

Vision-2050

Agriculture University, Jodhpur



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Message

Agriculture has evolved over time; regional diversity is the one which contributed for gradual evolution of agriculture and its application for human survival. It was the domestication of local biodiversity which made agriculture as self employment venture to produce food for satisfying human hunger. Gradually, it took a shape of an industry operative through human efforts by utilizing natural resources to meet diverse need of ever increasing human population.

Agriculture has grown as regional entity and local resources are the backbone for agricultural sustainability and prosperity. In India, climatic diversity is wide, considering from *Tarai* region to western Ghats; or may it be from North Eastern regions to arid western parts. Agricultural is a regional subject, defined under the boundaries of State, the Agricultural Universities are foremost bodies taking responsibilities to deliver innovative and improved technologies to make agriculture sustainable under prevailing agro-climatic conditions and available resources. Science has to run ahead with time considering future needs and resource availability.

Hence, the present document is envisioning agricultural developmental needs of the hot arid and semi arid regions of Rajasthan State by the year 2050. The Agricultural University, Jodhpur of Rajasthan State is bestowed with the responsibility of agricultural research, education and extension in the western parts of Rajasthan State.

“There are no miracles in agricultural production”

- Norman Borlaug

Although, the hot arid and semi-arid regions are resource limited depicting, its' inherent constraints to showcase agriculture holistically as a profitable venture. The present level of sustainability has only accounted due to the natural adaptation and utilization of biodiversity by the populace for survival. Looking to the other side of the coin, the climatic

peculiarities have generated diverse natural populations adapted to prevailing abiotic stresses; mainly high temperature, salinity, limited moisture etc. Henceforth, the future perspectives of agriculture development in the region lies with effective deployment of genomic configurations of the adapted biodiversity with available natural resources in the form of innovative technologies.

I can foresee, this VISION document will be a torch bearer for all the future endeavors of the University to deliver the needful with time for making agriculture prosperous in western parts of Rajasthan.

(Balraj Singh)

Preface

The regional agricultural scenario of western arid and semi arid zones of Rajasthan is very challenging, considering low rainfall, extremely high temperature, poor ground water quality, poor soil health due to low organic carbon content, undulating land topography etc. In totality agriculture developmental needs for the region are specific. Prioritizing the basic requirements for enhancing agricultural productivity suggests focusing mainly upon development of; early high yielding varieties having resistance/tolerance against major biotic/abiotic stresses, production technologies with high water and nutrient use efficiency, efficient protection technologies to address the issue of pesticide residue problems, post harvest management etc. Though, the scope of making agriculture a profitable venture in the region is very meager, but introduction and intervention of innovative technologies can help to boost the present productivity and farmers' income.

Considering the present status of research, resource availability, challenges etc., a future line of action plan is hereby prepared in form of VISION-2050 of Agriculture University, Jodhpur to make agriculture sustainable and a profitable venture for resource limited farmers of western arid semi arid Rajasthan. A brief account of Agriculture University, Jodhpur; Mission, Objectives, Infrastructure, Achievements, Challenges, Opportunities, Priority areas and Way forward is given in the present document.

I am thankful to the entire staff members of the Agriculture University, Jodhpur in providing valuable information for compilation of the information. Special thanks are due for our Hon'able Vice Chancellor Prof. Balraj Singh for continuous guidance and support to bring out the document consisting of a future plan to act for sustainability and prosperity of farmers of western arid and semi arid regions.

(B. R. Choudhary)

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1. OVERVIEW

India predominantly being an agriculture dependent country has to apprehend continuous growth in agriculture research and development for sustainability and livelihood security of farmers. The National Agricultural Research System (NARS), which is accounted as one of the unique system existing across world for agriculture research and development has emphasized upon to develop a strong network of agencies/bodies to deal with national and regional agricultural needs and problems in the country. As agriculture always influenced by local resources and regional climate, and Indian conditions are too diverse along the length and breadth of national boundaries. Henceforth, it becomes imperative to have regional units to deal with local agricultural needs, the network of regional units adds to national prosperity in a cumulative way. Agricultural Universities are an integral part of the NARS to deal with the regional agricultural problems for national food security and prosperity.

