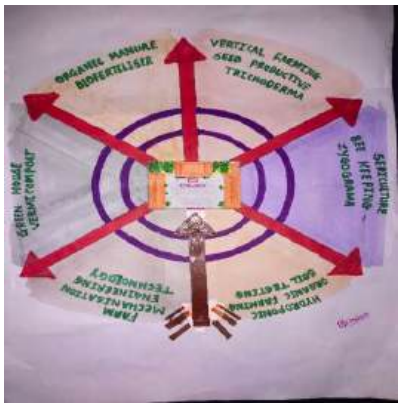
SOUVENIR

Think Globally, Act Locally.

2024-2025



Shri Shivaji Shikshan Sanstha, Pusad

College of Agriculture, Umarkhed

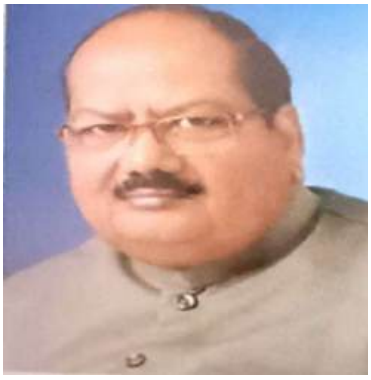
Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola Affiliated

SOURCE OF INSPIRATION

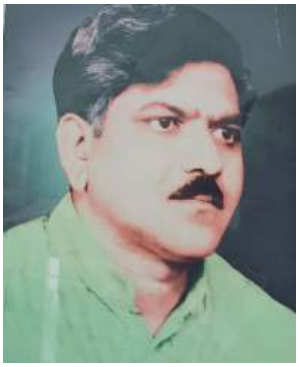
Late.Devrao Patil Chondhikar,Ex.MLA,
Founder President,
Shri.Shivaji Shikshan Sanstha, Pusad.

Late.Bhausaheb Mane ,Ex.MLA

Ex.President V.S.S.Factory,Pofali



Hon.ble.Shri.Vijay Patil Chondhikar,
Ex.MLA
Ex.President,
Shri.Shivaji Shikshan Sanstha, Pusad.



Late.Panjabrao S.Mane ,
Ex.Director of Y.D.C.C.Bank Yavatmal

Vice Chancellor

Foreword

It is with immense pleasure that I extend my Congratulations and best wishes to the College of Agriculture, Umarkhed, on the release of its Souvenir. This publication stands as evidence to the institution's firm commitment to academic excellence and holistic student development.

The contents of this Souvenir, ranging from insightful technical papers by our esteemed faculty to the vibrant contributions of our talented students, reflect the dynamic spirit and dedication of this academic community.

Agriculture, as the backbone of our nation, demands continuous innovation and dedicated efforts from its custodians. I am confident that the College of Agriculture, Umarkhed, will continue to inspire and nurture the next generation of agricultural leaders, researchers, and entrepreneurs.

I congratulate the editorial team and all contributors for their hard work and dedication in bringing this Souvenir to fruition. May this initiative inspire many more milestones in the journey of academic and agricultural excellence.

With my best wishes for your future endeavours.

Dated: 02.01.2025

(**Dr. Sharad Gadakh**)
Vice Chancellor
Dr. Panjabrao Deshmukh Krishi Vidyapeeth
Akola

Chairman
College of Agriculture
Umarkhed,
Yavatmal

Message

I am delighted to note that College of Agriculture , Umarkhed , is bringing out its maiden Souvenir in academic year 2024-25 . We would like it to be released in our annual program proposed to be held on 11th of January 2025.I congratulate editorial board for this endevour. I am informed that it contains college general information, technical section , students section & research abstract section. This will help college work and useful information reach to various platforms.

I wish every success to Souvenir.

(Dr.Vijay Panjabrao Mane)

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College of Agriculture, Umarkhed

