, Yeotmal and Buldhana districts comes under hierarchy of medium rainfall variation districts. Ratnagiri district recorded lowest variation in rainfall followed by Raigad, Thane, Nasik, Wardha, Nagpur, Jalna, Parbhani, Akola, Kolhapur districts, etc.

A matrix analysis showed that Beed, Osmanabad, Sangli, Solapur and Ahmednagar districts are vulnerable to both risk i.e. low rainfall and high variation in rainfall (Table 1). These districts receive low rainfall along with high intra-year variation. The adaptation strategy for these districts should be water harvesting, soil moisture conservation, growing of water stress resistance crops/varieties, etc. High variations with low rainfall suggest adapting the agricultural practices based on rainfall forecast in next season. The districts like Buldhana, Jalgaon, Dhule and Aurangabad are highly vulnerable to low rainfall and medium vulnerable to rainfall variation. Jalna district reported highly vulnerable to less rainfall but the year to year variation was very less suggest that this district receives over the year well distributed rainfall (Fig. 2). The districts like Sindhudurg and Satara are vulnerable to both risks like high rainfall and high variation may be susceptible to flood. The districts like Gadchiroli, Bhandara, Chandrapur, Ratnagiri, Raigad, Thane, Kolhapur, Nasik receives high rainfall along with medium or low variation represents less vulnerability to rainfall.

Table 1. Rainfall and its Variation in districts of Maharashtra

		Rainfall Low (<750 mm)	Medium (750 mm to 1000 mm)	High (>1000 mm)
Rainfall Variation	Low (<22)	Jalna	Nagpur, Wardha, Parbhani, Akola Yeotmal, Amravati	Ratnagiri, Raigad, Thane, Kolhapur, Nasik Gadchiroli, Bhandara, Chandrapur
	Medium (22-25)	Buldhana, Jalgaon, Dhule Aurangabad, Bee, Osmanabad, Sangli, Solapur, Ahmednagar	Pune, Nanded, Latur	Sindhudurg, Satara
	High (>25)			

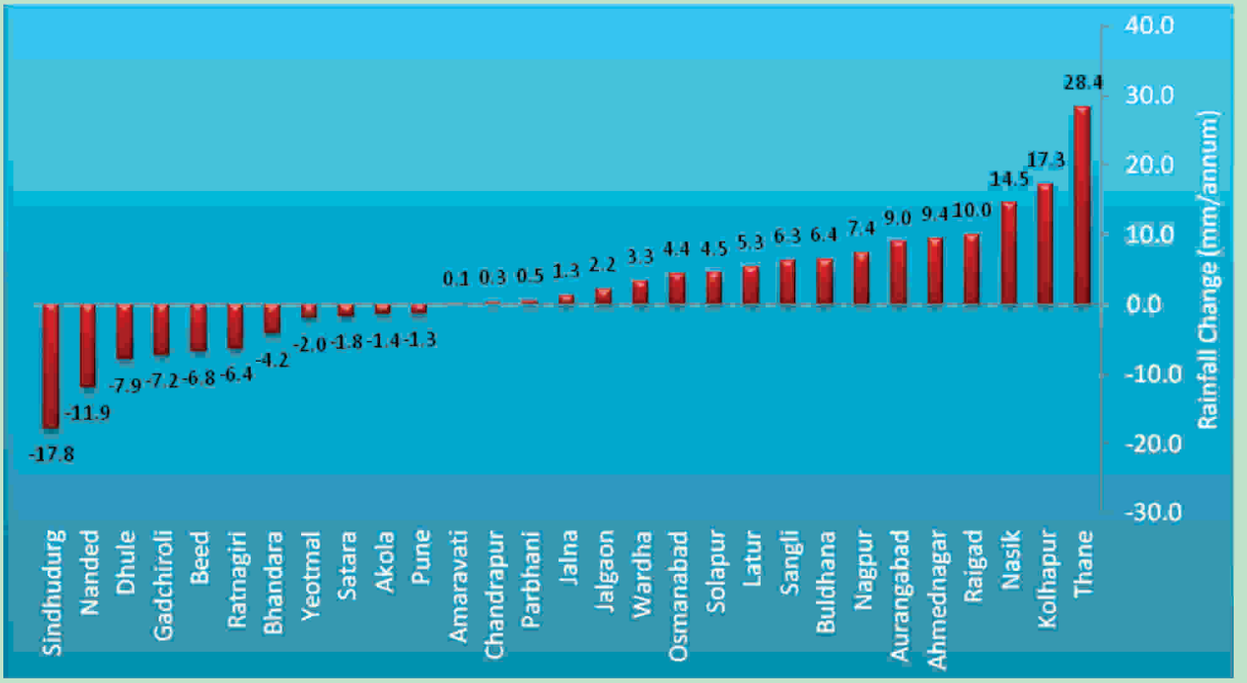


Fig. 1. Trends of Rainfall in Maharashtra (1989-2010)

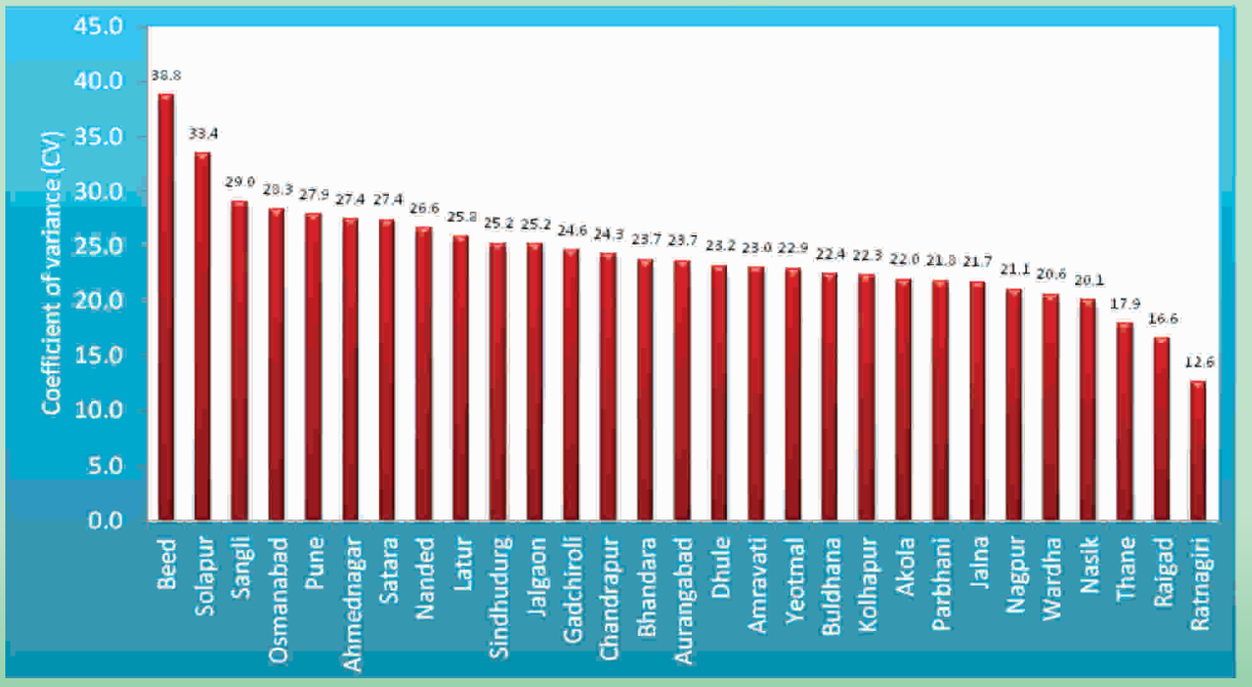


Fig. 2. Coefficient of Variation (%) in Rainfall in Maharashtra (1989-2010)

It is concluded that the rainfall is increasing in most of the districts but its annual distribution is irregular and erratic. The Marathwada and Khandesh districts are more vulnerable to receiving less rainfall and high variation in rainfall. Further research work will be undertaken to find out the relationship of rainfall with crops, livestock, fishery, birds, etc.

Perceptions of farmers about Abiotic Stresses

A survey on the perceptions of farmers about climate change and abiotic stresses were conducted. Around 80 per cent farmers from irrigated tract was of opinion that fluctuation in prices, increasing temperature, deterioration of soil, improper government policies are the main reasons for declining income of the farmers. The area being assured with irrigation by canal, these farmers are less affected by distribution of rainfall. More than 90 per cent farmers of rainfed area were of the opinion that uneven distribution of rainfall during the monsoon season, delay in the onset of the winter season, temperature above the normal as well as price fluctuations are the reasons causing declined agricultural productivity. The farming in this area is mainly dependent on rainfall and farmers were very keen to learn more about the abiotic stresses so as to reduce the losses in agriculture. The feedback received from farmers' are-

- Need to develop the innovative information system on abiotic stresses in agriculture
- Need to develop well market intelligence system in the country
- Develop the proper price mechanism to stabilize the prices in the country
- Look towards agriculture as a agribusiness
- Establishment of soil testing laboratory in Karjat, Ahmednagardistrict
- Develop and make available abiotic stress resistance varieties to farmers
- Encourage processing industries to make commodities throughout the year available to minimizes the impact of climate.

Database Management

The work on development of database on different variables on abiotic stresses is started. The variables are - gridded daily rainfall data 1951-2007, district-wise normal's, gridded daily temperature data 1969-2005, district-wise normal's data, price and arrivals of all markets of country of onion, potato, garlic, sugarcane, etc. data of all crops from APMC Baramati, agriculture area of all states, production and productivity of major food grain crops, state-wise GDP, NDP, state-wise total value of agriculture, livestock, forestry, fisheries commodities, state-wise value of road density, fertilizer, irrigated area, HYV area, etc.and some more variables on Maharashtra state.

Geological, Mineralogical and Geotechnical Studies

Field studies were conducted using bore logs, sample pits and soil profiles at different morphological features and elevations at NIASM Site to understand the nature and alteration effects in different flows/rocks, nature of hydrothermal/secondary mineral crystallization, type of soils/paleosols formed and nature and extent of degradation for evaluating the possible role of edaphic stresses on agriculture in view of climate change effecting various soil process.

Highly vesicular top layer with fairly compact middle layer

Zeolitic horizon mixed with soil layer : a constant source of nutrient to the soil

The indications are that three episodes of volcanic activity at the site occurred by vesicular (amygdular) and Non-vesicular (ordinary) flows during Upper Cretaceous to Lower Eocene period. From the study it has been established that alternate Vesicular–Non vesicular flows are separated by thin beds of inter-trappeans which were converted and are preserved as paleosols (Fig. 3 & 4). These paleosols are indicator of climate change in the region.

Vesicular (Amygdular) and non-vesicular (normal) flows are separated with thin beds of scoriae or inter-trappean beds, upper portion (vesicular flows) of the trap is showing weathering effects

Profile developed on shoulder slope, 23 cm deep, A horizon 8-10 cm underlain by C horizon of 12 cm (10-22cm) and followed by R horizon with gravelly sandy loam

The study revealed that the soils are underlain by altered horizons mostly without the intercalation/ development of soils and followed by hard rocks. The rhizosphere depth is restricted to a maximum of 50 cm. The topography of the site and the nature of parent rock just below the A horizon is not permitting to hold the water at the shoulder slopes and back slopes and therefore the area will experience a combination of edaphic stresses. The dry spells combined with shallow and gravelly rhizosphere make the plant experience moisture stress almost immediately without allowing the plant resort to adaptation or mitigation measures. Even the secondary minerals zeolites in the vesicular trap are highly prone to alteration and are rich source of calcium to the soils and plants. The high calcium combined with high pH may lead to restriction on availability of secondary and micronutrients. Apart with impending increasein atmospheric temperatures due to climatic change, the rich calcium zeolites will weatherfaster and may accumulate on surface after sodium leaching. This may lead to increasedrunoff due to soil sealing/ capping, thereby inhibits the plant phenological expression leading to desertification process. In the extreme eventuality of above process of separation of Ca and Na ions due to alteration of intensive leaching by reduced rainy days under retained average rainfall and high temperature due to climate change there may be a possibility of calcic and nitric horizons underlain within a profile leading to extreme degradation (Fig. 5). In view of all it is desired that the present state of weathering may be retained by thick soil application on the surface. This may reverse the soil profile from non-supportive rhizosphere to the enriched one. Eventually the vegetation will be a dominant factor reducing the ill effects of other parameters of degradation.