Being a part of NARS, Agriculture University, Jodhpur of Rajasthan State is responsible for providing agriculture education, research and extension in western arid/semi-arid regions. The University was established on September 14th, 2013 vide Government of Rajasthan Act No. 21 of the year 2013 and amendment No. 23 of 2013. The jurisdiction of the University comprises 06 districts (Fig.1) classified under the Arid-Semi-arid Region, which are; Arid Western Plain (Zone Ia-Jodhpur and Barmer districts), Transitional plain of Luni Basin (Zone IIb-Jalore, Pali and Sirohi districts) and part of Transitional plain of inland drainage (Zone IIa- Nagaur district). Jurisdiction area of the University covers 28.4% of total geographical area of the State and is sustaining 20.8% human and 28.4% of livestock population.

The University is esteemed to have a strong teaching, research and extension setup to envisage agricultural development in the western parts of Rajasthan. There are 03 Agricultural Colleges, 01 Institute for Diploma in Agriculture (IDA), 02 Agricultural Research Stations (ARS), 03 Agricultural Research Sub-Stations (ARSS), 06 *Krishi Vigyan Kendras* (KVKs). The University also offers Master programme (M.Sc-Agriculture) in disciplines of Plant Breeding and Genetics, Horticulture and Agronomy at College of Agriculture, Mandor (Jodhpur). Being a part of the NARS, the University is also guiding extension machinery at the State and National level for development of Agriculture and allied sectors.

The region specific needs of Rajasthan State is to cater technologies for agriculture development apt to challenging situation of western arid and semi arid regions. Water, the most crucial and limited resource of these regions is mainly available as ground water of which major part (>85 %) is brackish, secondly the prevailing climatic conditions are very harsh, that limits agricultural productivity of the region. Due to limited water availability, dry land agriculture is predominantly practiced in *kharif* season taking the main crops like pearl millet, moong bean, moth bean, cluster bean and sesame following conventional practices at large. Recent developments in canal network; Indra Gandhi *Nahar* Project and Narmada Canal Project are providing irrigation water to a limited extent for *kharif* crops like cotton, groundnut, castor and *rabi* crops like cumin, bond psyllium (isabgol), wheat, chickpea, mustard etc. As the rainfall pattern in the region is highly erratic and scanty, the sustainability of arid/semi arid agricultural production system is weak, hence becoming challenging.