Tq. Umarkhed Dist.Yavatmal

Academic Year 2024 -25

Shri Shivaji Shikshan Sanstha, Pusad

Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola Affiliated

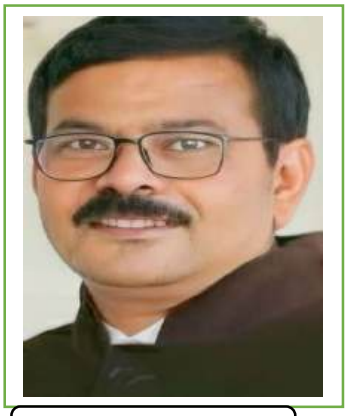
SOUVENIR

PATRONS

Shri.Aniruddha Patil Chondhikar

President

Shri Shivaji Shikshan Sanstha, Pusad



Dr.Vijayrao Mane

Chairman

College of Agriculture,Umarkhed

EDITORIAL BOARD

Chairman

Dr.R.M.Khan,
Principal College of Agriculture,Umarkhed

Faculty Members

Sr.No.	Name of Staff Member	Designation
1	Prof.Dr.R.M.Khan	Principal
2	Prof.S.K.Chintale	A.P.(Agro.)
3	Prof.A.K.Gadekar	A.P.(Agro.)
4	Prof.Y.S.Wakode	A.P.(GPB)
5	Prof.A.B.Ingle	A.P.(Econ.)
6	Prof.Mrs.K.R.Solanke	A.P.(SSAC)
7	Prof.A.S.Raut	A.P.(Extn.)
8	Prof.A.B.Tamsekar	A.P.(Engg.)
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10	Prof.V.B.Shinde	A.P.(Extn.)
11	Prof.K.V.Age	A.P.(Ento.)
12	Prof.Mrs.Dr.J.K.Mandan	A.P.(Frst.)
13	Prof.S.N.Ambhore	A.P.(Path.)
14	Prof.Dr.S.C.Nagrale	A.P.(GPB)
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18	Prof.Mrs.P.V.Ghotekar	A.P.(SSAC)
19	Prof.Miss.S.K.Gajbhiye	A.P.(Hort.)

Guest Member

Ashokraoji Wankhede (Shetimitra)

Felicitated farmer by Central & State Government

Students Members

Sr.No.	Name of students	Year
1	Sagar Dube	IV
2	Tanvi Wasnik	III
3	Bhumika Khadase	II
4	Chetana C. Dube	II
5	Wanshika Ramdhani	II
6	Shruti Anil Maske	I

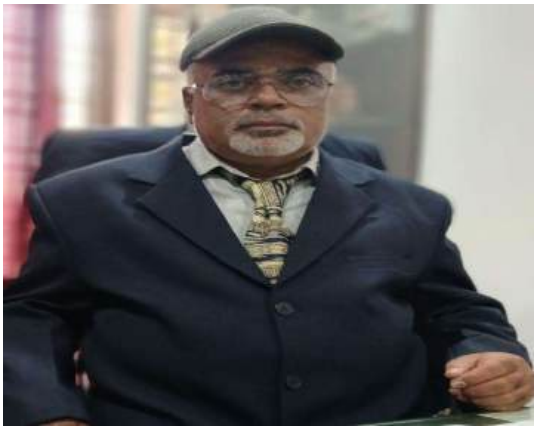
Editorial

We are pleased to place our first ever maiden SOVENIR in your hands. On my joining in July 2024 Hon'ble chairman asked me to prepare Souvenir so that we could complete it by our annual programme. Accordingly, we have taken his words and completed the task last week.

In this we have sections like general information about institute, technical papers, students' section and research abstract section. We have received the best wishes from Hon'ble Vice Chancellor of Dr.P.D.K.V., Chairman College of Agriculture, Umarkhed and many more .

This edition of Souvenir will work as prospectus beside giving scientific abstracts. I believe that this souvenir will be very informative and usefully to concerned person of agriculture.

I Personally acknowledge contribution of Shri.A.M.Paikrao Sr.Clerk,, Prof.A.S.Raut, Prof.A.B.Ingle, Gopal Rajurkar , Kadam ,Bakal , Sonare & Ade Ist Year and so many who have contributed directly or indirectly.



Prof.Dr.R.M.Khan
Address – Chief Editor Souvenir 2024-25
College of Agriculture, Umarkhed
Tq. Umarkhed Dist.Yavatmal
Academic Year 2024 -25

Prof.Dr.R.M.Khan
Principal,
College of Agriculture,
Umarkhed Dist.Yavatmal

FROM PRINCIPAL DESK

"I am pleased to take charge of College of Agriculture, Umarkhed from 01/07/2024. The first impression I got was a beautiful campus and clean environment along with disciplined students and learned staff. The college has started in 2010 and has a farm which is cent percent micro irrigated. Two sources of water supply and express feeder which gives 24 x 7 electric supply. The College has requisite class rooms and well-established Laboratories, Library, Canteen, Computer Hall etc. The equipment is added time to time. There are Generator set, Inverter, computers & peripherals, Xerox & devoted non-teaching staff, The office is spacious with large reception.

The institute is established under Shri Shivaji Shikshan Sanstha, Pusad managed by academicians and professionals. The organization is working since 1945. The institute is chaired by Agricultural Scientist.

I am very happy to join this institute and shall discharge my duties to the best of my capacity".

Above were the remarks on my joining to College.

During last six months we have worked on various aspects like admissions, college standard, infrastructures, preventive maintenance, cost reduction, agricultural production, scientific management & total quality management principles in which we got substantial success.

The Project we have completed are elegant gate at entrance upgradation of Office, Guest house, Canteen, Cattle Shed, Poultry Cage, Green House, Conference Hall. Ladies Toilet etc. We have done cent percentage micro-irrigation mobile control and increase augmented process of irrigation. The project in hands are raising of lawn, observatory , percolation tank, farm pond, biogas plant, solar project etc.