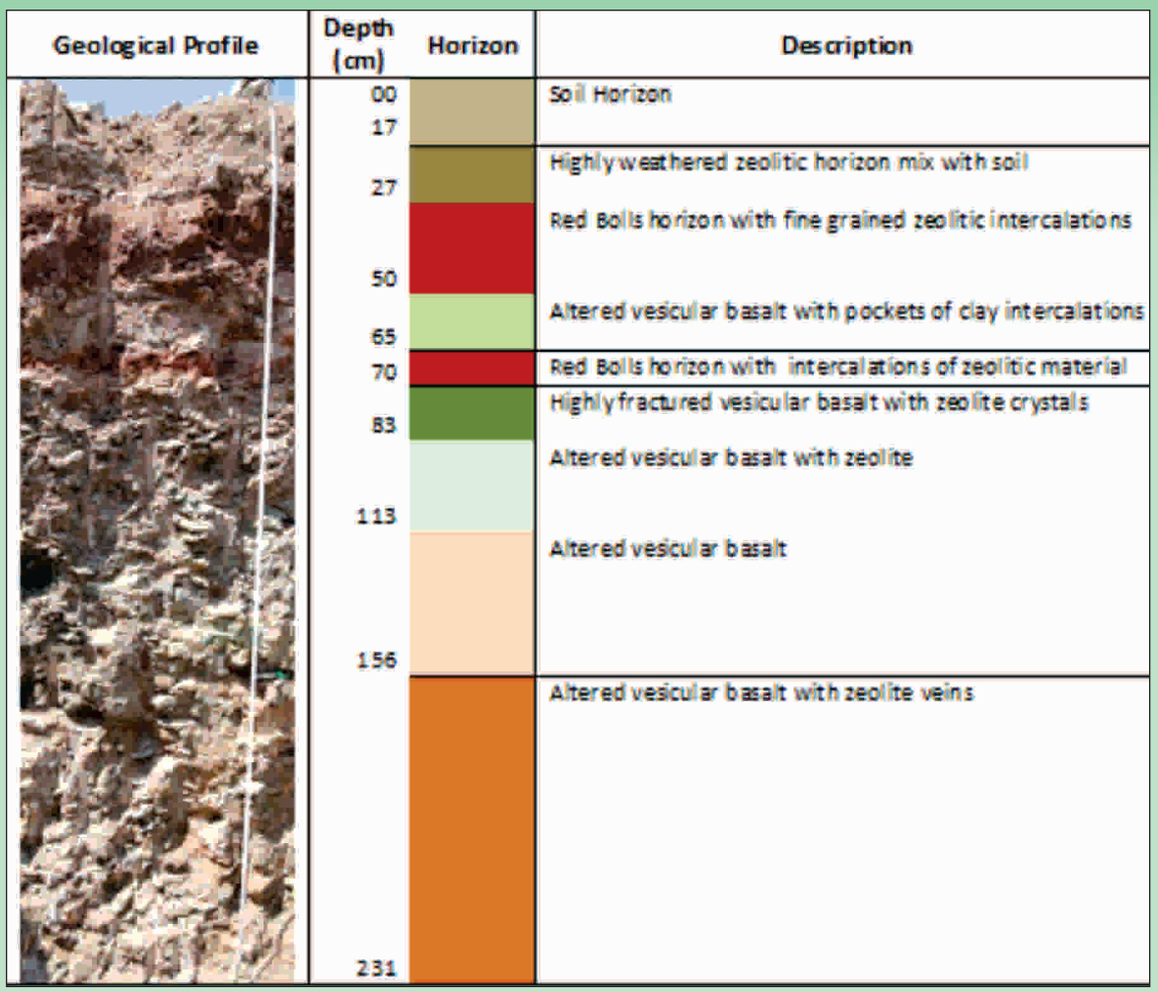


Fig. 3. Geo-flow in the farm area of NIASM (Vesicular basalt)

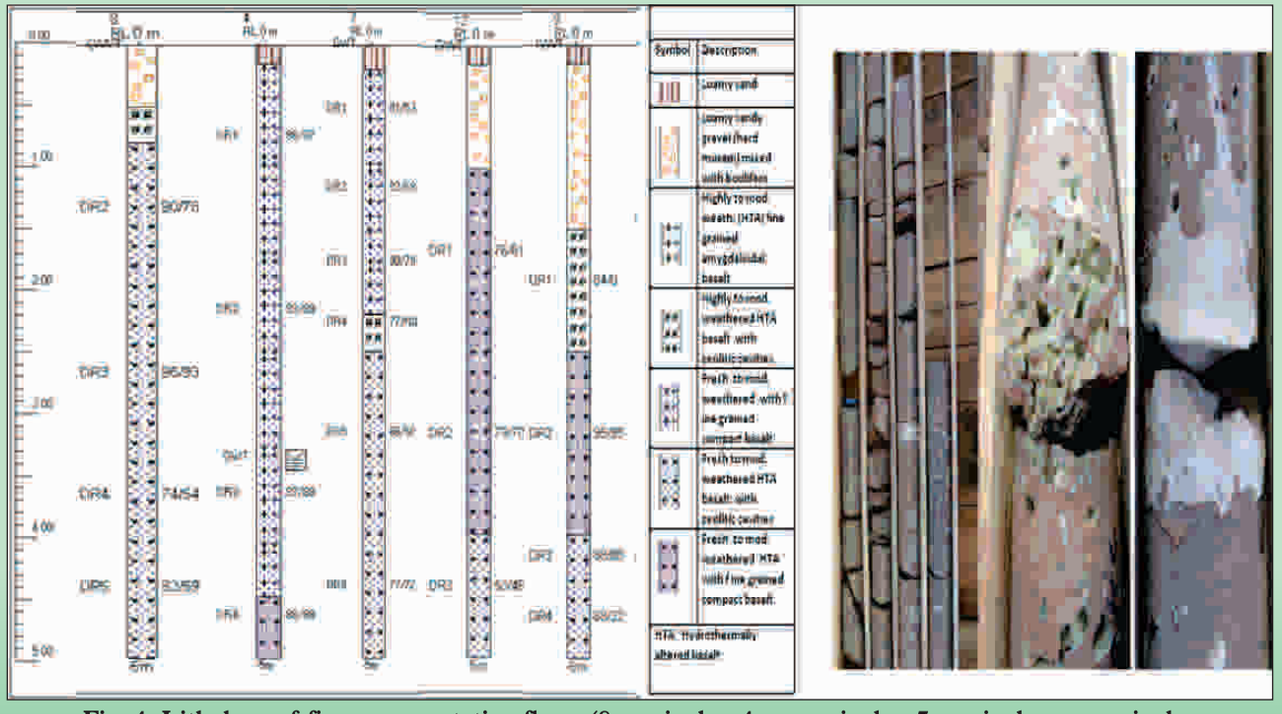


Fig. 4. Lithologs of five representative flows (8- vesicular, 4-nonvesicular, 7- vesicular-nonvesicular, 12- nonvesicular-vesicular, 9-vesicular-nonvesicular-vesicular) with vesicular-nonvesicular core sample No.7

Photographs	Description	Abiotic Stresses
	Weathered zeolitic horizon below soil layer with alternate horizons of red soils.	The rich calcium zeolites and calcite will weather faster and may accumulate on surface after sodium leaching with impending increase in atmospheric temperatures due to climatic change . This may lead to increased runoff due to soil sealing/ capping, thereby inhibits the plant phonological expression leading to desertification process.
	Zeolitic horizon mixed with soil layer, a constant source of nutrient to the soil	In the extreme eventuality of separation of Ca and Na ions due to alteration of intensive leaching by reduced no. of rainy days under retained average rainfall and high temperature due to climate change there may be a possibility of calcic and natric horizons underlain within a profile leading to extreme degradation.
	Rhombohedral calcite crystals below the soil horizon occur as localized vein	
	Formation of skeletal box work structure during the weathering showing soft portion has been removed and harder portion forming the skeletal like structure, the profile is intercalated with soil matrix	The average rainfall being 560 mm, and restricted to SW monsoon, the atmospheric drought will be a common experience. These dry spells combined with shallow and gravelly rhizosphere make the plant experience moisture stress almost immediately without allowing the plant resort to adaptation or mitigation measures.
	Profile developed on shoulder slope, 23 cm deep. A horizon 8-10 cm underlain by C horizon of 12 cm (10-22cm) and followed by R horizon with gravelly sandy loam in texture (Profile 3)	Presence of hard rocks on the surface with/without alteration in the north part of the site the rhizosphere depth is restricted to a maximum of 50 cm. Even this depth being gravelly, with A underlain by AC horizon at shallow depth the moisture retention of the soil, porosity, permeability and hydraulic conductivity are very much restricted and therefore the area will experience a combination of edaphic stresses.

Fig. 5. Edaphic factors leading to abiotic stresses

Geohydrological Surveys of National Institute of Abiotic Stress Management, Malegaon, Baramati, Pune

Aquifer Performance Test for determining aquifer characteristics and to ascertain the suitable sites for feasibility from the recharge point of view and construction of piezometers or piezometer nest was carried out under the project Geohydrological Survey of the site. 15 water samples were collected from Dug Well (12), Bore Well (2) as well as from canal (1) around the campus site and these are marked on the Google Map (Fig. 6). Results of the primary analysis of water samples were carried out for their pH and EC. pH is slightly to moderately alkaline and varies from 7.6 to 8.6 whereas EC show a very wide range due to presence of zeolite and fedspar in the area (Table 2). Further test is in progress.

Fig 6. Ground Water Sample Location on Google Map around NIAM Site

Table 2 : Groundwater Analyses of NIAM Site

Well_Id	Type	Latitude	Longitude	T°C	pH	EC
NW 1	DW	18.1609707N	74.5070431E	27.0	7.6	2400
NW 2	DW	18.1611873N	74.5064181E	27.5	7.6	2340
NW 3	BW	18.1617047N	74.5663296E	27.5	7.9	2110
NW 4	DW	18.1553943N	74.5052755E	28.5	7.8	1930
NW 5	DW	18.1546042N	74.5049697E	29.0	7.8	1570
NW 6	DW	18.1508117N	74.5053077E	29.0	7.8	1410
NW 7	DW	18.1517547N	74.504562E	29.0	8.0	1410
NW 8	DW	18.1597142N	74.4944715E	28.0	8.3	1030
NW 9	DW	18.160675N	74.4937232E	27.5	7.9	470
NW 10	BW	18.158032N	74.4932753E	27.0	8.6	1390
NW 11	DW	18.1568572N	74.4936588E	27.0	8.2	1270
NW 12	DW	18.1504319N	74.4980523E	28.0	8.3	880
NW 13	DW	18.151431N	74.4972262E	28.0	8.1	1000
NW 14	DW	18.1522747N	74.496797E	28.0	8.1	840
NW 15	Canal	-	-	28.0	8.2	150

Insect Population Dynamics

Possible impact of diurnal weather variations especially temperature on the abundance of the insect pests was assessedat the institute site. For this two light traps with 100 watt bulbs were installed at the campus and daily catches were recorded. For the collection of insects attracted towards the light trap, plastic tub filled with kerosene water were kept below it.

Insect surveillance through light traps

The weekly and monthly averages were taken. The observations on populations of moths and beetles recorded during November, 2010 to March, 2011 are depicted in Fig. 7.

It was observed that the population of moths disappeared suddenly with temperature fall during the December end and January. On the other hand there was constant decline in beetle population with fall in temperature.

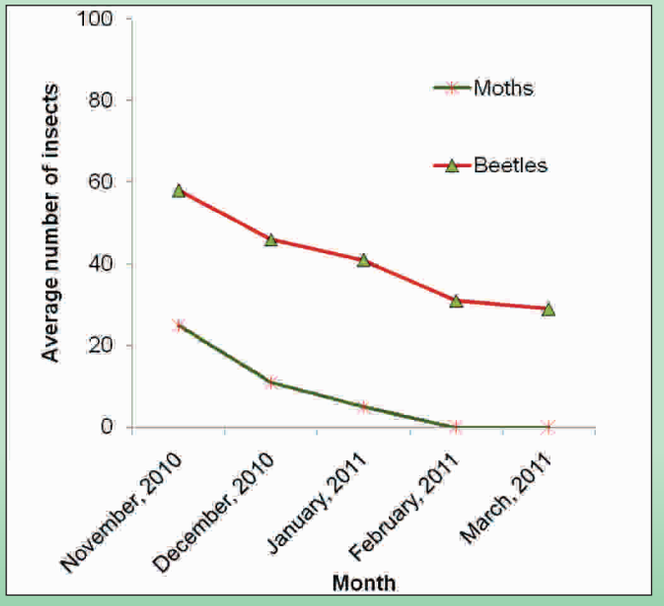


Fig. 7. Insect population dynamics

A Phyto-heritage of Baramati Region

NIASM has the mandate of identifying genetic code in crops, animals and fishes for improvement against abiotic stresses for adaptation or mitigation. Collection, identification and conservation of stress tolerant genotypes from different Agroclimatic regions of the country has become more valuable than ever before because of impending climate change, globalization and frequently occurring natural disasters. In the new trade regime, Intellectual Property Rights (IPR) has gained importance as a result of which access for collecting new germplasms is increasingly restricted. Creating germplasms base will help in biodiversity conservation of rare, endangered, threatened and potentially climate adapted species, identification of stress tolerant phenotypes and genotype selection using new molecular tools (Marker Assisted Selection) and bio-informatics.

Dr Suresh Kumar, Head, Division of Integrated Land Use Management and Farming Systems, Central Arid Zone Research Institute (CAZRI), Jodhpur, conducted a survey of the NIASM campus and surroundings in close proximity on request. Various summer species on the degraded land identified are- *Acacia nilotica, Achyranthues aspera, Aerva lanta, Alternanthera sessilis, Argemone mexicana, Aristida funiculate, Aristida royleana, Balanites aegyptiaca, Blumea malcolmii, Boerhavia diffusa, Boerhavia elegans, Calotropis procera, Capparis divaricata, Cassia auriculata, Cenchrus pennisetiformis, Chrysopogon fulvus, Commelina benghalensis, Croton bonplandianum, Cucumis prophetarum, Cyperus rotundus, Dicanthium annulatum, Dicoma tomentosa, Echinops echinatus, Euphorbia hirta, Euphorbia rosea, Evolvulus alsinoides, Fagonia schweinfurthii, Gomphrena serrata, Heydyotis affinis, Hyptis suaveolens, Indigofera cordifolia, Ipomoea carnea, Lepidagathis cristata, Leucas longifera, Lophopogon tridentatus, Melanocenchris jacquemontii, Ocimum spp., Oropeitium thomaeum, Partheninum hysterophorus, Physalis minima, Polygala erioptera, Rungia repens, Setaria pumila, Setatria verticillata, Solanum anguivi, Tephrosia pupurea, Tribulus terrestris, Tridex procumbens, Verbascum chinense, Vernonia cinerea, Vigna trilobata, Xanthium strumarium,* and *Ziziphus nummularia.* The party expected to record more than 100 species in course of time.