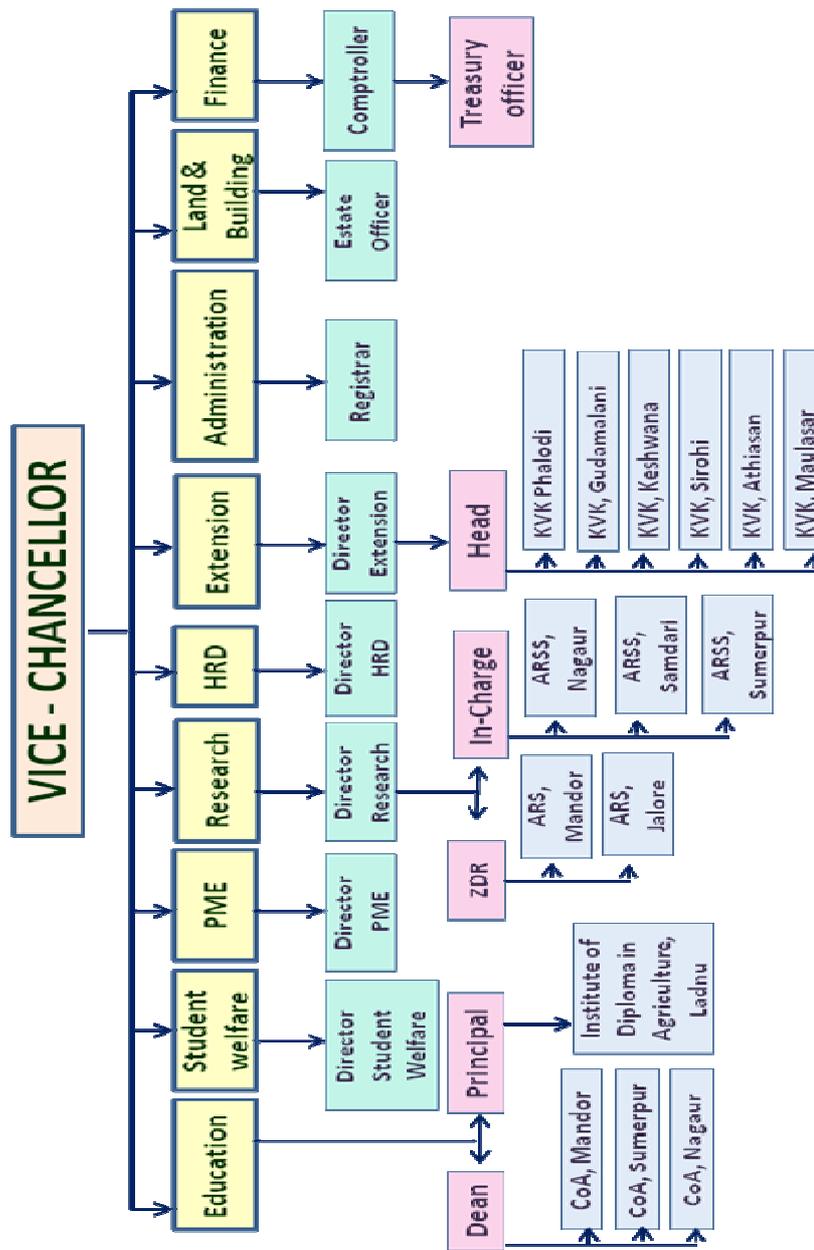
In brief, considering the prevailing adverse climatic conditions and inherent strengths of biological diversity, a systematic approach is very much needed to achieve agricultural sustainability and livelihood security of the region. Hence, the University is to envisage a vision, to develop technologies that can fit well under limited moisture; high temperature, low nutrient availability mainly due to low soil organic carbon, biotic and abiotic stresses.

In general, Agriculture University, Jodhpur is to work for delivering technologies for agricultural sustainability and livelihood security of farmers belonging to arid and semi arid regions of western Rajasthan.

2. MANDATES:

- Develop academically qualified human resources through UG, PG, Ph.D. and other academic programmes in different branches of agriculture & allied branches of learning and scholarship
- Conduct basic, strategic and need based area specific applied research in Agriculture (both rainfed & irrigated), Horticulture, Agriculture Engineering, Forestry, Animal Husbandry, Fisheries and other allied fields to develop technologies relevant to farming community for livelihood security and high farm income
- Undertake extension education and training programmes for improving the agricultural situation of the State and socio-economic status of weaker section of the society especially in rural areas
- Help and provide technical guidance to the State Government for development of agriculture in the State
- Develop collaborative linkages with State Agriculture Universities, Government Departments, Government Undertakings, and National & International Organizations for fulfilling above objectives and such other purpose which the University determines from time to time

3. ORGANOGRAM



4. MISSION :

The mission of the Agriculture University, Jodhpur is to develop human resources and to generate appropriate, efficient & effective transferable technology for sustainable growth in agriculture and allied fields. Ensuring food & nutritional security, income generation and environmental safety of the arid and semi-arid areas of western Rajasthan.

5. OBJECTIVES

- Imparting high quality modern education and scientific research in the field of agriculture and its allied sciences
- To reach advancement in learning and conducting research, particularly in agriculture and other allied branches to increase quality, quantity and productivity of prominent crops cultivated in the jurisdiction area of Agriculture University, Jodhpur
- To undertake extension education of such sciences/technologies especially focused for rural people of the State engaged in agricultural activities
- To serve the society by satisfying the increasing demand for excellence in agricultural education, research and extension in the region and
- Taking the initiatives in innovation and creativity in the different fields of agriculture to keep up with the holistic development of agriculture in the region

6. INFRASTRUCTURE:

The total area under different constituent units/centres/colleges etc of Agriculture University, Jodhpur is around 500 ha. At present the University Headquarter is located at ARS, Mandor, Jodhpur. Basic facilities and amenities are made available at all the centres. Agriculture Colleges and Diploma Institute have necessary facilities to carryout field and laboratory studies. Advanced laboratory facilities are also established in Research Stations to support research activities of the University. Research farms are also equipped with advance tools and machineries to undertake mechanical agricultural practices at a large scale. Advance hi-tech protected cultivation structures for taking up commercial crops and nurseries, general facilities like conference halls, committee rooms, recreation space etc., are also available. Under on-going programmes, a museum, digital library, ATIC unit, Farmers Training Centre, IPR Cell, ARIS, Seed production Co-ordination cell etc. will be established.