More challenges are yet to come for which we are fully prepared.

Prof.Dr.R.M.Khan

Sachin K. Chintale
Former Acting Principal (2021-2024)
Assist. Prof. Agronomy
College of Agriculture Umarkhed

The Institute is established under the trust Shri. Shivaji Shikshan Sanstha, Pusad managed by academicians & professionals. The Organization is working since 1945. College of Agriculture, Umarkhed is one of the Educational institute in the jurisdiction of the Dr.P.D.K.V.Akola at in part of the society that runs network of Schools, Colleges at a number of places. As on date it is fully developed for excellence in quality education by Dr.P.D.K.V. Akola offers a four-year undergraduate degree program, B.Sc. (Hons)Agriculture, Since 2010, the institution has been working to provide quality education to improve the life of students from rural parts of Maharashtra, including Nagpur, Chandrapur, Akola, Pune, Satara, Sangli, and Kolhapur. Students from Telangana and Andhra Pradesh.

The vision and mission of the trust is clear with Empowerment of students through need based education pertaining to efficient utilization of natural resources for sustainable agriculture development. To transform agriculture technologies to the farmer. To transform agriculture sector into grown engine of Indian economy

The college has 100 acres farm which is cent percent micro irrigated, with two sources of water supply & express feeder which gives 24x7 electric supply. The college has requisite Class rooms and well-established Laboratories, Library, Canteen and Computer lab as per need with devoted non- teaching staff. The office is spacious with large reception

Student's with XII Std. (Sci.) Passed in 10+2 Pattern from Maharashtra State Board of Higher Secondary Education or an equivalent examination with Physics, Chemistry, Biology, Mathematics, and English, anyone can get admission into this college through the entrance examination like MHT-CET/NEET/ JEE/AIEEA, The admission will be done through online admission portal of MCAER and CETCell. The intake capacity of College for 1st year Agriculture is 120 Students. Out of the total seats 80% are filled by Dr.P.D.K.V.Akola. And MCAER, Pune on the merit basis, rest of 20% are filled through Management Quota.

Agriculture is source of livelihood for 70% of Indian population directly and indirectly. As of now India is a most populated country worldwide which unfortunately creates huge food security issues. To fulfill this obligation agriculture based literate community have to work with farming community with full potential. This scenario present large scope for agricultural students who can work in government organization, academic, non-governmental organization and private sector.

Governmental organization includes central and state government administration as Agricultural Scientist, Agriculture officer, Extension officer, Field manager, SRA, JRA, Technical officer, Field Assistant etc. along with banking sector which includes nationalize banks, NABARD, RRB. Students also has opportunities in NSC, CWC, CCI, FCI, IFFCO, National fertilizer and chemicals etc. Students also can work in regional, national and multinational agriculture base

enterprises and companies. Technical education also introduces scientific thinking into students which leads to scientific Farming in future.

As an Assistant Professor of Agronomy since 2015, I have observed regarding this institution was continuous efforts were carried out for overall development of students not only with respect to academically (fulfilling the university curriculum) but also as well-rounded citizens of India. This overall development includes personality development and social awareness. Through this complete development, students have achieved remarkable goals in their lives. Many have secured positions in civil services, government jobs through MPSC, and other examinations conducted by the Government of Maharashtra. Over a hundred students work in the government sector, and more than thousands were working with private sector. Every year, more than 20 students pursue postgraduate programs like M.Sc., MBA, and ABM.

The institution has also had achievements in sports and youth festivals organized by the University and Maharashtra state. Various activities address challenging situations with the help of the National Service Scheme (NSS). Rural awareness and work experience (RAWE) program helps farmers overcome various agricultural problems such as pink bollworm, spraying awareness, and Lampi disease on cattle. These projects have been recognized and awarded by the University as innovative project. The college actively supports students seeking opportunities to pursue postgraduate programs in foreign universities and assists with placements in country and abroad.

Every year, institution organizes a state-level Krishi Gaurav Purskar on the occasion of Bhausaheb Mane's birth anniversary. This event invites progressive farmers from all over Maharashtra to shear their experiences with innovative farmers for the Umarkhed and Mahagaon divisions.

Even during the COVID-19 pandemic, the institution ensured the completion of both practical and theoretical coursework for students, as per guidelines prescribed by university.