In this connection, further discussions were held with Dr(Ms) RB Bhagat (Agharkar Research institute, Pune) and Dr RB Deshmukh (Sharadabai Pawar Mahila Mahavidyalaya, Sharadanagar, Baramati), who co-authored a book on Flora of Baramati (449 pg). Baramati represents 70% of state diversity with 936 species 14 subspecies and 41 varieties belonging to 136 families with total 17 endemic species. Biodiversity is very rich in Baramati with good number of plant taxa showing very diagnostic characters due to variation in water availability. The floristic patterns correlate with Eastern Karnataka, Rajasthan and Gujarat states and also the drier parts of Maharashtra State. Some unique species found in the local flora are- grass *Sporobolus, spicatus, Corbichonia decumbens, Dipcadi saxorum* (critically endangered species), *Juncus maritimus* (salinity dominant species) and *Eriocaulon baramaticum* (species new to science). There are genera of 113 families. Out of the 573 species, 326 are cultivated and remaining is wild. Recently two flowering plants have been added to the flora of Maharashtra from Baramati tehsil by them during 2007. Floristic account made by them in 2008 represents total 936 taxa belonging to 138 families. Floristic spectrum of region showed 10% trees, 16% climbers, 45% herbs and 29% Shrubs. Out of that 25% are monocots and 75% flora belongs to dicotyledons. The floristic diversity of region represents 66% wild and 44% is cultivated. Most importantly it exhibits highest biodiversity in grasses i.e. family Poaceae with 100 taxa. A narration of various flora according to seasons is as follows;

Flora of Semi-arid Areas

a. Rainy season

Vegetation of monsoon season shows maximum luxuriant growth of herbaceous flora. The peak period of flowing and fruiting of these herbs is in month of August to October. Ephemeral plants and grasses constitute a very important part of the flora. Some of the common ephemerals observed during season includes *Acalypha indica, Alysicarpus vaginalis, A. pubescenc, A. tetragonobus, A. luteo-vexillatus, Amaranthus spinosus, A. viridis, Anagalis arvensis Bidens pilosa, Blumea molis, B. lacera, Boerhaavia diffusa, B. erecta, Conscora diffusa, Cassia, uniflora, C. tora, Celosia argented , Cleme felina C. viscosa, C. simplicifolia, C. gynandra, Commelina benghalensis, Corchorus olitorius Crotolaria filipes Croton bonplandianum, Cullen corylifolina, Cyanotis fasciculate Cyperus spp. Datura metel, D. Inoxia, D. quersifolia, Digera, Muricata, Euphorbio hirta, E. geniculata, Evolvulus alsinoides, Hedyotis aspera, Hoppea dichotoma, Indigofera cordifolia, Iphigenia indica, Ipomoea pestigridis, Lactuca runcinata , Leucas aspera, L. longifolia monsonia senegalensis, Oxalis corniculata, Parthenium hysterophous, Phyllanthus amarus, P. madraspatensis, Polycarpaea corymbosa, Polygala arvensis, P.erioptera, Portulaca oleracea, P. quadrifida, Tephrosia Subtriflora, Tpurpurea, Thalspi arvense, Tonninga axillaries, Trianthema portulacastrum, Tribulus terrestris, Tridax procumberns, Withania somnifera* and *Zornia gibbosa.*

Grasses are abundant in waste places and constitutes a conspicuous aspect of rainy season vegetation. Common grasses during rainy season are *Acrchne racemosa, Andropogon pumilus, Aristida adscensionis, Brachiaria. Erusciformis, B. ramose, Chrysopogon fulvus, Cyperus rotundus, Dichanthium caricosum, D. pertusum, Dactyloctenium aegypticum, Dicanthium annulatum, Digitaria ciliaris, Dinebra retroflexa, Echinochloa colona, Eragrostella bifaria, Eragrostis unioloides, Fimbrystylis spp. Lophopogon tridentatus, Melanocenchris jacquemontii, Mnesithea granularis, Sehima nervosum, Setaria tomentosa, Oplismenus burmanii,* and *Oropetium thomaeum.*

b. Winter Season

Acanthospermum hispidum, Ageratum conyzoides, Argemone mexicana, Aristolochia bracteolate, Blumea mollis, Boerhaavia diffusa, Brachiaria eruciformis, Cassia sophera, Cathranthus pussilus, Chenopodium album, Chloris barbata, Convolvulus arvensis, Cyperus rotundus, Desmodium laxiflorum, Dichanthium annulatum, Digitaria abludens, Diplocyclos palmatus, Exacum pumilum, Hoppea dichotoma, Hyptis suaveolens, Imperata cylindrical, Indigofera ennaphylla, I. trita, Limnophila indica, Malva parviflora, Polygala arvensis, Setaria tomentosa, Sonchus oleraceus, Thalspi arvense, Trichodesma indicum, Vernonia cinerea and *Xanthium strumarium.*

c. Summer Season

A survey carried out by Dr Suresh Kumar on campus site is given above.

Flora on Arid Sandy Soils

In arid sandy conditions, the vegetation is very sparse and exhibit striking uniformity. Only those plants which are drought resistant constitute permanent structural floristic elements of the vegetation. They exhibit xenomorphic characters as adapted to arid-zone. Some are- *Aerva lanata, Aristida adscensionis, Boerhaavia diffusa, Calotropis gigantean, C. procera, Chrozophora prostrate, Cocculus hirsutum, Corbichonia decumbens, Croton bonplandianum, Cucumis prophet arum, Euphorbia hirta, E. hypericifolia, Favonian cretica, Lantana camera, Maytenus senegalensis, Parkinsonia aculeate, Pentatropis spirallis, Prosopis juliflora, Salvadora persica, Tribulus terrestris, Tricholepis amplexicaulis* and *Ziziphus mauritiana.*

Flora of Saline Areas

The vegetation of water-logged and salt affected soil in the region support growth of *Chenopodium album, Cyperus digitatus, C.rotundus, Echinochloa colona, hydrilla verticillata, Ipomoea carnea, Juncus maritisimus, Persicaria glabra, Portulaca oleracea, P. quadrifida, Sporobolus diander, S. spicatus, Solanum surattense* and *Typha angustifolia.*

Flora in (aquatic and marshy) Wetlands

As rainfall in the region is very less, water supply is done by left bank canal of River-Nira and wells. Canal System keeps the irrigation courses damp almost continuously throughout the year and creates numerous ponds and puddles in low-lying areas. There are no natural lakes in the region; similarly there are few streams which are active only in rainy season. Good aquatic vegetation is observed on the banks of these streams. In areas like Wagalwadi, Shirsuphal, Hol and Lakadi are fairly rich in Aquatic Angiosperm Diversity. Some of the common species are- *Baopa monerii, Blumea lacera, Canscora diffusa, Ceratophyllum demursum, Cyperus rotundus, Echinochloa colona, Eragrostis tenella, Exacum pumilum, Flaveria trinervia, Hoppea dichotoma, Hydrilla verticillata, Hygrophila schullii, Limnophila indica, Lindernia oppositifolia, Paspalum scorbiculatum, Sporobolus spicatus, Typha angustifolia* and *Vernonia cinerea.*

Hydrophytes

Free floating - *Eichhornia carssipes, Lemna perpusilla, Spirodela polyrhiza.*

Suspended - *Ceratophyllum demersum.*

Submerged anchored - *Hydrilla verticillata, Potamogeton crispus and Vallisnaria spiralis.*

Floating leaved anchored - *Hygrorhiza aristata and Potamogeton nodosus, these plants are rooted hydrophytes with floating or emerged leaves.*

Marshy (Amphibious) - *Asclepias curasavica, Cyperus rotundas, Echinochloa colona, Paspalum scorbiculatum, Persicaria glabra* and *Typha anagustifolia.*

Flora of Grasslands

Majority part of the tehsil is occupied by grasslands are found around Waghalwadi, Someshwar, Hol, Pandare, Kanheri, Supa, Murti, Chopdas Waki, Undawadi, Katphal, Songaon and Sangavi. These grasslands areas are essential for maintaining live-stock and control soil erosion. Common grass species like *Acrachne racemosa, Apluda mutica, Aristida adscensionis, A. redacta, Arundineeella pumila, Brachiaria eruciformis, B.ramosa, Cenchrus pennisetiformis, Chloris barbata, C. virgata, Chrysopogon fulvus, C. polyphyllus, Dactyloctenium aegypticum, Dichanthium annulatum, D. caricosum, D. pertusum, Digitaria ciliaris, D. royleana, Dinebra retroflexa, Echinochloa colona, Eleusine indica, Eragrostis spp., Eragrostiella bifaria, Imperata cylindrical, Ischaemum pilosum, Lophopogon tridentatus, Melanocenchris jacquemontii, Mnesithea granularis, Oropetium thomaeum, Paspalidium flavidu, P. vaginatum, Paspalum scorbiculatum, Pseudanthistiria heteroclite, Rhynchelytrum repens, Rottboellia cochinchinesis, Saccharum spontaneum, Sehima nervosam, Setaria spp., Themeda triandra, Tragus roxburghii, Zoysia spp.*

Weed Flora

Some of indigenous and exotic weeds of the region are : *Abutilon bidentatum, A. indicum, A. pannosum, Acanthospermum hispidum, Achyranthes aspara, Aerva lanata, Ageratum conyzoides, Alternanthera sessilis, Alysicarpus spp., Amaranthus spinosus, Argemone mexicana, Asclepias curasavica,*

Bidens biternata, Blumea lacera, Celosia argentea, Chrozophora prostrate, Cleome gynandra, C. viscosa, Commelina benghalensis, Corchorus olitorius, Cryptolepis buchananii, Cyanotis cristata, Cynodon dactylon, Cyperus rotundas, Desmodium laxiflorium, Digera muricata, Dinebra retroflexa, Echinochloa colona, Eclipta prostrate, Eleusine indica, Eragrostiella bifaria, Eragrostis unioloides, Euphorbia heyneana, E. hirta. Fimbristylis dichotoma, Hyptis suaveolens, Ischaemum indicum, Lagasca mollis, Lantana camara, Lindernia spp., Mukia maderaspatana, Oxalis corniculata, Parthenium hysterophorus, Paspalum scorbiculatum, Pennisetum pedicellatum, Phyllanthus maderaspatensis, P. urinaria, Portulaca oleracea, P. quadrifida, Sida acuta, Tonningea axillaries, Tragus roxburghii, Tridax procumbens etc.

Parasitic Plants

a. **Stem :** *Cuscuta reflexa*

b. **Root :** *Striga densiflora, S. gesnerioides, Santalum album and Orobanche cernua*

c. **Climbers**

Tendrilar : *Cardiospermum helicacabum, Cayratia trifolia, Cissus qadrangularis, Coccina indica, L. cylindrical, Mukia madraspatana, Passiflora edulis and Tetrastigma sulcatum*

Twiners : *Abrus precatorius, Ceropegia bulbosa var. bulbosa, C. bulbosa var. lushii, Clitoria ternatea, Cocculus hirsutus, Cryptostegia grandiflora, Ipomoea cairica, I.eriocarpa. I. nil, I. quamoclit, Peatropis nivalis, Pergularia daemia, Rhynchosia minima, Rivea hypocrateriformis and Tinospora cordifolia*

Economically Important Plants

Crops : *Eleusine coracana, Oryza sativa, Pennisetum americanum, Saccharum officinarum, Sorghum spp., Triticum aestivum* and *Zea mays*

Pulses : *Arachis hypogia, Cajanus cajan, Cicer arietinum, Glycine max, Lablab purpureus, Lathyrus sativus, Macrotyloma uniflorum, Phaseolus vulgaris, Pisium satium, Psophocarpus tetragonolobus, Vigna aconitifolia, V. dalzelliana, V. mungo, V. radiate* and *V. unguiculata.*

Vegetables : *Amaranthus cruentus, A. roxburghianus, Abelmoschus esculentus, Benincasa hisida, Beta vulgaris, Brassica oleracea var. lanatus, Coriandrum sativum, Coccinia grandis, Cucumis melo var. melo, C. sativus, Cucurbita maxima, C. moschata, C. pepo, Cyamopsis tetragonoloba, Daucus carrota, Ipomoea batatas, Luffa acutangula, Luffa cylindrical, Lycopersicum esculantum, Moringa pterigosperma, Momordica chantia, Pisium sativum, Raphanus sativus, Sesbania grandiflora, Spinacia oleracea, Solanum melongena, S. tuberosum, Trigonella foenum-graecum etc.*

Timbers : *Acacia nilotica, Albizia lebek, Bambusa arundinacea, Eucalyptus spp., Gmelina arborea, Mangifera indica, Samanea saman, Syzygium cumini, Tamarindus indica, Tectona grandis etc.*

Medicinal Plants

Abution indicum, Acalypha indica, Allium sativum, Ammania baccifera, Aristolochia bracteolata, Asparagus racemosus, Azadirachta indica, Bauhinia tomentosa, Boerhaavia diffusa, B.repens, Calotropis gigantia, Calotropis procera, Catharanthusroseus, Cissus quadrangularis, Cullen corylifolia, Datura metel, Euphorbia hirta, Fagonia schweinfurthii, Justicia adhatoda, Melia azedarach, Ocimum sanctum, Pergularia daemia, Sida acuta, S. cordifolia, Sida spinosa, Tephrosia purpurea, Tinospora cordifolia and Woolfordia fruticosa.

Cultivated Exotic Species

Allamanda cathartica, Alstonia macrophylla, Antigonon leptopus, Bougainvillea spectabilis, Caesalpinia pulcherrima, Canna flaccid, Copsicum spp., Carica papaya, C. grandis, Citrus aurantifolia, Dahlia pinnata, Delonix elata, Helianthus annuus, Jacaranda acutifolia, Jacquemontia coerulea, Kalanchoe pinnata, Kigelia africana, Parkinsonia aculeate, Peletophorum pterocarpum, Pithecellobium dullce, Plumeria alba, P. rubra, Polianthes tuberose, Psidium guajava, Psophocarpus teteragonolobus, Pyrostegia venusta, Ricinus communis, Rosa multiflora, Samanea saman, Tagetes erecta, T. patula, T. tenuifolia, Zinnia linearis etc.