7. ACHIEVEMENTS

Research

The University has an important research mandate for generating scientific technology and development of improved crop varieties through a network of All India Coordinated Research Projects (AICRPs) of the ICAR, operating at different research stations in the State. There are 03 AICRPs, 01 All India Network Projects, 01 Centrally sponsored long term project on seed spices, 04 voluntary centres, 02 seed hubs, 07 externally funded projects including 01 ICAR funded Farmers' First project and 11 RKVY projects are operative in the University. Project under RKVY has significantly contributed for strengthening of research capabilities and infrastructures. Total available land for research is approximately 302.15 ha including all the ARS/ARSS. The total budget on Research for the year 2015-16 was Rs. 478.11 lakhs.

The major annual crops of the region are; Pearl millet, Sesame, Mung bean, Moth bean, Cluster bean, Groundnut, Cumin, Isabgol, Chilli, Mustard, Taramira, Fennel, Fenugreek, Castor, Wheat. Likewise major fruit crops of the region are; Ber, Pomegranate, Datepalm, Guava, Papaya, Lime, Aonla, Cordia. Moreover, vegetable crops of solanaceous and cucurbits family are very commonly grown in the region.

Agriculture University, Jodhpur in the last four years since its inception has significantly contributing to the Regional/State/ National need. University has developed 06 varieties mainly of Pearl millet, Sesame, Cluster bean, Moth bean, Castor, Spices and underutilized potential crops.

Education:

At present total intake capacity of the students is 537 that include 500 in B.Sc. (Agriculture), 25 in Diploma (Agriculture), 12 in M.Sc. (Agriculture). Emphasis is also being laid on extra-curricular activities like NSS, cultural & literary events, sports along with education programmes to give better exposure to students. A well established Student Counseling and Placement Service cell is also being managed by the University faculty. The cell organizes special lectures, personality development workshops, trainings on communication skills and also assist in campus placements. Besides, library facilities are also available and fully functional having more than 7500 books collection being maintained at various libraries of Colleges, Research Stations, KVK's etc. Other documents are also maintained which includes Bound Journals/Periodicals, Government Publications etc.

Extension education:

The Directorate of Extension Education (DEE) was set up in Oct. 2013 in Agriculture University, Jodhpur at University headquarters. Its purpose is to promote transfer of agricultural technologies by providing training, advisory and farm information to the farmers and professional extension personnel of line departments.

The activities of the DEE include - (i) Trainings for the farmers and farm women, (ii) Front line Demonstrations at farmers' field, (iii) Farmers'/ students' exposure visits to the DEE, skill development trainings for farm women, (iv) Workshops for KVK Staff, (v) Other Extension activities

such as organizing Farmers' Fair, *Kisan Diwas*, Farmers-Scientists Interaction, Exhibitions etc.

Services:

Seed production: Seed production is one of the major resource generation programme of the University. In the past three years ie., from 2013-14 to 2015-16, a total of 923.15q truthfully labeled seeds and 1.77q of breeder seeds of different crop varieties has been produced. Approximately 87 % of total area (302.15 ha) accounting 263.82 ha is available for seed production, of which 91.32 ha (34%) is having irrigation facilities.

Phyto-sanitary Laboratory: At ARS, Mandor a model laboratory has been established to analyze agro-commodities for issuing phyto-sanitary certificates.

Soil & Water Testing Laboratory: At ARS, Mandor laboratory for analysis of soil, water and plant samples of field experiments is also functional.

Metrological unit: Establishment of Agro-met Advisory units at all research units is under process with the support of Indian Meteorological Department, Pune.