About B.Sc.(Agriculture)Degree Programme

B.Sc. Agriculture is 4-year undergraduate degree awarded by Indian Universities for 10+2 students preferable with science stream. The college offers a four year under – graduate degree programme distributed in eight semesters. The department included in this degree programme is Agronomy, Horticulture, Agril. Botany, Animal Husbandry & Dairy Science, Soil Science & Agricultural Chemistry, Plant Pathology, Agril. Entomology, Agril.Extension, Agril Economics, Agril. Engineering, computer science. A separate one semester is allotted for RAWE (Rural Agriculture Work Experience) and one for Experiential Learning Programme. The student's academic activities involve delivering seminars, submission of RAWE reports, participating various sports in inter-collegiate as well as inter-University, NSS and cultural activities. Uptil now result of last years students is 100% . Every year most of students of this college get admission for post graduate studies in India and abroad for further studies.

Scope of B.Sc. (Agriculture)

India being predominantly ag agricultural country, the scope and utility for Agril. Technology is tremendously increasing. The degree has wide career and employment opportunities. It aims to produce expertise and skilled manpower in agricultural industries, NGOs, Govt. departments, universities, Research organizations, Banks are some of the existing career prospectuses at National and International level. The challenges of food production, processing, rural employment and Hi-tech agricultural operations are released by agriculture.

Salient Feature of the College

1) Highly experienced, qualified and motivated staff.
2) Well- equipped laboratories with latest equipment.
3) State of the art labstical work.
4) No place for indiscipline.
5) Advisory system for each student.
6) R.O. Drinking water facility.
7) Playground, for all sports activity.

Eligibility

Sr. No.	Degree Courses	Duration	Credit Load	Eligibility
1.	B.Sc. (Hons.) Agriculture	4 year's (08 Semester)	183	XII std (Sci.) Passed in 10+2 Pattern from Maharashtra State Board of Higher Secondary Education or an equivalent examination with Physics, Chemistry, Biology, Mathematics and English, those who have not offered Mathematics shall have to complete deficiency courses as prescribed by respective University. I got admission into this college through the joint entrance examination. You can get admission into this college through the entrance examination like MHT-CET/NEET/JEE/AIEEA. Admission will be done online admission portal of MCAER.

Student Selected as Asst.Manager. Axis Bank
2024 -25

Vaishnavi

Sakshi

List of Students Selected in Government Sector

Sr.No.	Name of Student	Name of Post	Enroll.No.	Year
1	Pankaj Ashok Ganjare	A.F.O.(P.N.B.)	KK-777	2012
2	Sumit Kumar Sudam Hedau	A.F.O.	II-621	2010
3	Nilesh Ganpat Mahajan	Co-operative Bank	II-642	2010
4	Achit Sambhaji Jadhav	Asst.Manager (Mumbai)	KK-782	2012
5	Arvind Ballewar	P.O.Sarswat Bank	LL-2175	2013
6	Maroti Ghule	A.F.O.(Union Bank)	MM-2593	2013
7	Pili Shiva Shankar Reddy	A.F.O.	MM-2646	2013
8	Edde Manoj Kumar	A.F.O.	MM-2589	2013
9	Aashirwad A.Uttarwar	A.F.O.	OO-2627	2016
10	Mrs.Tejasvini Dhage	A.F.O.	PP-3147	2017
11	Nitin Domale	A.F.O.	OO-2541	2016
12	Mrs.Ashwini Ladaskar	A.F.O.	OO-2580	2015
13	Mrs.Puja Gawande	R.R.B., P.O.	PP-3155	2017
14	Bharat Khobragade	S.B.Z. P.O.	OO-2577	2016
15	Saurabh Dolas	A.F.O.C.B.Z.	OO-2540	2016
16	Mrs.Samiksha Datar	S.B.I.(Cleark)	OO-2537	2016
17	Tursa Parteti	Sales Tax Officer		2012-13
18	Monika Rajgadkar	Sales Tax Officer		2014-15
19	Shubahm Dukare	Agriculture Officer		2016-17
20	Dipak S. Masolkar	Agriculture Extension Officer		2011-12
21	Santosh Khandare	Forest Guard		2013-14
22	Kiran Mukade	Agriculture Officer		2012-13
23	Dinesh Kadam	Talathi (Nagpur)		2012-13
24	Sunil Londhe	Agri.Assistant		2016-17
25	Shardhha Munde	Agri.Assitant		
26	Anup Khobragade	F.C.I.		2015-16
27	Adewad Madhav	Cluster Officer		2012-13