Endemic Plants

Some 17 species endemic to India found in the region include - *Alysicarpus pubescens, A.tetrgonolobus, A. luteo-vexillatus, Arthraxon lanceolatus var. meeboldii, Cajanus lineatus, Clematis heynei, Cleome simplicifolia, Cleome feline, Clitoria ternatea var. pilosula, Crotolaria filipes var filipes, Dichrostachys cineaea var. indica, Exacum pumilum, Ischaemum pilosum, Lophopogon tridentatus,*

Pseudanthistiria heteroclite, Stylosanthes fruticosa, Tragus roxburghii.

M/S Gyantech, Hyderabad also provided the following additional information about flora in and around Baramati.

Grasses: *Achnatherum hymenoides, Achnatherum thurberianum, Aegilops cylindrical, Aegrostis stolonifera, Alopecurus pratensis, Aristida purpurea, A. chasmanthium latifolium, Bromus tectorum, Bromus hordeaceus, Big blue stem, Digiteria sanguinalis, Distichlis strica, Ductylis glomerata, Echinocloa muritica, Elymus cinerus, Elymus elymoides, Festuca spp., Hordeum leporinum, Hordeum vulgare, Kentucky blue grass, Lolium perenme, Phalaris arundinacea, Phragmites australis, Poa annua, Poa bulbosa, Polypogan monspeliensis, Poa trivates, Pennisetum setaceum, Secale cereal, Setaria viridis, Setaria verticillata, Switch grass, Taeniatherum capt-medusae, Tragus roxburghii.*

Legumes: *Wisteria, Indigofera, Leucaena, Cyamposis, Sesbania, Castanospermum australe, Amorpha fruticosa, Astrasgalus cervicarpus, Astragalus filipes, Astragalus mulfordiae, Dalea ornata, Dalea searlsiae, Glycyrrhiza lepidota, Lathyrus nevadensis, Lathyrus pauciflorus, Lathyrus gigidus, Lotus corniculatus, Lupinus arbustus, Lupinus caudatus, Medicago sativa, Melilitus alba, Trifollium repens, Trifollium pretense, Trifollium macrocephalum, Trifollium fragiferum, Thermopsis montana, Glinus oppositifolius, Ficus religiosa, Securinega, Gymnocladus dioicum.*

This indicates that the region is interestingly representing climatic, edaphic and biological diversity which reiterates magnitude uniqueness of the region. In short, it can well be seen with stratigraphic diversity in general.

Establishment of Eco-reserve Park

Further discussions with the NIASM scientists/IRC here brought out a necessity for restoration of natural vegetation in the form of Eco-reserve Park and Rare-Endangered-Threatened-and-Endemic species (RET&ES) Park on the campus for facilitating future research work. In line with this, the plant/ seed material was provided by Dr. Suresh Kumar, from CAZRI, Jodhpur and was brought by Dr KPR Vittal, Director NIASM. Around 19 different species of Xerophytic plants such as *Dolichothele longimamma, Caralluma spp., Notocactus horsti, Euphorbia caudolifolia, Mammilaria sphaerica, Opuntia ficus indica, Theolocactus leucacanthus, Opuntia mortolensis, Chamacereus silvestrii, Mammelaria centracirrha, Echinopsis multiplex, Mammelaria hahniana, Trichocerus pachanoi, Mammelaria bocasana, Theolocactus bicolour, Mammelaria amptotricha, Echinopsis tubiflora var. rosea, Opuntia vestita, Opuntia glomerata* were planted.

Establishment of Natural Geological Lab

To demonstrate the volcanic activity, mineral resources and abiotic stresses at the Site, a Geological Profile of 25×14×9' dimension was prepared with steps of stone carving. Nine different horizons were earmarked with change in lithology and mineral content. Important horizons of zeolite just below the soil surface and deeper level have been earmarked for their role in studying abiotic stress. Details of the site information are made available in front of the Profile Pit. Demonstrated this activity to the members of IMC during their meeting on 21st February, 2011.

Research Projects Proposed

Internally funded projects

Following research projects were approved under research activity of the Institute.

Phenotypic, biochemical and molecular analysis of green gram lines for identification of drought tolerant genotypes

Promising candidate genes for tolerance to the abiotic stresses in green gram will be identified. Green gram, a major pulse crop of the country, lacks in osmotic adjustments to water deficits thereby limiting its production capacity in rainfed tracts of the country. Hence, there is need to develop genotypes which can withstand the water deficits without any appreciable reduction in the grain yield. To achieve this end, the Mungbean cultivars with varying degrees of

resistance to abiotic stresses will be collected and subjected to biochemical and molecular characterization to identify promising candidate genes for tolerance to the abiotic stresses. The genotypes will be used to generate the transgenic Mungbean plants which will be evaluated for resistance to various abiotic stresses. Outstanding performers will be evaluated at advanced multi-location trials and identified for release. For this purpose 35 drought tolerant green gram accessions were received from Dr. KC Bansal, Director, NBPGR, New Delhi. They are- IC-311397, IC-323990, IC-324005,012, 021, 025, 036, IC-325738, 752, 756, 770, 774, 782, 787, 788, 791, 799, 810, 817, 823, 833, 853, IC-329039, 067, 078, IC-333253, IC-369823, IC-370467, 474, 489, 490, 515, 532, IC-373426, IC-415144.

Functional & Genetic Diversity of Bacterial Endophytes of Drought Tolerant Sorghum

Bacterial endophytes represent a subgroup of the rhizobacterial communities and are more likely to show plant growth promoting effects than bacteria exclusively colonizing the rhizosphere. Several recent studies confirmed that crop plants host diverse endophytic bacterial communities. However, only a few of these crop plants have been completely studied in relation to their endophytic biology. Consequently there is a great opportunity to find new and beneficial bacterial endophytes among the diverse crop plants growing in different ecosystems or abiotic stress environments. Sorghum is oneamong the important drought tolerant crop growing in arid and semi-arid regions. In addition to genotype, rhizobacteria and bacterial endophytes associated with sorghum also play a key role in sorghum crop tolerance to drought stress. Hence, bacterial endophytes of sorghum will be isolated and their functional and genetic diversity to be studied.

Functional Genomics of Abiotic Stress Response in Fish

Molecular mechanisms associated with physiological and hormonal responses to abiotic stressors in fishes are not fully understood. The transcriptomic and proteomic approach for studying the functional gene expression changes in response to stressors in fish will identify genes responsible for adaptive changes in fish. This will enable selection of stress tolerant fishes by identifying microsatellite and single nucleotide polymorphism markers in the genes for Marker assisted selection. In addition, the aquatic metagenomics for allele mining of salt tolerant genes from the water and sediment samples of Lonar Lake is also planned.

Abiotic Stressaffecting Crop-insect Pest Interactions

Unpredictable changes in the abundance of insect-pests due to global climate change are likely to affect agricultural production and the livelihood of farmers in tropical countries like India. A research proposal is developed to determine the effect of pesticide aerosols created during spraying on abiotic stress tolerance in plants and also to determine climate change induced vulnerability of crops to insect pests through phenology modelling. The outcome of this study will be helpful for recommending suitable and cost-effective adaptation strategies to minimize the losses to farmers under changed climatic conditions.

Economic Analysis of Abiotic Stresses on Onion Production in Maharashtra

A proposal is submitted to study the association of Abiotic stresses with the area, production, productivity and prices of onion in Maharashtra. Price behaviour in different onion markets of the Maharashtra will be analyzed along with its co - integration with other major onion markets of the country. Identification of current status of risk assessment as an effective tool for income stabilization among onion growers in Abiotic stress conditions in Maharashtra. Assessment of vulnerability and perception of different categories of onion growers to abiotic stresses in Maharashtra. Study the nature of adoption strategy used by onion growers to mitigate impact of climate change in Maharashtra. The study will provide a feedback to the policy makers to formulate suitable price policy in onion for the stable prices in country.

National Abiotic Stresses Map

Information on edaphic, water related, atmospheric, environmental including pollution, aerosols and others is available with various institutes of ICAR, Governmental agencies, CSIR and others. To provide on time reality of abiotic

stresses to working biotechnologists for construction of genetic code, this theme map becomes handy. This requires bringing agencies of various hues and integrating/overlaying the maps of varying scales in to a single thematic presentation.

Geohydrological Surveys

A collaborative Research project with Department of Geology, University of Pune, is submitted to carryout geological, geophysical (electrical resistivity) and geohydrological surveys of the NIASM site for the delineation of potential/ suitable/ favourable zones for sinking of water abstraction structures (dug well / bore well) for water supply to farm land, plots and other utilities on the campus, to carry out the Aquifer Performance Test for determining aquifer characteristics and to ascertain the suitable sites for feasibility from the recharge point of view and construction of piezometers or piezometer nest for agriculture research and correlations with plant stress and physiology, to carryout core drilling and logging of 2 bores for matching subsurface geology with resistivity data and to study thin sections of core samples for mineralogical make up and hydro- geochemistry of water samples as well as geochemistry of rock/soil samples at different interval of depth for locating the abiotic stresses. These studies will act as a ready reference to the NIASM watershed. It is proposed to collect detailed geo-hydro-meteorological baseline data at the NIASM site so that its role vis-a-vis abiotic stress can be evaluated.

Collaborative Research Programme signed between NIASM and University of Pune

Design and Development of Research Farm for Abiotic Stress Studies in Agriculture

The NIASM is vested with responsibility of conducting research in complimentary mode for mitigating atmospheric, edaphic and water related stresses in crops, trees, animals, birds and fishery. The degree of severity and extent of various stresses need to be developed using modern scientific tools for testing the developed material. This synthesis is to be finally integrated into a farming system almost neutral to increasing intensity of abiotic stress under climate change. The scientists need on-farm abiotic stress bench for primary screening or prototype testing of the material under synthesis, before going to the actual site at the research farm. Efforts are on for providing the same.

Survey of RET&E Species

Biodiversity offers multiple opportunities for development and improving human well-being. It is the basis for essential environmental services upon which life on earth depends. Thus, its conservation and sustainable use are of crucial importance. The opportunities and challenges associated with biodiversity typically apply over large geographical extents, although one or two issues may be more important at any given location.

Externally Funded Projects

NICRA Strategic Research Component

The project on "Evaluation of green gram *(Vigna radiata)* genotypes for resilience to drought stress in climate change scenario" is approved along with establishment of plant phenomics facility for evaluation of abiotic stresses.The phenomics facility at a cost of ₹ 930 lakhs is being purchased by NIASM.

Projects submitted to NICRA under competitive grants

- Impact of abiotic stress on ontogeny of embryonic and larval development of India major carps.
- Exploring thermophiles diversity of hot springs of India and mining genes for thermo-tolerance.
- Conservation and management of pollinator bees for sustainable agriculture.

Academic Programmes

COLLABORATIONS, SHORT-TERM COURSES

The institute is active during this year with proposals on academic activities for short-term courses, diplomas and degree programmes as mentioned below :

International Center, Baramati

The Van Hall Larenstein Institute, University of Applied Sciences, The Netherlands, Agricultural Development Trust, Baramati and NIASM, Baramatiare signing an agreement to collaborate in teaching, research, in advanced courses in abiotic stresses of plants, horticulture, livestock, birds, etc. for the bachelors' and masters' degree programmes to be given by the mentioned University (ICAR F. No. 1303/Dir (D)/2011 dated 27th April,2011). The courses to be taught by the institute will be of post graduate and above levels of specialization in abiotic stresses.

Short Term Courses

M/s. Gyantech Information System Pvt. Ltd., Hyderabad (GISPL) assisted NIASM at the meet held at Baramati on 29-30 October 2010 by facilitating research heads from 15 private companies to attend the meet. Based on the deliberations held during the pre-meet 29 October, which was attended by DG, DDGs etc, it was felt that pending the infrastructure getting ready at NIASM, Specialized Short Term Courses of 3 months duration may be offered which later can become Modules of the post-graduatecourses of the Deemed University and offered commercially to Industry and other participants. GISPL on behalf of NIASM has conducted a quick survey with participating industry and identified Short Term Courses for Crops on Phenotyping and systems biology having good demand. NIASM has accordingly asked GISPL for an approach proposal. In pursuance of the needs, syllabi for a few short term courses was developed. The syllabi in brief of proposed four short term courses are given below:

Course 1: Phenotyping

The Managed Stress Environment

Principles, method, instrumentation, site homogeneity, experimentation faults, controlling the water regime, severity and timing of stress in the field, managed drought, protocols, plant growth and productivity, plant water status, the expression of dehydration avoidance/tolerance, high throughput phenotyping, commercial services.

Agronomical and environmental aspects population diversity, adaptation to water-logging, genetic traits related to hypoxia tolerance, identification of the involved genome regions, methodology of the detection of QTL, caution and strategies, major loci.

Quantitative Inheritance

Multiple factors (additive, dominance, over–dominance, epitasis), statistics, QTL mapping, quantitative genetic models, single marker analysis, interval mapping, environment* QTL, Bayesian approach, QTL cloning, molecular marker assistance, introgressions, gene transfers, gene identification, in situ hybridization, chromosome identification (FISH, GISH, Spectral Karyotyping, Multiplex Fluorescence, MAS), transgenic genetic and molecular basis, microarray, molecular/ serological techniques, cold tolerance, biochemical and molecular bases of signal transduction, tolerance improvement.

Emerging Trends in Functional Genomics

Transcriptome analysis, micro RNAs stress-responsive genes, proteomics, networking the gene function, functional characterization of responsive gene, transgenic approaches, breeding (gene pyramiding, gene deployment, multi-line varieties (drought, salt and temperature)/ tolerance, genetic mechanisms (proline, glycine,betaine, dehydration

response elements, trehalose), screening sources, breeding.