Plant Health Clinic: Plant health clinics are established at ARS, Mandor; KVK, Jalore and KVK, Sirohi under NHM for diagnosis of plant samples to provide remedial measures to farmers.

8. CHALLENGES:

- Highly erratic rainfall pattern and high temperature in the region coupled with high wind velocity are causing aridity in the region which led to highly unfavorable environment for crop production
- The problems related to climate change viz., high diurnal temperature variation, untimely rains, hailstorms, seasonal shift in duration, increase in mean temperature is putting agriculture at risk in terms of productivity, resources use and profitability
- Poor soil and ground water quality prevailing in different areas of western Rajasthan limits the soil and water use and eventually agricultural prosperity in the region
- Dwindling livestock populations due to limited fodder availability and decrease in areas under rangelands have created challenging situation for maintaining agricultural sustainability in the region
- Declining water resources due to high depletion of ground water for agriculture and low rainfall has created challengeable situation in an already water scare region.
- Under arid and semi arid agriculture system due to low income and profitability from agriculture; rural migration coupled with limited agricultural mechanization in the region has increased problem of labour shortage leading to increased cost of cultivation
- Adoption of few crops irrespective of its feasibility looking to local resources and conditions (Onion, Carrot, Pomegranate, Groundnut, Cotton, Castor) has created a resource competitive front for conventional crops

- Soils in the canal catchment areas of the region are being further degrading due to secondary salinization by seepage and overuse of water as irrigation
- Tenant farming traditions and absentee farmers in the prime agriculture lands are leading to low agricultural productivity because of negligence on part of both owner as well as grower
- Undulating land topography, shallow soil depth and poor soil organic matter in the region limit potential exploitation of land and resources
- Low technology adoption rate due to illiteracy, unawareness and traditional mind set of the farmers is the major obstacle for boosting agricultural productivity
- Low availability of organic manure due to less production of biomass and animal faeces
- High infestation of root-knot and other nematode species and their fast multiplication in the sandy soils are the major problems for successful cultivation of crops both under open field and protected conditions

9. Opportunities:

Although, regional climatic specificity and available resources together have provided limited opportunities for farmers in the region to harness profit from agricultural. However, certain specific crops/commodities/aspects possess potential to focus for farmers benefit:

- Conventional crops *viz.*, pearl millet, mung bean, cluster bean, sesame *etc.*, requires less resources and give higher returns. Besides, crops like cumin, isabgol, *Nagauri methi*, *heena* are pride crops of the region due to their high value and large acreage.
- Conventional horticultural crops of the region like ber, anola, pomegranate, datepalm, karonda, snapmelon, melons, *Mathania* chilli, fenugreek, dill *etc.* are potentially remunerative having high market demand
- Medicinal and other underutilized plants like ashwagandha, guggal, sankhpushpi *etc.*, hold potential to be cultivated with poor quality soil and water, in-turn can enhance farmers income
- Value additions and processing of all the important crops pre-dominantly grown in the region have huge scope for catching domestic and international market both.
- Commercialization of local heritage crops like *Sangri*, *kair*, *lasoda*, *kumut*, *kachri* *etc.*, in form of value added or processed products can further increase in farmers' income
- Exploitation of *Prosopis juliflora* (*Vilati babool*); a vegetation in abundance in the region; through alternative uses has potential to enhance farmers' income

- Most of the dryland areas of the region that are virgin/chemical free can be exploited for production of commodities with a tag of 'chemical free produce' in competition with organically produced product
- Exploitation of solar power for agriculture holds strong potential scope to envisage miniature mechanization in agriculture to cater the problem of labour and power scarcity
- Amply available brackish water in the region holds potential scope for its exploitation by developing agriculture enterprises apt for poor quality water *e.g.*, silvi-pastoral, agroforestry, agrostology, horticulture, aquaculture etc.
- Canal irrigation network covering huge area of the region can be potentially exploited by proper dissemination of improved technologies for enhancing agricultural production potential/water productivity
- Biodiversity conservation and its utilization using biotechnological tools for identification of gene(s) for resistance/tolerance against drought, high temperature and salinity holds potential to be exploited at molecular level.