List of Students Selected in Private Sector

Sr.No.	Name of Student	Name of Post	Enroll.No.	Year
1	Anil V. Dawane	Manager	II	
2	Rajkumar P.Garude	Talathi	II	
3	Satyanaryana Godase	Private Company	II	
4	Sujaykumar Burrewar	Private Company	JJ	
5	Rahul G. Hanwate	Private Company	JJ	
6	Narendra Reddy Byreddy	Private Company	JJ	
7	Nitesh B.Lakade	Asst.Prof. of Agril.Polytech.	KK	
8	Raghava Cirigiri	Private Company	JJ	
9	K.Santosh Ushanna	Private Company	JJ	
10	Santosh S.Mane	Asst.Prof. of Agril.Polytech.	KK	
11	Nishant Inzalkar	Private Company	II	
12	Saikumar Kothadhoddi	Private Company	JJ	
13	Krushna B. Jadhav	Private Company	JJ	
14	Akshay M.Jagtap	Private Company	II	
15	Chetan A. More	Dhan Foundation Madurai	JJ	
16	Manish P.Thakare	Private Company	KK	
17	Prakash S.Suryawanshi	Private Company	JJ	
18	Subodh C.Kamble	Private Company	II	
19	Kailas N.Magar	Private Company, Paris	II	
20	Puja G.Chandrawanshi	Asst.Prof. COA,UKD	JJ	
21	Swadesh P.Nerkar	Private Company	II	
22	Kiran M.Patil	Private Company,Pune	II	
23	Manish N.Dhere	Private Company	JJ	
24	Sujata W.Madke	Private Company	JJ	
25	Mayur M.Thawali	Foundation Madurai Manager		
26	Dipak S.Masolkar	A.Extension officer	JJ	
27	Manisha P.Kurme	Asst.Prof.COA,UKD	JJ	
28	Shital K.Gajbhiye	Asst.Prof.COA,UKD	JJ	
29	Ganesh P.Upewad	PSI.Exam Pre Qualigy	JJ	
30	Sambhaji K.Mane	Asst.Prof.AHDS	JJ	
31	Suvarna C.Nagrale	Asst.Prof. BOT,COA,UKD	II	
32	Dnyaneshwar Pund	Monsanto Company	MM	
33	Santosh Mohire	Coromandal International	MM	
34	Jagdish Bahaudre	Kisan Agro Foundation Ltd.	MM	
35	Amol Mohire	Coromandal Int		
36	Shubham Meshram	Pravardhan Seed Pvt.Ltd	MM	
37	Sandip Khandare	Crystal Crop Protection Ltd.	MM	
38	Tursa Parteti	TechnicalAsst.Agril.	KK	
39	Kiran K.Mukade	Krushi Mandal Adhikari	KK	
40	Shubham Tajane	Sales Officer	KK	
41	Manisha Thakare	KPMG,India, Pune	KK	
42	Anand S.Raut	Asst.Prof. COA,UKD	KK	
43	Pramod Shinde	Sales Officer, Parbhat	KK	
44	Swapnil Yadav Mekala	Agril.Extn Officer		

Satyashodhak Lakhpati Farmer Pattern: Our Advanced Agricultural Philosophy

Ashok Wankhede
Recipient of Central and State Government Awards,
PDKV Ideal Farmer 2024)
President - Bhausaheb Mane Krishi Pratishthan,
Umarkhed, Yavatmal District

If anyone first wrote about the issues of farmers, it was Satyashodhak Mahatma Jyotiba Phule. In his book "Shetkaryacha Asud", he truthfully presented the struggles and conditions of farmers. Our country has many individuals who dedicate themselves to society, but Mahatma Jyotiba Phule stands as the only great soul who truly voiced the plight of farmers.

In our region, the propagation of the Satyashodhak movement has been significantly influenced by Satyashodhak Sahakar Maharshi Bhausaheb Mane. He contributed greatly to the cooperative sector and rural education. Bhausaheb Mane served as the MLA of Umarkhed twice, from 1967 to 1978. In his memory, we established the Bhausaheb Mane Krishi Pratishthan (Agricultural Foundation), which has been operational for the past 30 years. Initially working at the taluka level, then the district level, and now at the state level, we are constantly working for the welfare of farmers. I have been serving as the unbroken president of this foundation.

Every year, on the occasion of Bhausaheb Mane's death anniversary on January 9th, we organize a state-level agricultural conference. This conference facilitates knowledge exchange among progressive farmers, agricultural scientists, extension experts, and media representatives involved in agricultural technology dissemination. We also focus on the progress of young farmers and women engaged in sustainable agriculture and daily income-generating activities. During these conferences, farmers present their innovations, which inspire local and other farmers. This aligns with the objectives of technology transfer emphasized by Dr. Punjabrao Deshmukh Agricultural University, Akola. This effort has shown excellent results in our region, especially in milk production and the silk industry, achieving a significant white revolution.

Under the guidance of Dr. Vijayrao Mane (an agricultural scientist), we aim to create a functional agricultural ecosystem by linking food chains, nitrogen cycles, and carbon cycles. This reduces the cost of farming and increases yields. When farming becomes low-cost and high-yielding, the principles of advanced agriculture will truly come to fruition.