Transcriptomics/Proteomics to Signaling Networks

Profile dataset, AtGen, UV-B light osmotic, salt, cold, drought, heat, wounding, genotoxic, oxidative etc. approaches, future.

New Plant Hormones

Cross-talk, abiotic/biotic stress signaling, hormone signaling, ROS, joints of convergence stress pathways, transcription factors signaling, mitogen activated protein kinase cascade, effects of humidity and temperature.

Jasmonates

Biosynthesis, metabolism, bound OPDA, Arabidopsides, mutants, biosynthesis and signaling, COI1-JAZ-JA-Ile-mediated signaling, Jasmonates and Oxylipins.

Brassinosteroids

Signaling, increase tolerance, temperature, salt, drought, pathogen, others, anticancer and antiviral effects, independent role of BAK1, innate immunity and cell death, systematic studies.

Cold, Salinity, and Drought

Induced genes, low-temperature, acclimatization, functional regulated genes, freezing, salinity, negative impact on salinity stress, signaling, SOS pathways, ABA, transcription factors, water stress due to salinity, proline, GB, ROS, stomata, photosynthesis, sugars, osmolytes, phospholipid signalling.

Heavy Metals

Uptake and distribution, cellular response, oxidative stress signalling.

Systematic analysis of superoxide-dependent signaling in plants cells

Methyl viologen, reactive oxygen species, biological relevance. detoxification of ROS, anti-oxidative network, methyl viologen, redox indicator, herbicide application as effectors in oxidative stress, mechanism, lipid peroxidation, superoxide anion-mediated signalling, limitation, superoxide anion and hydrogen peroxide signaling, role of transgenic plants.

Signaling Networks

Protein networks, CNA, PINs, global Arabidopsis, PINs, Calmodulin and Calmodulin like-binding proteins, PSNs, perturbations/responses to high throughput approaches.

Course 2 : Metagenomics

Simulated Data Sets

Fidelity of metagenomic processing method, use of the rRNA operon and genomic repetitive sequences, use of different PCR primer-based strategies, bioinformatics for whole-genome,short gun sequencing, environmental short gun sequencing, DNA pyro-sequencing, metagenomic contrasts, chemical sensor networks.

Libraries

Integron first gene cassettes, adaptive genes, gene–targeted-metagenomics, Array Ome & tRNA-facilitated mobilome, metagenomics of plant pathogen-suppressive soils,comparative metagenome MEGAN, SILVA, Metasim, ClustScan, Next-generation.

Ecological Genomics of Marine Roseobacters

Visual and statistical comparisons, statistics in comparative metagenomics, metatranscriptomics, unique microbial small RNAs, Gene networks, computational model, Lambda receptor, lac operon, Genome density, GC content, CPG Islands, Isochores, codon usage bias, cDNAs, ETs, SNP arrays, GeoChip/phyloChips, complex microbial communities, metagenomic DNA, RNA, protein Isolation from soil.

Soil Microbial DNA Purification

PCR-DGGE, application of phylogenetic oligonucleotide microarrays, complex microbial communities, substrate induced gene expression screening, bioactive natural products from microbiota, novel antibiotic resistance genes, novel metal resistance genes, functional metagenomic approach, retrieval of full-length functional genes,

subtractive hybridization magnetic bead capture, biochemistry of bio-mining.

Genes for Stress

Drought, salt resistance, nutrition enhancing, community genome analysis, microarray, functional gene arrays, community genome arrays, phylogenetic oligo nucleotide arrays, whole genome ORFarrays, environmental gene tags, environmental genomics.

Bio-prospecting and Allele Mining from Extreme Environments

Microbialresponse, stress proteins, roles of cold and heat shocks, oxidative/ starvation stress, adaptation conditions. limitations to microbial growth, microbial response to radiation, pressure, salinity, hydrogen, ion concentration (pH), redox potential, magnetic force, antagonism, siderophores, survival strategies.

Microbial Bio-remediation

Plasmid in bioremediation,large scale techniques for sequencing and analysis at the whole-genome level genomics of prokaryotic and eukaryotic model organisms, challenges with metagenomic analysis, genovo, de-novo assembly for metagenomes, behavioural genetics (movements/ migration GPS tracking), chrono-series, ecological succession, over dispersion/ecological filtration, QTL mapping.

Course 3 : Systems Biology

Use of Computers

Computer networks and biological uses and integration, microarray – definition, types of array, micro array analysis, hierarchical clustering, applications of micro arrays in systems biology-self-organizing maps, connectivity maps, networks and pathways, types and methods, metabolic networks, network of metabolites and enzymes,design of circuits and databases, simulation of cellular subsystems,identifying biological interactions, detecting significant network structures simulation and pathways, signalling

Model System to Crop Improvement

Stress response of a model bacterium, experimental methods, robustness and optimality stress response, sigma's regulatory network, E. coli osmotic shock resistance, acid resistance, differentially controlled sigma's module, translational regulation, post-translational regulation, competition for RNAp and promoters.

Moss as a Model System for Plant Stress Responses

Physco-mitrella, water/cold stress and abscisic acid, *T. ruralis*–a model for Poikilo-hydry

Stress Responses and Newly Involved Plant Hormones

Physiology of higher plants, cross-talk between abiotic and biotic signaling, brassinosteroids, cold, salinity, drought, heavy metals.

Plant/Crop Tolerance and Stress

Oxidative stress and anti-oxidative defence systems, antioxidant protection, biochemical mechanisms for the maintenance of oxidative stress, plant hormone functions in abiotic and biotic stress responses, proline in plant response to drought/ salinity,Dehydrinsin stress response, behaviour of water in plants at low and ultra-low temperatures.

Plant and Crop Responses

Physiology, cellular and molecular biology, microbiological aspects stressful conditions, high temperature and UV-radiation on photosystem II, plant water relations- plant stress-production,drought resistance and improvement, plant response to toxic metal stress, heavy metal pollution, damage and defence strategies in plants, heavy metals, plastid metabolism, Cd/ Hg.

Biotic and Agri-Chemical Stress Conditions

Abiotic stressin plants and crops induced by parasitic weeds, involvement of insect pests in plant and crop stress, agrochemical mediated alteration in the population and activity of root-associated microorganisms/fungal pathogen.

Improving Plant and Crop Adaptation/ Tolerance and Cultivation Under Stress

Seed invigoration, physiological and biochemical strategies allowing plants to thrive under ionic stress, *Acacia ampliceps* in managing salt-affected lands, adaptive strategies of tropical forage grasses to low phosphorus, Brachiariagrasses, salinity gradients around roots, different approach to develop and select plants for future

With references to above three courses, GISPL proposed for imparting the above in specialized modules offered through NIASM in the following manner at IMC meeting on 29th October 2010. GISPL also interacted with the International Institute of Plant Abiotic Stress and the industry. It agreed to undertake conceptualizing the three month course modules for each of the above topics, creating curriculum and content and provide faculty for imparting training. It suggested two possible options for NIASM. Firstly, the NIASM would have one of the above course modules exclusively developed within three months with the copyright for that course module to be owned by NIASM. Impart the same with the help of experts initially with an additional cost of ₹ 10 lakhs per course and have Its own scientists getting trained for delivering future courses expect a revenue of ₹ 5 lakhs per course (25 participants at ₹ 20,000 per participant), modify the course on a continued basis and retrieve the total cost incurred by the end of the tenth course either directly or through partners. This requires ₹ 50 lakhs per module. Secondly, the NIASM would offer one of the above course modules at a cost of ₹10 lakhs per course with the copyright 'not' being owned by NIASM. This would facilitate NIASM to have its own scientists and other interested persons from ICAR institutes along with industry participants, to get trained on the advanced modules. An advantage is revenue along with training to NIASM scientists, also imparting the course modules to be leased from the copyright owners for future courses. It may be noted that in both the above options, scientists of NIASM would be trained on latest modules which can further be utilized in future for short term courses or as modules in post-graduate courses or in doctoral programmes. Further, the participants may be awarded a joint certificate/diploma with NIASM kick-starting the training activity. GISPL is can offer a module within six months.

On this proposal for specialized short term courses on Abiotic Stress Management vide ICAR F No.14-3/10-AFC dated 12th Nov. 2010, it was observed by Natural Resource Management Division that it appears that the specialized short course is to be run by the GISPL and there is very little role to be played by the Institute. Actually it should be other way round. The role of the Institute should be apparent/ dominant in the proposal. Moreover, the objectives of the courses should be clearly specified and the following aspects may be included:

i. Knowledge sharing on abiotic stresses related to agriculture (e.g. cold waves, salinity/ alkalinity, nutrient toxicity including geogenics like F, Se, Ar, etc.)

ii. Technologies for mitigation of drought and atmospheric stress through frontier science tools such as nanotechnologies, geoinformatics, etc.

iii. Value addition to farm produce for nutrient security and high economic value yield

iv. To analyze impact of climate change on vulnerability of agriculture and allied sector and develop adaptation/ mitigation measures.

The council was informed that GISPL would be only facilitating any activity under the guidance of NIASM and would be invariably drawing the immense expertise available within the ICAR system, others from outside the NARS system and Industry participation.

Course 4: Recombinant DNA Technology in Fisheries and Aquaculture

Recombinant DNA Technology

DNA modifying enzymes, restriction endonucleases, DNA/RNA modifying enzymes, vectors-plasmids, phagemids, cosmids, high capacity vectors, shuttle vectors, adapters, linkers, ligation, transformation and selection, prokaryotic and eukaryotic hosts, DNA amplification using Polymerase chain reaction, applications, T/A cloning of amplified products, structure and function of DNA polymerase and reverse

transcriptase, genomic DNA library construction, screening, applications, chromosome walking, cDNA library construction screening and clone characterization, Nucleic acid hybridization methods-southern, northern, western blotting, DNA probes and their labelling, transgenics-fish as model organism, target genes, methods of gene transfer, transgenic screening techniques, biofactories, biosensors, waste water treatment, probiotics, genetically modified organisms, biosafety regulations and ethical issues related to biotechnological products, patent laws and IPR issues, synthetic hormones for induced breeding, cryopreservation of gametes and embryo, microalgae mass culture, single cell protein, raceways for microalgae culture, vitamins, minerals and omega 3 fatty acids from microalgae, post-harvest biotechnology for delaying spoilage, detection of toxic substances, pathogenic microbes, biosensors for toxins, nanotechnology

Fish Bioinformatics

Computers and biology, online bio-informatic resources, data and database, programming languages, sequence alignment and sequence analysis tools for DNA and proteins, microarray, SNP, haplotypes, plasmid maps, comparative genomics for pattern and sequence function relationship, gene prediction, RNA structure prediction, protein databases, structure prediction, conserved domains,phylogeny, Cladsitics, evolution, phylogenetic trees, fish genome projects

Aquatic Metagenomics

Bio prospecting and allele mining for metagenomic library of unculturable bacteria, marine pollution and its control, genetically engineered microbes for waste water treatment, biofouling and prevention, comparative genomics of two ecotypes of the marine planktons, genomic analysis of the uncultivated marine microorganisms, metagenomic contrasts of viruses in soil and aquatic environments, resource partitioning and sympatric differentiation among closely related Bacterioplankton, quantifying environmental adaptation of metabolic pathways, bioinformatics for whole-genome shotgun sequencing of microbial communities, detection of large numbers of novel sequences in the meta-transcriptomes of complex marine microbial communities, Microbial community gene expression in ocean surface waters, methods in metagenomic DNA, RNA and protein Isolation from soil, soil microbial DNA purification strategies for multiple metagenomic applications, aplication of PCR-DGGE and metagenome walking to retrieve full-length functional genes from soil, phenomics and phenotype microarray, applications complementing metagenomics, identification of molecular markers.

The syllabi are only indicative of the module structure. It can be upgraded or detailed more depending on participants.

Expert Consultancies

University of Mumbai, Department of Environmental Sciences, Institute of Technology, Kanpur, Washington State University, USA, Singapore University, International Institute of Abiotic Stresses , New Delhi and several other organizations, national and international, showed keen interest in developing syllabi, programmes and collaborations with the initiative taken by GISPL, Hyderabad.

Workshops

FARMERS' DAYS, MEETINGS, EXPERT CONSULTATIONS COMMITTEES

During this year, two farmers' days, curtain raiser meet, inauguration of workshop, divisional meeting, international workshop and other mandate committee meetings were held. A brief report on the above is provided chronologically.

Farmers Meet on Abiotic Stress Management in Agriculture at NIASM, Malegaon Khurd, 24th September, 2010

The First Farmers Day was held on Friday, 24th September 2010 at NIASM site, Malegaon Khurd, Baramati to create awareness among farmers about abiotic stresses and its impact on agriculture.

Dr. R. N. Sable, speaking on abiotic stresses and impact on agriculture

Dr. KPR Vittal (Director NIASM Baramati), Dr. Digambar Bakwad (Director of Horticulture, Maharashtra State), Dr. Ankush Kamble (Scientist, NIASM Baramati), Dr. RN Sabale (Ex. Head, Agro- Meteorological Department, MPKV Rahuri), Shri. MS Dandwate (Director, Maharashtra State Guava Grower Association), Shri Vijay Singh Deshmukh (SDO Baramati), Shri Ganesh Ghorpade (SDO Agriculture, Baramati) and others disseminated the information on abiotic stresses in agriculture and their management so as to increase the income level of farmers. About 300 farmers from the Baramati, Indapur, Purander and Daund talukas of Pune district attended. This group represented mostly irrigated tract. A few farmer groups from dry lands of districts like Ahmednagar, Satara and Solapur also participated. The interaction with the experts was intense and fruitful. A survey on the perceptions of farmers on climate change and abiotic stresses was made by Dr. Ankush Kamble with the help of senior students from Agricultural College, Baramati.