PRIORITY AREAS:

Arid and semi arid regions of Rajasthan State holds strong potential, the major research priority besides quality education and intensive extension activity are:

- Development and evaluation of high yielding varieties of field and horticultural crops having resistant to various biotic and abiotic stresses suitable for resource limited conditions of arid and semi arid regions
- Quality seed production of cereals, pulses & oilseeds by adoption of 'Seed-village concept' or by making Farmer- Producer Organizations (FPO)/associations/self help groups.
- Promotion of hi-tech horticulture technologies specially protected cultivation for production of high value vegetables, cut-flowers and vegetable hybrid seed production.
- Raising nursery of fruits, vegetables and ornamental plants/crops at commercial scale for meeting local demand
- Development and refinement of value addition and processing technologies for seed spices, chilli's and leafy commodities *Nagauri methi*, leafy amaranthus etc.
- Crop diversification through introduction of new crops like quinoa & chia under contract farming system
- Introduction of crops like quality protein maize (QPM), sweet corn, grain amaranth for income security and resource use efficiency
- Enterprise diversification through value addition in export oriented high value crops like seed-spices/spices and medicinal & aromatic plants at local level

- Potential exploitation of value addition through cold grinding technology in seed spice and other medicinal value crops
- Promotion of organic farming of high value niche area crops of the region
- Production of high quality bio-fertilizers, compost/vermicompost, azolla, liquid organic manures, bio-agents & bio-pesticides in rural areas for better employment opportunities
- Conservation and multiplication of local livestock breeds like Gir and Tharparkar of cattle, Marvadi and Sirohi of goat, Marvadi and Jaisalmeri of sheep which are well adapted under arid and semi arid regions
- Production of animal feed & concentrates in rural areas for meeting local demand and employment generation
- Creating custom hiring services like laser leveling, plant protection machineries, harvesters, threshers & graders (mobile graders), miniature mechanization tools etc in rural areas to generate employment
- Similarly, rural employment can be also be generated by establishing plant & soil health clinic services, animal health clinics services
- Consultancy services for hi-tech horticulture, micro-irrigation, agri-marketing, & agri-processing etc., for effective dissemination of technology and employment generation
- Development of 'Agro-tourism' models of arid zone agriculture for further promotion of commodity exports and revenue generations
- Skill development of youths in frontier areas of agriculture like hi-tech horticulture, value addition,

processing, seed production, bio-pesticide production and vermi-compost etc.

- Use of ICT's in agriculture for effective transfer of technology, feedback and monitoring
- Development and popularization of disease-pest forecasting models for major crops
- Development and promotion of miniature mechanization powered by solar energy

- **Specific: Based on important regional crops**

- **Field crops:**

- **Cotton:** Revival of American cotton varieties for better adaptability and resource conservation
- **Pulses:** Development of extra early varieties (50-60 days) in mung bean with heat tolerance; development of early moth bean cultivars with no/low bearing in base for better harvesting; development of cluster bean varieties with fixed and synchronous maturity duration to escape delayed maturity in case of terminal rains/ stress
- **Cereals:** Development of heat tolerant extra early varieties of pearl millet, wheat and barley

- **Seed spices, medicinal & other horticultural crops:**

- **Cumin:** Cumin *Alternaria* blight management by identification of genetic resistance; identification of potential bio-agents
- **Fennel:** Developing dwarf and early fennel varieties, identification of root cause of fennel gummosis and its management; increasing sweetness in fennel for more price
- **Dill:** Developing varieties of dill with non-shattering habit and suitable for rainfed conditions

- **Coriander:** Introduction of coriander in Narmada canal area
- **Chilli:** Development of varieties/hybrids using popular local variety '*Mathania/ Mandoria*'
- **Heena:** Mechanical harvesting and other production technologies for better returns and export promotion
- **Isabgol:** Development of varieties with minimum seed shattering
- **Pomegrante:** Management of nematodes, bacterial blight and termite; production/availability of disease free planting material
- **Lasoda:** Development of agro-techniques or varieties to advance fruiting for better returns
- **Vegetables:** Development/ identification of varieties with varied maturity duration for staggered cultivation matching market demand for fetching better returns