Based on this principle, we have integrated various practices such as mulberry cultivation for silkworms, feeding silkworm waste to cattle, and using crop residues for goat rearing and poultry farming. The vermicompost and animal waste are then used to enhance soil fertility. Excess worms and silkworms are used as poultry feed, creating a sustainable cycle. For example, our local "Umarkhed Jowar" variety has been branded to minimize bird attacks, as its unique upward-turning cobs make it less accessible to birds. We are also exploring biological methods to protect crops from wild boars.We are developing techniques for processing milk and silk products to ensure farmers can store their produce and sell it when prices are favorable. By collectively reeling silk threads, farmers gain market value. Processed silk pupae are used for medicinal proteins and poultry feed, providing essential nutrients like Omega-3, enhancing the health of native chicken breeds, and producing protein-rich food for humans.

Our "Satyashodhak Lakhpati Farmer Pattern" focuses on creating interconnected cycles and chains in farming ecosystems. For example, cultivating 40 acres of mulberry, 40 acres of jowar, and 20 ares of vegetables, combined with maintaining 2-3 dairy cows or buffaloes, 5-10 goats, and 20-25 indigenous chickens, ensures daily income for farmers. This integrated system ensures agricultural prosperity, which is the essence of the Satyashodhak philosophy.

If the government adopts our pattern or includes us in policy implementation, it will undoubtedly pave the way for farmer prosperity.

Agronomy - the Mother of all Agricultural Departments

Atul Krushnarao Gadekar *

Agriculture always remains decisive factor for accelerate growth of the developing countries. As per India concern got measure problem of food security which ultimately dependant on efficient agriculture production system. To keep this functional and sustainable various factor such as Government, research scientist and educational institution plays vital role. Out of it educational institution has got great responsibility to collect, analyse and transfer to student so that they will use to solve real life problems for betterment of rural community.

Agriculture institution is the amalgamation of various facility/ department with functions as a system out of which Agronomy is a major department which deals with crop production and it's management by considering principal of sustainability. Agronomist acts as a mediator between other departments. It also a manager which collaborate with other department considering their valuable suggestions and applies them for management decision on field for successful crop production.

Agronomy deals with it's own sub department that is agro meteorology, Irrigation management, Weed management Organic and sustainable management etc. Which in comprehension forms department of Agronomy. In Agricultural educational institution, staff of agronomy performs both jobs as teacher and manager of field.

College of Agriculture, Umarkhed department of Agronomy is a kind of triode Shri.S.K.Chintale head of department of Agronomy & Assistant professor, A.K.Gadekar, Assistant Professor, T.A.Chavhan assistant professor of Agronomy. Each staff is equal shares responsibility as per decision taken be HOD and Principal of college.

Our departmental laboratory is a museum of different aspect of agronomy which contains various chart, model made from Iron or wood displays and flex board, meteorological implements and various sensor. The charts contain primary tillage, secondary tillage, tillage of inter cultivation, hand tools, implents for seed bed preparation, implements for irrigated farm, implents for small farm rainfed area etc. Which present view of real time agriculture implements. The model display unit content a mini model of agriculture implements. The seed display units' contents collection of various seed of field crop.

The irrigation stream measuring instrument provide idea regarding their use. Meteorological instrument is very useful & provide idea regarding their use how they work in observation. In summation the department content all the necessary tools and material regarding education and research purpose. Department also got vermi composting unit which is prepared and maintained by module students. Whatever production receives from this unit use in college farms and also sale purpose. The farmers form nearby area visit to department and buy this vermi compost in cheap rates.

The Department of Agronomy is also got major share of credit in both V th and VIth Dean committee syllabus given by MCAER. The syllabus contains basics of Agronomy from beginning to advance courses later on. Syllabus is complete theoretical knowledge, practical knowledge as per department of Agronomy concerns.

The Department of Agronomy also look the college agriculture field. The field is divided into sub unit where field crops and horticultural crops were grown. Field contains tur/gram sorghum and safflower/

In conclusion department of agronomy is important indispensable part of our agriculture education system. The decisive for Agricultural education system. The efficient functioning of department of Agronomy is a decisive factor for agricultural education system.

* Asstt.Professor, Department of Agronomy College of Agriculture,Umarkhed Dist.Yavatmal

Extension Activities

Prof. A. S. Raut and Prof. V. B. Shinde

Introduction:

The courses related to Agricultural Extension & Communication were offered to Undergraduate and Diploma students since the inception of the college in 2010. The department aims at accelerating the transfer of agricultural technology through its innovative academic programme to mould skilled extension personnel. The syllabus of Undergraduate courses are as per the current trends in agriculture field. The department regularly conducts farmers' need-based basic and strategic research in the field of extension sciences. The department coordinates RAWE programme offered to the Seventh semester undergraduate students. Also the various programme under the NSS unit are conducted by the department.

Principles of Extension Education

1. Participatory Approach: Involving farmers and rural communities in the planning, implementation, and evaluation of extension programs.
2. Need-Based: Focusing on the specific needs and problems of farmers and rural communities.
3. Practical and Applicable: Providing practical and applicable knowledge and skills that can be readily used by farmers and rural communities.