Farmers Meet on Abiotic Stress Management in Agriculture at Karjat, Ahmednagar, 20th October, 2010

The Second Farmers Day was organized on Wednesday, 20th October 2010 at Krishi Tantra Vidhyalay, Durgaon, Karjat Taluka, Ahemednagar District. The objective was to create awareness among the farming community about the institute and its work. The feedback from farmers was also collected.

Dr. KPR Vittal (Director, NIASM Baramati), addressing farmers

Dr. KPR Vittal (Director NIASM Baramati), Dr. AD Kadlag (Associate Director of Research, Solapur), Dr. Ankush Kamble (Scientist, NIASM Baramati), Dr. Susheel Kumar Raina (Scientist, NIASM Baramati), Shri GD Lokhande (SDO Agriculture, Karjat), Ashok Jaibhai (Progressive Farmer, Karjat) and others were the experts. They spoke and discussed with the farmers on abiotic stresses. In this farmers' day, nearly 1200 farmers from 78 villages participated. About 300 women representing different self-help groups attended. Students from Krishi Vidyalay, Mirajgaon also took part actively in organization.

Curtain Raiser Meet on Research Needs arising due to Abiotic Stresses in Agriculture Management in India under Global Climate Change Scenario, 29-30th October, 2010

A two day national level meet was held at NIASM, during 29-30th October, 2010 to discuss the research needs arising due to abiotic stresses in agriculture management in India under global climate change scenario. The objective was to finalize the tasks of research and educational activities to be initiated at NIASM.

The Hon'ble Union Minister of Agriculture Shri Sharad Chandraji Pawar and Madam Supriya Sule, Hon'ble Member of Parliament visited the site. The visit was conducted by Dr. S Ayyappan, Secretary (DARE) and Director-General (ICAR) and Dr. KPR Vittal, Director, NIASM. They appreciated various initiatives taken on farm development and visited locations of the various buildings.

The Hon'ble Union Minister opened the workshop and examined the models of various buildings. The Secretary (DARE) and Director-General (ICAR) explained various facilities and intimated datelines. The Hon'ble Union Minister of Agriculture emphasized on early infrastructure development in view of high expectations so of the public and on sticking to the datelines. This was followed by the plenary session.

Hon'ble Union Minister for Agriculture & Consumer Affairs, Food & Public Distribution, Shri Sharad Pawar addressing the scientific community

The Secretary (DARE) and Director-General (ICAR) expressed a need of multi-location, multi-disciplinary and dynamically evolving research initiatives with a thrust of simultaneous understanding of the impact of abiotic stresses on crops, livestock and fisheries. He also emphasized a need for collaboration between several stake-holders like the farmers, publically funded research, private industry led research initiatives to tackle the issue. With this sort of mind, the establishment of National institute of Abiotic stress Management is an initiative taken by ICAR which will be engaged in the cutting-edge research to develop the super varieties/ breeds of crop/ animal/ fish and also enhance the capacity building through training and education in the related area.

Dr. S Ayyappan, Secretary (DARE) and Director-General (ICAR) speaking about research initiatives

Presentations were made by DDGs and ADGs on the on-going and desired research in abiotic stress management in crops, livestock and fisheries. This was followed by presentations from the industry on on-going initiatives related to abiotic stress management. The participants are from various ICAR institutes, all the five Maharashtra State Agricultural Universities, CCS Haryana Agricultural University, Governmental agencies (IMD Pune, and NFDB Hyderabad); private firms (Nuziveedu Seeds Ltd, Monsanto Research Centre, Syngenta Foundation India, Bayer Crop Science, ITC- ABD, Vibha Seeds, RIL Pune, and CLFMA Bombay), international and national organizations (ICRISAT, IIIT Hyderabad), School of Biotechnology, Vidya Pratishthan Baramati, Foundations (Barwale and MSSRF Chennai),

and non-governmental organizations (WoTR Pune and AFPRO Hyderabad).

Unanimously, the participants appreciated the timely vision of the council to create this dream project. In short course of time the institute should be active with wide ranging networks, short-term courses, diplomas, workshops, etc. encouragement needs to be given for contractual research personnel at higher emoluments. This should house best brains in the world and being laurels to the country.

Consultants Meet on Abiotic Stress Management in Animal Sciences, 19-20th November, 2010

The meeting started with welcome by Dr. KPR Vittal, Director NIASM. He briefly explained the purpose of the establishment of the institute, its mandate, and about the meeting and sought for a close partnership between the animal science institutes and NIASM. Prof. KML Pathak, DDG (AS) explained the background of the meeting and informed the participants that this meeting was a follow up of the curtain raiser meeting held recently. This meeting aims to have subject matter wise discussion to provide insight on the activities on abiotic stress being carried out by Animal Science division and means to have networking with NIASM. He said that the division took initiative to identify experts and scientists working in this area under NARS and bring them on one platform to address the issue of abiotic stress in livestock and poultry. He further emphasized on bringing out crisp recommendation from the meeting.

The technical session started under the Chairmanship of Prof. KML Pathak. Dr. CS Prasad, ADG (AN&P), informed about the research programs running in ICAR Institutes about Abiotic stress which can possibly have collaboration/networking with NIASM and identify future thrust areas. Dr. Sushama Chapalkar, Director, VSBT, expressed happiness that it is a good forum to develop a road map for addressing abiotic stress in animals. Prof. AK Gehlot, VC, RAJUVAS, Bikaner and the guest of honour gave a brief about the possibility of including courses on abiotic stress at graduate and postgraduate level in veterinary and animal science universities. Dr. CS Prasad made a brief presentation on 'Adaptation and mitigation strategies in livestock' –Indian context, which formed a base for further discussion.

The meeting was attended by Prof. KML Pathak, DDG (AS), Prof. AK Gehlot, VC, RAJUVAS, Bikaner, Dr. KPR Vittal, Director NIASM, Dr. CS Prasad, ADG (AN&P), Scientists from various animal sciences institutes of ICAR and Private industries.

Dr. KPR Vittal, Director, NIASM, setting the tone for the meeting

This meeting identified the importance of rumen microbial flora as a panacea for the problems induced by abiotic stress due to climate change.

Expert Advisory Committee Meeting on NIASM Farm Development, 1st Dec, 2010

The first meeting of the Expert Advisory Committee on NIASM Farm Development was held on Wednesday, the 1st December, 2010 in the committee room of the institute at Malegaon, Baramati.

Farm Development Committee

The meeting was attended by Sh. Ganesh Ghorpade, SDAO Baramati; Sh. PS Jagtap, Agri-Officer, Baramati; Sh. Vivek Bhoite, KVK, Baramati; Prof. B.N. Tambe, Agriculture College, Sharadanagar, Mrs. Raorane; Agriculture College, Shardanagar; Sh. Sangram Taware, Progressive Farmer; Sh. Chandrakant Saste, Progressive Farmer, Er. Padmanabhan, CPWD, Pune; Dr. SV Ghadge, Sr. Scientist, NIASM; Dr. Ankush Kamble, Scientist, NIASM and Dr. Babasaheb Fand, Scientist, NIASM.

The following recommendations emerged out of the discussions: the total farm area being too large to manage effectively as single piece, it should be divided into smaller farm plots of approximately 0.5-1.0 ha size each surrounded by a layout grid of farm paths. The individual plots should be rectangular in shape with dimensions of approximately 100-125 x 40-80 m. Uniform soil profile up to 60 cm depth may be created by using crawler dozer with ripper sub-soiler. Levelling activity should be minimal restricted to individual plot requirement to ensure better irrigation water management. After levelling the plot and removing boulders and bigger stones towards bunds, soil depth of 60 cm should be created by using both mechanical means as well as external soil filling if required. Irrigation network of pressurized systems like drip and sprinkler should be planned keeping in view the different crops planned to be cultivated. Use of bio-fertilizers like phosphorus/potash soluble bacteria, rhizobium etc., cakes and organic residue, poultry manure is suggested for improving soil fertility along with chemical fertilizers.

Some of the rainfed crops suggested for the coming kharif season 2011 are- soyabean, tur, soyabean-tur, mung, black gram, dhaincha, tag, bajra, horse gram and cowpea. If irrigated, maize and groundnut may be taken. Pulse crops like soyabean, mung, urad may be taken to increase fertility. Suggested fodder crops- Napier grass (Jayvant, BAIF-100, Stylo, Lucerne, Berseem). Horticulture crops- Guava, Sapota, Chiku, Citrus, Custard Apple, Mango, Tamarind, Jamun, Coconut, Fig, Aonla, etc. are suggested for roadside plantations.

International Meet on Plant Molecular Farming by Vidya Pratishthan School of Biotechnology, Baramati and NIASM, Malegaon, 17-18th Dec, 2010

This meeting was held under the chairmanship of Prof. Henry Daniels, from University of Central Florida, Orland, USA who is an authority on this subject. The participation was by invitation and limited to 25 numbers from selected institutes. The meeting clearly brought out the incremental quality aspects due to impinging abiotic stresses under climate change. However, the basic understanding of organ based physio-chemistry is the need of hour.

Institute Management Committee Meeting, January 21st, 2011

The first Institute Management Committee meeting was held on January 21st, 2011 in the Committee room of NIASM. The Meeting was attended by following Members and Special Invitees: Dr. KPR Vittal, Director, NIASM; Shri A. N. Javale, Director of Extension Education & MCAR, Government of Maharashtra, Pune; Prof. Nilesh Nalawade, Principal, College of Agriculture (MPKV), Shardanagar, Baramati; Dr. SS Magar, Ex-Vice Chancellor, Konkan Agricultural University, Dapoli; Dr. GS Karibasappa, Principal Scientist (Hort.) NRC for Grapes, Pune; Dr. JC Dagar, ADG (Agro & AF), ICAR, New Delhi; Sh. Mahesh B. Khubdikar, Administrative Officer, NIASM; Mr. DSK Rao, Director, M/s. Gyantech Information System (P) Ltd, Hyderabad; Shri. Ganesh Ghorpade, Sub Divisional Agricultural Office; Baramati; Er R. Sampath, Superintending Engineer CPWD, Pune; Er. JK Patil, Executive Engineer MSEDCL, Baramati; Er. DK Ahuja, Executive Engineer, CPWD, Mukundnagar; Pune, Er. PT Jagtap, Sub Divisional Engineer, Maharashtra Jeevan Pradhikaran, Baramati; Sh. Vishram Naniwadekar, M/s. Gyantech Information System (Pvt.) Ltd, Hyderabad and other invitees.

Dr. KPR Vittal, Director, NIASM, presenting the progress of various works

The Meeting started with a warm welcome by Director and introduction of the members and the special invitees. The committee recommendations focused on Vision document preparation and expediting formalities for obtaining deemed University status. The committee recommended for one Security officer post, and for circulating for seeking willingness of Scientists from other institutes. The proposal by GISPL for preparation of the short term course option A, of ` 5 lakhs (per course) as revenue from participants and option B as patenting it, with copyright being cost effective and with NIASM has been approved. The IMC appreciated the active role taken by the NIASM in a short span of time and desired more senior officials to visit for hastening the progress. All the past activities were ratified.

The proposed foreign deputation of the following Scientists was recommended for developing specialized facilities of international standards; Dr. SV Ghadge, Sr. Scientist –Rain water simulators and Rain out shelters, Dr. Manoj Pandit Brahmane, Scientist (Sr. Scale) : Fisheries Biotechnology, Dr. Susheel Kumar Raina, Scientist- Phenotorium and other facilities, Dr. V Govindasamy, Scientist- Microbial Metagenomics.

The Committee observed a huge change in the site from the time of Foundation Stone Ceremony within a short time, by the dedicated NIASM Team headed by Dr. KPR Vittal, Director. Dr. JC Dagar, ADG (Agronomy), extended thanks to the Ex-VC Dr SS Magar, other members and all participants for active participation on behalf of the Council. The meeting ended with a vote of thanks to the Chair for effectively moderating the meeting and to all members, for the valuable inputs received from all by the Member-Secretary.

Meeting with Various State Government Officials, 4th February, 2011

A meeting with various State Government officials of Maharashtra State was held to discuss issues related to NIASM under the Chairmanship of the Sh. Vijaysinh Deshmukh, SDO Baramati on February 04th, 2011 with Dr SV Ghadge, Officer-in-Charge (Works) NIASM as the Member Secretary. This was facilitated by the Director, NIASM. Following members attended the meeting: Sh. Kharade, Tahsildar, Baramati; Er. PT Jagtap, SDE, MJP; Er. JK Patil, EE, Mahavitaran; Er. Chaphalkar, DE, Zilla Parishad; Er. Redekar, JE, MSRTC; Er. Revade, JE, Zilla Parishad; Sh. Gaikwad, Depot Manager, MSRTC; Dr. KPR Vittal, Director, NIASM; Er. Bedasgaonkar, MEO, MSRTC; Sh. AK Gangwani, FAO, NIASM; Er. Kulhal, Div. Engg., MSRTC; Sh. Mahesh Khubdikar, AO, NIASM and others.