Other issues:

- **Brakish water:** Development of field and horticultural crop varieties and production technologies suitable for cultivation under brakish ground irrigation water
- **Export promotion:** Identification of '*Export Production Regions*' for cumin, isabgol etc; development of GAP's for cumin and other crops of export value; management of aflatoxins in chilli
- **Virtual water loss:** Virtual loss of water through adoption of high water demanding crops like carrot, groundnut, onion, cotton, castor etc in the region instead of cultivating local adapted crops and cultivars
- Validation and development of region specific hi-tech horticultural technologies considering depleting water resources and impending climate change

11. WAY FORWARD:

A. Short term plans: (Coming 15 years)

- **Infrastructure development:** To develop modern research farms having boundaries/fencing around and equipped with improved implements & machineries. To construct water harvesting structures and to develop modern irrigation facilities. To establish protected cultivation structure suitable for arid/semi arid conditions. Establishment of ICT's enabled Agriculture Technology Knowledge Center. To create modern infrastructure facilities for administrative staff, students and researchers. To have better residential facilities for students and staff.
- **Academics:** Strengthening of UG classrooms with audio-visual aids; Preparation of practical /lab manuals for all UG & PG courses; Increase in intake capacity of students in Master programme; Initiation of Ph.D. programme at College of Agriculture, Mandor, Jodhpur and Master Programme at College of Agriculture, Sumerpur; Establishment of Bio-informatics facilities; Introducing Internship program for Graduates and Postgraduates from other Institutes/Universities.
- **Research:** The important focused research areas in short term will be; Integrated nutrient management and weed management; Development of technologies for 'per drop more crop'; Development of packages for harvesting, processing and value addition in medicinal & aromatic crops like senna and henna; Escalation of seed production in different crops and hybrid seed

production program in pearl millet; Development of GAP's in important crops with major focus on pesticide residue management; Emphasizing value addition and post-harvest processes for arid fruits, spices and local crops; Test for assessment of genetic purity of breeder seed; Selection of genotypes of different crops for drought tolerance, salt tolerance and early maturity; Off-season vegetable cultivation technologies for better returns; High density plantation and canopy management of fruit crops for efficient resources utilization; Testing of new plant protection chemicals and screening of germplasm of various crops against insect-pests, phytophagous mites, nematodes and disease in climate change scenario; Studies on crop and area specific insect-pest threshold levels and potency evaluation of natural enemies for developing effective bio-control protocols; Development of Herbal garden with all local medicinal plants (Completed); Upgradation of ARSS to ARS and creation of new research stations for strengthening location specific and need based research in the region.

- **Extension education:** The major emphasis in short term lies for; training of farmers and in-service field functionaries of line departments; organization of farmer's fair in addition to demonstrations and field days for farmers, farm women and rural youths ; creating facilities of mobile soil and water testing units; development of crop museum and Agricultural Technology Information Centre; Participatory seed production at farmers' field .

- **Computer Center and information System:** To develop University website as a single window information source; Establishment of 'Centre for Information Management and Computer Application (CIMCA) at Mandor, Jodhpur campus for preparation and maintenance of Pay rolls, Provident Fund etc; Aim is to develop paperless office by computer networking; To support the research platform, aim is to establish SAS server in the Department of Statistics and Computer Science.
- **Skill Development:** Skill Development Trainings to be organized on different aspects for students, educated youths, entrepreneurs; Seed quality testing, Seed certification; Plantation techniques for Horticultural crops; Phytosanitation; Production of Bio-fertilizers and Bio-pesticides; Soil and Water testing; Honey Bee keeping; Mushroom cultivation; Modern irrigation techniques; Custom hiring services, hi-tech horticulture etc.
- **Resources Generation:** Activities which will be given priority to increase the income of the university are seed production of agronomical and horticultural crops, specially- pearlmillet, wheat, barley, mustard, onion, fenugreek, fennel, cumin, carrot, fenugreek, Nagauri methi, isabgol and coriander; nursery establishment of fruits, ornamental plants and vegetables; production of bio-fertilisers and bio-pesticides; soil and water testing facilities; mushroom cultivation etc.
- **Strengthening of Placement Cell:** Workshop/Training Programmes for development of communication skills; personality development programmes will be organized

for students; Establishment of English Language Laboratory; Collaboration with industries for internship during RAWE