Objectives of Extension Education

1. Disseminating New Technologies: To disseminate new technologies and practices to farmers and rural communities.
2. Building Capacity: To build the capacity of farmers, students, rural communities, and extension agents to adopt and adapt new technologies and practices.
3. Promoting Sustainable Agriculture: To promote sustainable agriculture practices that conserve natural resources, reduce environmental degradation, and promote social equity.
4. Enhancing Rural Livelihoods: To enhance rural livelihoods by improving access to markets, credit, and other services.
5. Fostering Innovation: To foster innovation and entrepreneurship in agriculture and rural dev.

Asstt. Professor, Department of Agricultural Extension, College of Agriculture Umarkhed, Dist. Yavatmal

Methods of Extension Education

1. Demonstrations: Showcasing new technologies and practices to farmers and rural communities.
2. Training: Providing hands-on training to farmers and rural communities on new skills and technologies.
3. Field Days: Organizing field days to showcase new technologies and practices and provide a platform for farmers and rural communities to interact and share experiences.
4. Mass Media: Using mass media such as radio, television, and newspapers to disseminate information to farmers and rural communities.

Work carried out by Extension Education:

On-Farm Activities

1. Crop Demonstrations: Conducting demonstrations on new crop varieties, farming practices, and technologies.
2. Livestock Demonstrations: Conducting demonstrations on improved livestock breeds, feeding practices, and health management.
3. Farm Visits: Visiting farms to provide technical guidance, advice, and support to farmers

Training and Capacity Building

1. Training Programs: Organizing training programs for farmers, rural youth, and women on various aspects of agriculture and rural development.
2. Workshops and Seminars: Conducting workshops and seminars on topics such as sustainable agriculture, climate change, and market access.
3. Study Tours: Organizing study tours for farmers and rural communities to expose them to new technologies, practices, and innovations.
4. Mentorship Programs: Establishing mentorship programs to provide guidance and support to new farmers and rural entrepreneurs.

Information Dissemination

1. Print Media: Publishing newsletters, bulletins, and pamphlets to disseminate information on new technologies, practices, and innovations.
2. Electronic Media: Using electronic media such as radio, television, and social media to disseminate information and reach a wider audience.
3. Field Days: Organizing field days to showcase new technologies, practices, and innovations and provide a platform for farmers and rural communities to interact and share experiences.
4. Exhibitions: Participating in exhibitions and fairs to showcase new technologies, practices, and innovations and provide information to farmers and rural communities.

Community Development

1. Community Mobilization: Mobilizing communities to participate in extension programs and activities.
2. Group Formation: Forming groups of farmers, rural youth, and women to provide a platform for sharing experiences, knowledge, and resources.
3. Leadership Development: Developing leadership skills among farmers, rural youth, and women to enable them to take charge of their own development.
4. Partnerships and Collaborations: Building partnerships and collaborations with other organizations, institutions, and stakeholders to leverage resources, expertise, and support.

Research and Development

1. Needs Assessment: Conducting needs assessments to identify the knowledge, skills, and technology gaps among farmers and rural communities.
2. Technology Development: Developing and testing new technologies, practices, and innovations to address the needs of farmers and rural communities.
3. On-Farm Trials: Conducting on-farm trials to test and validate new technologies, practices, and innovations.
4. Impact Assessment: Assessing the impact of extension programs and activities on farmers, rural communities, and the broader society.

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5
An Introduction to Soil Testing in Sustainable Agriculture

Mrs. Pallavi Vijayrao Ghotekar *

Introduction

Soil testing is a crucial process that evaluates the physical, chemical and biological properties of soil. It provides valuable insights into soil health, fertility and potential contaminants, enabling informed decisions for agricultural productivity, environmental sustainability and economic benefits.

Importance of Soil Testing

Soil testing is essential for:

1. Optimizing crop yields: Accurately determines nutrient deficiencies and optimal application rates.
2. Protecting environmental sustainability: Preserves soil structure, organic matter and biodiversity.
3. Ensuring public health: Prevents waterborne diseases and reduces contaminant leaching.
4. Supporting economic development: Increases property value and attracts businesses.

Types of Soil Tests

1. Physical Tests:

- Texture analysis
- Water holding capacity
- Permeability
- Density measurement

2. Chemical Tests:

- pH measurement
- Nutrient analysis (N, P, K, etc.)
- Electrical conductivity (EC)
- Soil extract analysis
- Heavy metal testing

3. Biological Tests:

- Microbial analysis
- Soil respiration
- Soil organic matter (SOM) analysis
- Soil enzyme analysis

Soil Testing Methods

1. Laboratory Analysis:

- Soil extraction
- Instrumental analysis (AAS, ICP-MS, etc.)
- Chromatography

2. Field Testing Methods:

- Soil color observation
- Soil texture by feel
- Soil moisture measurement

3. Advanced Techniques:

- Geophysical testing (GPR, ERT, etc.)
- Remote sensing
- Soil mapping

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Benefits of Soil Testing

1. Improved crop yields: Optimizes fertilizer and water usage.
2. Enhanced soil health: Promotes biological activity and organic matter.
3. Reduced chemical use: Minimizes pesticide and fertilizer applications.
4. Increased property value: Enhances soil's productive potential.