As desired by the Town Planner, Baramati, the widening of the approach road, process is started by Zilla Parishad (ZP) on the directions from SDO, Baramati. The ZP is preparing a proposal for acquisition of 3 acre land. The request will be forwarded by SDO, Baramati to the CEO, Zilla Parishad, Pune. The cost may be borne by the ZP. In case, needed gap funding may have to be borne by ICAR. The total time estimated for land acquisition is six months after the submission of the proposal by 15th March, 2011. The SDE conveyed to the SDO, that the proposal of one MLD irrigation water from the Nira Canal has been submitted to the, CE Irrigation, Pune. An early permission was assured by CE, Irrigation, Sinchan Bhavan, Pune to the Director, NIASM on 31st January, 2011 in his office. The MJP informed that the tender for 0.1 MLD of raw water connection will be finalized soon and work will be completed earlier by 3 months than stipulated time. The Mahavitaran estimated a requirement of 600 KVA Express feeder. Permission will be given by 15th Feb, 2011. EE Mahavitaran has recommended submitting proposal in phased manner so as to cut down the electricity bills. The shifting of sub-station will be discussed with Secretary (ICAR) on

his visit on 9th Feb 2011. Land acquisition proposal for ten ha of good farm land on the south side, as identified in Gat nos. 17 &18 of Malegaon Kh., is to be submitted in the required format by NIASM. This may be done with the help of Er Bagul, DE, CPWD. The MSRTC presented blue print plans for entire area of ten ha. They cannot share any part of the land. The ICAR is asked to give actual requirements. The SDO advised for appointing a Project Management Consultant for NIASM works and more frequent meetings with the parties concerned.

Institute Research Council meeting, 21st March, 2011

The first meeting of Institute Research Council of NIASM was held on 21st March, 2011 to discuss about research activities to be undertaken by the scientists working at the institute. The meeting was attended by Dr. KPR Vittal, Director, NIASM, Dr SV Ghadge (Senior Scientist), Dr MP Brahmane (Scientist-Sr. Scale), Dr Ankush Lala Kamble (Scientist) Dr Susheel Kumar Raina (Scientist) Dr. Babasaheb B Fand (Scientist), Dr. V Govindasamy (Scientist), Shri MB Khubdikar (AO), Shri G Laxminarayana (AAO) and Dr. AK Sharma (Documentation Officer). Various issues discussed during the meeting included research activities to be proposed by the scientists, submission of research proposals in the format of RPF-1, procurement of equipment, glassware and chemicals for research laboratory and others.

Research Advisory Council Meeting, April 20th, 2011

The first meeting of Research Advisory Council of NIASM, Baramati was held on April 20th, 2011 under the Acting Chairman-ship of Dr. R. P. Samui, DDG (Agro-met), IMD, Pune. Other members were Dr. S. P. Adhikary, Dr. (Mrs.) Renu Khanna Chopra, Shri. Rajendra Pawar, Dr. SS Magar, Dr. KPR Vittal, and Dr. SV Ghadge, Member Secretary. The scientists of NIASM Dr. SV Ghadge, Dr. MP Brahmane, Dr. Ankush Lala Kamble, Dr. Susheel Kumar Raina, Dr. Babasaheb B Fand and Dr. V Govindasamy attended the meeting.

The meeting started with welcome by Director, NIASM and a field visit of the members to Institute site, research farm, building model, lab and other facilities. All the scientist of NIASM gave brief presentation about their research programmes. The committee appreciated the infrastructural, scientific progress initiatives of the Institute with limited scientific and other staff strength in a short time. The following recommendations emanated from the discussions; the vision document of the Institute may be developed at the earliest from recommendations of panel of senior most officials in science management based on suggestions from a string of meetings being organized by SMDs of the Council. In view of several scientists in other Institute working on the abiotic stress research, the role of NIASM and expectations may be synthesized to focus on work/ activity plan objectively initially on a short term basis. After periodic reviews long term objectives/ goals may be derived. Arid legumes and rhizosphere soil micro-flora and micro-fauna may have a wild gene pool already adapted to abiotic stresses. These should be identified, documented and focused for research at NIASM. The scientists are encouraged for partaking in the national crop insurance program formulation research by using weather based indices. A long term data on soil heat fluxes in different type of soils may be accumulated for future use. The capacity of scientific pool at NIASM may be used for forwarding weather based agro-advisories.

The scientists need to be encouraged to attend the IRCs of other institutes of their interest for formulating network program in the system. Scientist from other related Institutes in/ outside the above networks may be invited to the IRC at NIASM. For abiotic stress management gaps in research may be identified by scientists to formulate network projects in various disciplines of NIASM. The Institute is encouraged to complete infrastructure facilities at the earliest and start short term training courses. Focused syllabi for short term advanced training programs may be prepared containing theory and practicals/ experiments. Projects proposed were approved and asked to merge later with networks. For summer training and internships, the post-graduate

students of related fields may be accommodated on payment for a period of three months or more as a research support to the scientists. Complete database on different fields of abiotic stress should be created at NIASM. In view of periodic changes to be incorporated in the forward direction in early stages, the RAC may require to meet 2-3 times in the first year. The Directors of other related Institutes working on abiotic stress in various agricultural sectors may be invited to the Institute RAC.

More Meetings for Vision Document

Besides the above Animal Science Division meeting, other divisions of the Council viz., Crop Sciences, Horticulture, Education, Fisheries and NRM are also requested to hold their meetings here as expert consultations on abiotic stress management under climate change to identify the research gaps and future network research projects. M/s. Nuziveedu Seeds showed keen interest to hold a meeting with International participation on the identification of gap in Abiotic Stress Research on the seed front. A meeting with SAU biotechnologists and Non-NARS biotechnologists is also planned. A panel meeting on the suggestions of the secretary is planned with senior most experienced former science managers at national level like former Director Generals of ICAR, CSIR etc., with the participation of senior most official of the Council up to DDG/National Directors to finalize NIASM vision document.

Other Meetings Planned

Meetings with experts from neighbouring institutes working on plant and other ecologies, preparation of national abiotic stresses map, vulnerability indices for abiotic stresses in the context of climate change, PRA techniques for abiotic stress evaluation and others are planned.

Meetings Attended

LEAD LECTURES, WORKSHOPS, CONFERENCES

LEAD LECTURES

Dr. KPR Vittal Director	National Abiotic Stress Map	Indian society of soil survey and land use planning, NBSS & LUP, Nagpur	October 10, 2010
Dr. KPR Vittal Director	Climate change and onion and garlic production	Indian society of Alliums, DOGR, Rajgurunagar (Pune)	March 13, 2011

MEETINGS

Dr. SV Ghadge Senior Scientist (FMP)	Enhancing the role of IASRI in R&D efficiency	IASRI, New Delhi	September 22, 2010
Dr. Susheel Kumar Raina Scientist (Plant Breeding)	International Meet on Plant Molecular Farming	VSBT, Baramati	December 17-18, 2010
Dr. SV Ghadge Senior Scientist (FMP), **Dr. Susheel Kumar Raina** Scientist (Plant Breeding), **Dr. V Govindasamy** Scientist (Microbiology)	2nd meeting of ICAR network project on National initiative on climate resilient agriculture for the finalization of specifications of plant phenomics facility launch programme of NICRA project	CRIDA, Hyderabad	December 26, 2010
Dr. Susheel Kumar Raina Scientist (Plant Breeding)		NAS Complex, New Delhi	February 1-2, 2011
Dr. MP Brahmane Scientist (Sr. Scale) (Biotech_AS)	ZTM-BPD meeting cum workshop	Central Institute of Research on Cotton, Mumbai	March, 11-12, 2011

WORKSHOPS

Dr. SV Ghadge Senior Scientist (FMP)	Regional workshop on FAO project on Establishment of Information Sharing Mechanisms for Monitoring the Implementation of Global Plan of Action	NBPGR, New Delhi	August 30, 2010
Dr. AK Sharma Documentation Officer (T-7)	Project Information Maintenance System (PIMS)	CIAE, Bhopal	November 11, 2010

CONFERENCES

Dr. MP Brahmane Scientist (Sr. Scale) (Biotech_AS)	International Consultation on DNA Bar coding	NAS Complex , New Delhi	November, 6-7, 2010
Dr. V Govindasamy Scientist (Microbiology)	51st annual AMI conference and also attended a two day international workshop on rRNA sequencing, phylogeny and next generation genome sequencing	BIT, Mesra, Ranchi	December 14 to 17, 2010
Dr. Babasaheb B Fand Scientist (Agril. Entomology)	International Conference on preparing agriculture for climate change	PAU, Ludhiana	February 6-8, 2011
Dr. MP Brahmane Scientist (Sr. Scale) (Biotech_AS)	10th Agricultural Science Congress	NBFGR, Lucknow	February 10-12, 2011
Dr. UK Maurya Technical Officer (T-6)	16th Annual Convention and National Symposium on Application of Clay Science: Agriculture, Environment and Industry Clay Mineral Society of India	NBSS&LUP, Nagpur	18-19 February, 2011

Capacity Building

STATISTICS, LIBRARY, BIOTECHNOLOGY, FARM, ECONOMICS

Following officials from the Institute underwent the trainings on different subjects-

Dr. AK Sharma Documentation Officer (T-7)	Design and Development of Digital Libraries using DSPACE	NISCAIR, New Delhi	May 10-14, 2010
Dr. SV Ghadge Senior Scientist (FMP)	Installation training programme on Strengthening Statistical Computing for NARS	CIFE Mumbai	June 16-17, 2010
Dr. Susheel Kumar Raina Scientist (Plant Breeding)	Molecular Techniques in Gene Cloning and characterisation	NRCPB, New Delhi	November 8-28, 2010
Dr. AK Sharma Documentation Officer (T-7)	Advanced WINISIS	NISCAIR, New Delhi	December 06-10, 2010
Dr. S.V. Ghadge Senior. Scientist (FMP)	Course on Research Station Management	ICRISAT Hyderabad	January 16-22, 2011
Dr. V. Govindasamy Scientist (Microbiology)	NAIP sponsored training programme on Crop Gene Expression Data Analysis and Structural Bioinformatics	NBPGR, New Delhi	March 01-12, 2011
Dr. Ankush Lala Kamble Scientist (Agril. Economics)	Quantifying the Impact of Climate Change on Agriculture	NCAP, New Delhi	March 21-25, 2011

Publications

INSTITUTE AND CONFERENCES

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Babasaheb B. Fand, 2011 Impact of climate change and abiotic stresses on insect pests dynamics, International Conference on preparing agriculture for climate change, Punjab Agricultural University, Ludhiana, February, 6-8.

Celebration of days

RAJBHASHA, INDEPENDENCE DAY, REPUBLIC DAY

हिन्दी सप्ताह प्रतिवेदन

हिन्दी सप्ताह समारोह १४ सितम्बर से २१ सितम्बर, २०१० तक राष्ट्रीय अजैविक स्ट्रैस प्रबंधन संस्थान में मनाया गया। इस समारोह की शुरूआत परिपत्र फा.सः हिन्दी/१०-११/२ दिनांक ४.९.२०१० के अनुसार की गई । जिसमे निदेशक महोदय को कार्यक्रम के बारे मे जानकारी के साथ मानदेय की संस्तुति ली गयी। कार्यक्रम की रूपरेखा तैयार कर संस्थान के सभी अधिकारियों एंव कर्मचारियों को सूचित किया गया और साथ ही अनुरोध किया गया कि सभी लोग सक्रिय भाग लेकर कार्यक्रम को सफल बनायें। इस सप्ताह के दौरान विभिन्न प्रतियोगिताए जैसे कि हिंन्दी पठन, हिंन्दी लेखन, हिंन्दी अनुवाद, हिंन्दी निबन्ध (विषयः जलवायु परिवर्तन) का आयोजन किया गया जिसमें संस्थान मे उपस्थिति सभी लोगो ने बढ-चढकर भाग लिया।

समापन समारोह २७ सितम्बर २०१० को किया गया. जिसमे डॉ. शिवाजी के. अंबेकर, प्रिंसिपल. शारदाबाई पवार शिक्षण महिला महाविद्यालय, शारदानगर, बारामती मुख्य अतिथि के रूप मे उपस्थित थे। इस समारोह की शुरूआत सदस्य सचिव (राजभाषा) के स्वागत भाषण के साथ हुई। सदस्य सचिव ने सभी कार्यक्रमों के बारे में मुख्य अतिथि को अवगत कराया। मुख्य अतिथि ने हिन्दी के बारे मे भारत सरकार द्वारा चलाई जा रही मुहिम की विस्तृत जानकारी दी और इसे राजभाषा बनने में आ रही सभी तरह की कठिनाइयों को उजागर भी किया। हिन्दी समिति के अध्यक्ष एवं संस्थान के निदेशक माननीय डॉ. के. पी. आर. विट्ठल ने हिन्दी भाषा का प्रचार-प्रसार का उल्लेख और हिन्दी सम्बन्धित महत्वपूर्ण जानकारी, विदेशो की यात्राओ के दौरान, बताकर उद्घृत किया। इसके बाद पुरस्कार वितरण का कार्यक्रम हुआ जिसमें विजयी प्रतियोगियों को मुख्य अतिथि एवं संस्थान के निदेशक महोदय ने पुरस्कार वितरित किये। इस समारोह में प्रतियोगिताओं का मूल्यांकन डॉ. अरूण कुमार शर्मा, श्री अशोक कुमार गंगवानी और श्री. महेश बी खुबडीकर ने किया।

सभा को सम्बोधित करते हुए संस्थान के निदेशक एव अध्यक्ष राजभाषा डॉ. के. पी. आर. विटठ्ल. साथ में मुख्य अतिथि डॉ. शिवाजी के. अंबेकर

समारोह का समापन डॉ. अरूण कुमार शर्मा के धन्यवाद ज्ञापन के साथ हुआ जिसमे उन्होने मुख्य अतिथि एवं निदेशक महोदय का आभार व्यक्त किया एवं सभी प्रतियोगियों को प्रोग्राम सफल बनाने के लिये और संम्पूर्ण प्रोग्राम को कैमरे मे बंद करने के लिए श्री. संतोष पवार एवं श्री. प्रविण मोरे को धन्यवाद दिया।

हिन्दी कार्यक्रम के बारे में जानकारी देते हुए सदस्य सचिव (राजभाषा) डॉ. यू. के. मौर्य

