INFORMATION

Criteria7 : Institutional Values and Best Practices

Key Indicator : 7.3 Institutional Distinctiveness

Metric : 7.3.1

Metric Description : Portray the performance of the Institution in one area distinctive to its priority and thrust within 1000 words

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The university has significantly contributed to the nation by developing relevant technologies through fundamental, strategic, and applied research, leading to self-sufficiency in food grains and the diversification and export of agricultural commodities. It has adeptly responded to the evolving needs, challenges, and opportunities within Indian agriculture by continuously redefining its mandate, plans, and programs. Renowned for its pivotal role in the Green Revolution, the institute has also played a key role in transforming Indian agriculture from traditional practices to modern methodologies by leveraging advanced tools and technologies to address various challenges more effectively. The university's unique advantage lies in its multi-crop and multi-disciplinary approach, encompassing crop improvement, natural resource management, crop production, crop protection, and both basic and social sciences. This comprehensive perspective enables its scientists to tackle research issues in a holistic manner.

The major challenges before agriculture are its marginal land holdings, widening production disparities between irrigated and rainfed areas (ratio of irrigated to rainfed yield lie from 1.25 to 3.30), degradation and depletion of natural resource base, climate change, increase in non-agricultural demand for land and water, inadequate mechanization, labour shortage, inefficient use of inputs, wastage of agricultural produce due to inadequate post-harvest operations, lack of awareness among farmers for modern crop production methods, ineffective extension services, inefficient financial resources for investments, high levels of consumption services (such as subsidies) resulting in wastages and above all low per-capita income for farmers. The specific areas of concern needing priority attention are as follows:

- Increasing productivity of agricultural production system per unit of land, water, energy and other critical inputs.
- Diversification of the production systems for household food & nutritional security and increased export of farm produce/product.
- Sustainable management and equitable use of natural resources such as land, water and biodiversity, especially in the context of changing climate.
- Bio-security and crop health management for higher yields and improved food quality.
- Enhanced profitability, non-farm employment, rural livelihood, gender mainstreaming and global competitiveness in agriculture through appropriate technology development, market linkage and policy.
- Accelerated information and technology flow to farmers and other stakeholders through efficient extension approaches.
- Capacity building and quality human resource development in frontier areas of science and

management of agricultural programs and enterprises.

With its unique multidisciplinary and multi-commodity mandate, AAU is well-positioned to take a leadership role in addressing agricultural challenges. By collaborating with agro-industries, warehouses, NAFED, and other stakeholders, AAU can leverage its strengths effectively. Its capabilities in basic and strategic research, policy formulation, extension support, and manpower development are crucial for managing R&D, public development programs, and the corporate sector. These strengths will play a significant role in transforming agriculture and fulfilling the aspirations of rural communities.

Agriculture	• Conventional breeding and its augmentation with molecular biological techniques
	• Development of novel genetic resources for exploitation of heterosis and development of hybrids in non-conventional crops
	• National networking with a self-sustainable translational platform on PPP mode for use of precision breeding methodologies and genomic resources
	• Genetic improvement under cropping systems exposed to changing climate regimes
	• Genetic enhancement of photosynthetic efficiency in C3 crops
	• Phenomics and genomics assisted development of climate-smart crop varieties
	• Understanding the crop response under different agronomic manipulation for conservation agriculture and designing the agronomy to maximum production under climate change
	• Genetic adaptation to agronomic manipulation for conservation agriculture
	• Understanding host- pest vis- a- vis pest- predator dynamics under conservation agriculture
	• Deciphering the impact of resource conserving technologies on soil health
	• Weed dynamics and management in cropped and non-cropped situations
	• Integrated Nutrient Management and Integrated Pest management
	• Organic and Natural farming Practices
	• Liquid bio fertilizers, nano fertilizers and impact on the soil and crop health
Horticulture	• Increasing productivity and quality of horticultural crops through genetic enhancement and developing sustainable integrated crop management practices

	• Production and supply of quality planting material of horticultural crops
	• Effective utilization of natural resources and enhancement of input use efficiency
	• Exploring biodiversity for tagging genes and pre breeding lines for resistance to abiotic and biotic stresses through association mapping.
	• Broadening of genetic base through interspecific hybridization, space breeding, haploidy breeding, mutation breeding, reverse breeding, polyploidy etc. and their characterization.
	• Development of improved varieties/ hybrids through conventional breeding, marker assisted breeding and space breeding, apomictic technology, in vitro ploidy, male sterility system, non-nuclear genome manipulation, transgenic technology and nano technology for abiotic and biotic stresses.
	• Enhancing factor productivity through protected cultivation and vertical farming.
	• Development of technologies for aeroponics, hydroponics and soilless culture. Development of integrated crop specific nutrient kits using microbial consortia and nutrient formulations
	• Developing sustainable land management technologies including safe production and organic farming protocols.
	• Carbon sequestration and footprints from horticultural systems.
	• Identifying mechanism of stress tolerance and developing appropriate rootstocks and genotypes.
	• Molecular biology and genomic studies for better understanding of genetic variation in stress related traits.
	• Precision farming for resource conservation efficiency
Agricultural Engineering	• Developing efficient water and nutrient management systems including automated and pulsed micro-irrigation and fertigation
	• Development of precision farming techniques, farm mechanization and energy management.
	• Industrial and domestic Waste water management for crop production
	• Combating degradation/depletion of natural resources under changing climate
	• Integrating pre- and post-harvest protocols for minimizing postharvest losses.
	• Value addition and product diversification.

	• Utilization of by-products, residues and wastes, Biochar culture, • Use of non-conventional energy resources for energy reduction and reducing carbon credit in different farm operations • AI & ML techniques for stream flow forecasting in ungauged basins • Agricultural mechanization and automation for different field and horticultural crops for various operations
Food Technology	• Sustainable technologies for reduction of post-harvest losses • Development of nutraceuticals and functional foods • Value addition to underutilized agricultural and horticultural crops • Use of non-thermal processing such as high-pressure processing, gamma irradiation for processed foods • Evaluation and identifications of adulterants and contaminants in foods
Agricultural Business Management	• Price Forecasting and Marketing trend for agricultural products • Crop Insurance • Techno-Economic evaluation agro-based industries
Information technology	• Analyse climate conditions and their impact on crops, • Monitor and track crop and soil conditions, • Make farming practices more precise and data-driven, • Improve the efficiency of greenhouses, • Andriod based crop monitoring and execution schedules

The Institute envisions that by 2050 the agriculture should transform itself from subsistence level of farming to commercial farming, input intensive to input responsive, carbon-negative (C-) to carbon-positive (C+), low-efficiency to high efficiency, polluting to pollution-free, and climate-prone to climate-smart agriculture.

Details	Supporting Documents
Appropriate webpage in the Institutional website	View Document
Any other relevant information	View Document