B. Long term plan: (Coming 30 years)

- **Infrastructure development:** Construction of farm roads and mechanization of instructional farms; Upgradation of internet connectivity from 8 mbps to 1 Gbps; Connecting University administrative units, departments and hostels with optical fiber for faster internet connectivity and surveillance system; Establishment of University Cultural Center having musical instruments, yoga cum meditation room and other recreation facilities; Development of sports complex facility; Development of University museum.
- **Academics:** Development of Online Student Portal for students linked with the University website; Establishment of new colleges - College of Dairy Science and Food Technology, College of Basic Sciences, College of Agricultural Engineering and Post Harvest Technology, College of Horticulture & Agroforestry, College of Home Science and Nutrition; College of Agricultural Business Management etc; Facilities for audio-video recording of class room lecture and their repository on University website; Development of smart class rooms for students.
- **Research:** Development of high yielding abiotic and biotic stress resistant varieties suitable for the region. Establishment of Centre of Excellence on different aspects such as abiotic stresses, climate change and potential crops like chilli, cumin, isabgol & fenugreek;

Insect pest management of crops in field and protected cultivation through environment-friendly technologies including semiochemicals, nanotechnology etc; Development of Post-harvest Technologies for vegetables and fruits to increase their shelf life and processing; Studies will be envisaged on Biochemical/Molecular basis of abiotic stress particularly salinity /water / temperature in crop plants and microbes; Development of suitable dryland farming technologies for field and horticulture crops; Development of package of practices for high value horticultural crops under protected cultivation; Planning research base for conservation agriculture, precision agriculture, specialty and secondary agriculture.

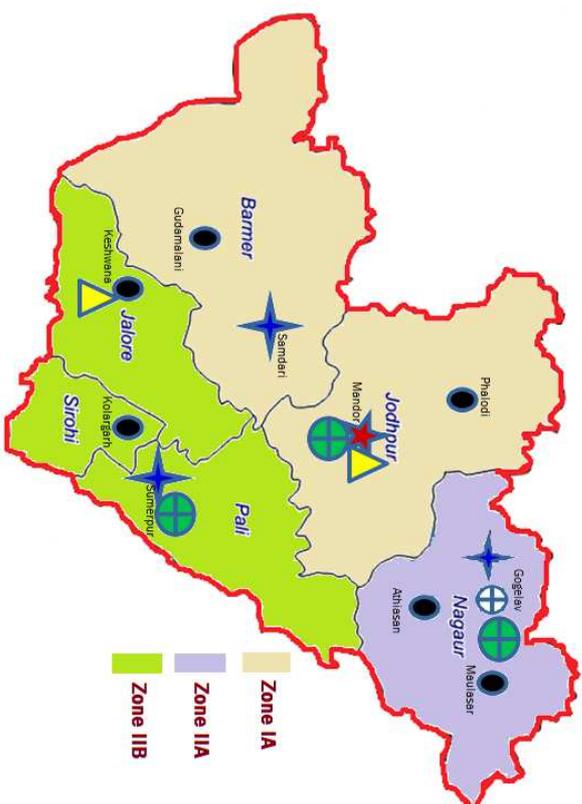
- **Extension education:** Encouraging farmers for setting up agro-processing centre for post harvest crop management in each Agro-climatic zone in collaboration with NABARD or other supporting agencies; Intensive use of ICT to disseminate technologies, problem identification and ready solution.
- **Skill Development:** Production and marketing of processed products from fruits, vegetables, seed spices and medicinal plants.

AGRICULTURE UNIVERSITY, JODHPUR

(Established on 14th September, 2013)

Overview

- ★ **University HQ**
- **College: 3**
- ▲ **ARS: 2**
- ★ **ARSS: 3**
- **KVK: 6**
- ⊕ **Institute of Diploma: 1**



Geographic Boundary

Covering 6 districts and 28% geographical area of the state
 Supporting 20.8% human and 28.4% livestock population of the state