आयोजित विभिन्न प्रतियोगिताओं मे
भाग लेते प्रतियोगी

Republic Day, January 26, 2011

Independence Day, August 15, 2010

Republic Day, January 26, 2011

Visitors

FARMERS, MINISTER, MP, ICAR INSTITUTES, INDUSTRY AND OFFICIALS

During the year, the institute was visited by several of the reknowned scientists, officials, farmers and others. To name a few, we had Shri. Sharad Pawar, Hon'ble Union Minister for Agriculture & Consumer Affairs, Food & Public Distribution, Smt. Supriya Sule, Hon'ble Member of Parliament, Dr. S Ayyappan, Secretary (DARE) and DG (ICAR), Shri. Rajiv Mehrishi, Secretary, ICAR, Dr. AK Singh, DDG (NRM), Dr. KML Pathak, DDG (AS), Dr. SK Datta, DDG (Crops), Dr. Meenakumari, DDG (Fisheries), Dr. KD Kokate, DDG (Agril. Extension), Dr. NPS Sirohi, ADG (Engg.), Dr PS Minhas, ADG (Agro.), Dr. C.S.Prasad, ADG (ANP), Dr. VM Mayande, VC, Dr. PDKV, Akola, Dr. AK Gehlot, VC, RAJUVAS, Dr. RB Deshmukh, Ex-VC, MPKV, Rahuri, Dr. SS Magar, , Ex-VC, Dr. BSKKV, Dapoli, Directors and Scientists of ICAR Institutes viz., CRIDA, CAZRI, NRCP, NRCG, DOSR, DOGR, CICR, NRCE, NRCAF, NBSSLUP, CRRI, DWM, NIANP, NAARM, CMFRI, CSWCRTI, CIAM, CIFE, NRCPB, I ISR, NRCC, CIRCOT, ICAR RCG, all five agricultural Universities of Maharashtra, CCSHAU, Hisar, Industry giants like MRC, ITC-ABD, Bayer Crop Science, Barwale Foundation, Nuziveedu Seeds, WoTR, AFPRO, GISPL, MSSRF, Vibha Seeds and Syngenta visited to see the growth and development made by the institute in a short span of time. Officials from other Govt. agencies like IMD, Sate Agriculture Department, CPWD, Mahavitaran, MSRTC, MJP, Zilla Parishad, Irrigation Circle, Pune, Other organizations including ICRISAT, AFRO, WoTR, Bank of Baroda, Axis Bank representatives, etc., Media representatives from Sakal Daily News papers (P) Ltd., family members of Commissioner of Pune visited this institute and appreciated the remarkable growth .

Farmers from Pune, Ahmednagar, Satara and Solapur districts participated in farmers meet organized at, NIASM campus site. They were interested to discuss about their problems. Farmers from the villages- Aanjangaon (1), Baburdi (3), Baramati (34), Barshi (1),Belsar (7), Borakarvadi (1), Buldhana (1), Devulgaon (3), Daund (5), Dhumalwadi (1), Disakal (1), Gojubavi (1), Eda (1), Gunvadi (2), Indapur (4), Jalgaon (1), Hol (5), Karati (1), Karavagaj (7), Karzat (1), Kasegaon (1), Katapur (3), Kati (1), Katphal (2), Khadaki (1), Khandj (2), Khatav (2), Kokalgaon (1), Kopargaon (1), Korale (1), Koregaon (1), Kurnewadi (1), Latur (1), Malegaon Kh, Malegaon Kh (12), Malshiras (5), Maval (1), Morgaon (2), Murti (1), Murum (1), Nimbut, Nimbut (2), Nimgaon (1), Nimgaon Ketaki (1), Nira (1), Malegaon (20), Niravagaj (11), Padavi (1), Pandare (9), Paravadi (1), Phaltan (3), Pimpari (2), Redani (2), Reporter, Baramati (1), Rue (1), Pimpri (4), Sangavi (11), Pune (4), Sasvad (4), Satara (2), Saval (3), Shindewadi (1), Shirsuphal (1), Shirur (1), Shirvali (1), Singapur, Purndar (1), Purnder (14), Rajale (1), Solapur (2), Someshawar (1), Supe (4), Tandulvadi (2), Urlikanchan (1), Vadgaon (3), Vahle (1), Varvant (1), Vasada (1), Vir (2), Yadavwadi (4) and Zargarvadi (1) attended interactive sessions on abiotic stresses.The figures in parantheses are number of farmers.

Whole heartedly we all are thankful to the visitors, without whose enthusiastic intervention; we would have been lost and lonely on this island of institutionalization of enormous task.

Dr. S. Ayyappan, Secretary (DARE) and DG (ICAR) and Dr. A.K. Singh, DDG (NRM), at NIAM Camp Office at KVK, Shardanagar, Baramati

Shri. Rajiv Mehrishi, IAS, Secretary, ICAR at NIAM Camp Office at KVK, Shardanagar, Baramati

Dr. S. Ayyappan, Secretary (DARE) and DG (ICAR) explaning NIASM Master Plan to Shri Sharadchandraji Pawar, Hon' Minister of Agriculture & Consumer Affairs, Food & Public Distribution, GOI, Smt Supriya Sule, Member of Parliament

Budget

SANCTION, UTILIZATION, RECEIPTS, PAYMENTS

Vide ICAR F. No. 22-3/2010-I.A.II, dated 31st March, 2011, on the subject of construction of works, an additional sanction of ₹ 1303.1 Lakhs amounting to a total of ₹ 2093 Lakhs against an EFC approval of ₹ 740 Lakhs for Office cum Admin building complex was made. This variation will be met out from the permissible variation of ₹ 1470 Lakhs which is 20 % of EFC sanctioned amount of ` 7350 Lakhs. This year the expenditure is one hundred per cent of sanctioned budget as in last financial year. The budget sanctioned and expenditure from the council and external funding from National Initiatives on Climate Resilient Agriculture (NICRA) project is given below:

Table 1. Budget utilization (2010-11) (₹ in Lakhs)

Sr. No.	Head	ICAR Sanction	Expenditure	NICRA Sanction	Expenditure
A.	**Recurring**				
1	Pay & Allowances, Wages	68.10	68.22	-	-
2	Travelling Allowance	10.36	10.35	-	-
3	HRD	-	0.50	-	-
4	Contingencies	144.34	134.76	-	-
	Total(A)	222.80	213.83	-	-
B.	**Non-Recurring**				
1	Equipments	71.34	79.41	930	-
2	Furniture & Fixture	26.81	1.14	-	-
3	Vehicles	31.03	31.03	-	-
4	Information Technology	33.79	34.78	-	-
5	Library	3.96	3.96	-	-
3	Works	610.27	635.66	-	-
	Total(B)	**777.20**	**785.98**	**930**	**-**
	Grand Total (A+B)	**1000**	**999.81**	**930**	

Table 2. Receipts and payments account for the year ended 31 March, 2011

(₹ in Lakhs)

Receipts		Current Year	Previous Year	Payments		Current Year	Previous Year
I.	**Opening balances:**			**I.**	**Expenses:**		
a)	Cash in hand	5000	0.0	a.	Establishment	6821616	2070083
b)	Bank balances	941060	0.0	b.	Administrative	10405623	2826691
	in current Accounts	0.0	0.0	c.	Research	4313085	0.0
	in deposit Accounts	0.0	0.0				
	in savings Accounts	0.0	0.0	**II.**	**Payments against funds for various projects**	0.0	0.0
b.	Grants Received from Govt. of India						
	Plan	193100000	100000000	**III.**	**Investments and Deposits**	0.0	0.0
	Non-Plan			a)	Out of Earmarked funds		
	A.P. Cess			b)	Out of own funds.		
c.	Donations and Contribution	0.0	0.0	**IV.**	**Expenditure on Fixed Assets and capital work-in-progress**		
d.	Income on investments from	0.0	0.0				
a)	Earmarked Funds			a)	Purchase of Fixed Assets	34826182	150822
b)	Own Funds			b)	Expenditure on Capital Work-in-progress	43772500	74195000
V.	**Interest Received**						
a)	on Bank Deposits	1354382	929776	**V.**	**Repayment of un- utilized Grants/Loans/Borrowings**	0.0	19400000
b)	Loans, Advances						
VI.	Deposits and Advances	2881490	1473210	**VI.**	**Deposits and Advances**	2878604.00	1465726
VII.	Other Income	242405	0.0	**VII.**	**Other payments**	938576.00	0.0
VIII.	Loans and Borrowings	0.0	0.0	**VIII.**	**Closing Balances**		
				a)	Cash in hand	7500	5000
IX.	Misc. Receipts	0.0	8800	b)	Bank Balances	1560651	941060
					in current Accounts	93000000	0.0
					in Deposit Accounts	0.00	0.0
					in Savings Account	0.00	0.0
				c)	In transit		
	Total	**198524337**	**102411786**		**Total**	**198524337**	**102411786**

Personnel

AWARDS

Dr. KPR Vittal, Director, NIAM elected as NAAS Fellow on 01/01/2011.

PROMOTIONS

Shri. G. Laxminarayana, Assistant Administrative Officer was promoted to Administrative Officer on 22/03/11.

Smt. Purnima Ghadge, Upper Division Clerk promoted to Assistant on 29/03/2011.

POSTINGS

Dr. Susheel Kumar Raina, Scientist (Plant Breeding), Dr. Ankush Lala Kamble, Scientist (Agril. Economics) and Dr. V. Govindasamy, Scientist [Microbiology (Agril.)], posted at NIASM, on completion of 90th FOCARS training (April-August 2010) at NAARM, Hyderabad.

TRANSFERS

Dr. Babasaheb B. Fand, Scientist (Agril. Entomology) transferred from CPRI, Shimla on 24/10/2010.

Dr. M P Brahmane, Scientist (Sr. Scale) transferred from CIFRI, Barrackpore on 22/11/2011.

Shri. A K Gangwani, Finance and Accounts Officer, NIASM transferred to CAZRI, 22/03/2011.

Shri. Ram Avtar, joined as Finance and Accounts Officer on promotion from NRCE, Hisar 02/04/2011.

STAFF IN POSITION

Dr. KPR Vittal	Director	
Scientific Staff		
Dr. S.V. Ghadge	Senior Scientist (FMP)	
Dr. M.P. Brahmane	Scientist (Sr. Scale) (Biotech._AS)	From 22/11/2010
Dr. Susheel Kumar Raina	Scientist (Plant Breeding)	From 27/08/2010
Dr. Ankush Lala Kamble	Scientist (Agril. Economics)	From 26/08/2010
Dr. Babasaheb B. Fand	Scientist (Agril. Entomology)	From 24/10/2010
Dr. V. Govindasamy	Scientist (Microbiology)	From 10/11/2010
Documentation & Library		
Dr. AK Sharma	Documentation Officer (T-7)	
Technical Staff		
Dr. UK Maurya		Technical Officer (T-6)
Mr. Santhosh Manohar Pawar	Technical Assistant (T-3)	From 16/07/2010
Mr. Pravin Hari More	Technical Assistant (T-3)	From 17/09/2010
Ms. Noshin A. Samsad Shaikh	Technical Assistant (T-3)	From 13/07/2010
Mr. Aniket T. More	Field Assistant (Mali) (T-1)	From 01/03/2011

ADMINISTRATION

Shri. MB Khubdikar	Administrative Officer	
Shri G. Laxminarayana	Assistant Administrative Officer	Up to 21/03/2011 From 22/03/2011
Shri. AK Gangwani	Finance & Accounts Officer	Up to 29/03/2011
Shri. Ram Avatar	Finance & Accounts Officer	From 02/04/2011
Smt. Purnima S. Ghadge	UDC Assistant	Up to 28/03/2011 From 29/03/2011

INSTITUTIONALIZATION OF MANDATED AND FUNCTIONAL COMMITTEES

RAC, Secretary	Dr. S V Ghadge
IRC, Secretary	Dr. A K Sharma
IMC, Secretary	Shri M B Khubdikar
RTI Cell	
Appellate Authority	Dr. KPR Vittal
Central Public Information Officer	Shri M B Khubdikar
Assistant Public Information Officer	Dr. A K Sharma
Institute RFD	
Committee Chairman	Dr. KPR Vittal
Member Secretary	Dr. B B Fand
RFD Nodal Officer	Dr. B B Fand
Institute PME Cell	Dr. S V Ghadge
Transparency Officer	Dr. S V Ghadge
Roster and Liaison Officer	
Up to 24/05/2011	Dr. AL Kamble
From 25/05/2011	Dr. M P Brahmane
Institute Joint Staff Council	
Secretary Official side	Dr. V Govindasamy
Secretary Staff side	Mr. Pravin More
Gardening and landscape	Shri. Aniket More
Externally funded projects (NICRA)	Dr. S. K. Raina
Data Base Management	Dr. A. L. Kamble
Internet & Computer cell	Mr. Pravin More
Women cell	Smt. Purnima S Ghadge
Grievance cell	Mr. Santosh Pawar
Hindi / Rajbhasha cell	Dr. U. K. Maurya
Purchase Advisory Committee	Dr. M. P. Brahmane
Standing Library Advisory Committee	Dr. A. K. Sharma
DDO & SPO	Shri. G Laxminarayana
Quarterly & Half yearly reports	Dr. S V Ghadge
Works & Workshop	Dr. S V Ghadge
Vehicles	Shri. G Laxminarayana
Security	Shri M B Khubdikar

Curtain Raiser Meeting

30th October, 2010


NIAM


National Institute of Abiotic Stress Management,
Malegaon, Baramati
Meet
on
Research Needs Arising Due to Abiotic Stresses
in Agriculture Management in India Under
Global Climate Change Scenario
30 Oct, 2010, Malegaon, Baramati
NIAM


National Institute of Abiotic Stress Management,
Malegaon, Baramati
Meet
on
Research Needs Arising Due to Abiotic Stresses
in Agriculture Management in India Under
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