Steps for Soil Testing

1. Select a testing method: Laboratory or field testing.
2. Collect soil samples: Proper sampling techniques.
3. Choose a laboratory: Certified laboratory.
4. Interpret results: Accurately understand test results.
5. Implement recommendations: Adjust soil management practices.

Measurement of Soil Testing Parameter

pH, Electrical Conductivity (EC) and Organic Carbon (OC) are crucial soil properties for agricultural productivity, environmental sustainability and ecosystem balance.

pH

1. Definition: Measures soil acidity or alkalinity (0-14 pH units).
2. Importance: Affects nutrient availability, microbial activity and plant growth.
3. Optimal range: 6.0-7.0 for most crops.
4. Factors affecting pH: Soil type, parent material, organic matter, fertilizers.

Electrical Conductivity (EC)

1. Definition: Measures soil's ability to conduct electricity (µS/cm).
2. Importance: Indicates soil salinity, nutrient levels and water quality.
3. Optimal range: 100-500 µS/cm for most crops.
4. Factors affecting EC: Soil salinity, nutrient levels, water table depth.

Organic Carbon (OC)

1. Definition: Measures soil's organic matter content (%).
2. Importance: Affects soil fertility, structure, water-holding capacity and carbon sequestration.
3. Optimal range: 2-5% for most crops.
4. Factors affecting OC: Soil type, organic amendments, land use.

Interrelationships

1. pH affects OC decomposition and nutrient availability.
2. EC influences nutrient uptake and water availability.
3. OC impacts pH and EC through soil buffering capacity.

Likewise, Nitrogen (N), Phosphorus (P) and Potassium (K) are essential macronutrients for plant growth, soil fertility and ecosystem balance. Here's an overview:

Nitrogen (N)

1. Definition: Essential for plant growth, development and productivity.
2. Functions: Protein synthesis, chlorophyll production, enzyme activation.
3. Optimal range: 50-150 ppm (parts per million) for most crops.
4. Factors affecting N availability: Soil type, organic matter, microbial activity, fertilizers.

Phosphorus (P)

1. Definition: Crucial for plant growth, root development and energy transfer.
2. Functions: Photosynthesis, respiration, cell division and differentiation.
3. Optimal range: 10-30 ppm for most crops.
4. Factors affecting P availability: Soil type, organic matter, microbial activity, fertilizers.

Potassium (K)

1. Definition: Essential for plant growth, resistance to disease and stress tolerance.
2. Functions: Cell membrane stabilization, enzyme activation, water balance.
3. Optimal range: 100-200 ppm for most crops.
4. Factors affecting K availability: Soil type, organic matter, microbial activity, fertilizers.

Fertilizer Application

1. Types: Organic (manure, compost), inorganic (synthetic fertilizers).
2. Application rates: Based on soil test results, crop requirements and local regulations.
3. Timing: Follow recommended application schedules.

Best Management Practices

1. Soil conservation: Reduce erosion, maintain soil organic matter.
2. Integrated nutrient management: Combine fertilizers, organic amendments and conservation practices.
3. Irrigation management: Optimize water use, minimize nutrient leaching.

Conclusion

Soil testing provides valuable insights into soil health, fertility and suitability for specific crops or land uses.

1. Soil testing is essential for optimizing crop productivity, soil fertility and environmental sustainability.
2. Regular soil testing helps monitor soil health, detect nutrient deficiencies and adjust management practices.
3. Soil testing informs fertilizer application, irrigation management and pest control strategies.
4. Understanding soil properties (pH, EC, NPK, organic carbon) is crucial for balanced soil management.

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Testing of Quality of Water

Mrs. Kalyani Raosaheb Solanke *

What is Water Quality?

Water Quality can be defined as the chemical, physical and biological characteristics of water, usually in respect to its suitability for a designated use. Water can be used for recreation, drinking, fisheries, agriculture or industry. Each of these designated uses has different defined chemical, physical and biological standards necessary to fulfil the respective purpose. For example, there are stringent standards for water to be used for drinking or swimming compared to that used in agriculture or industry.

1.2 What is Water Quality Analysis?

After many years of research, water quality standards are put in place to ensure the suitability of efficient use of water for a designated purpose. Water quality analysis is to measure the required parameters of water, following standard methods, to check whether they are in accordance with the standard.

1.3 Why Water Quality Analysis is required?

Water quality analysis is required mainly for monitoring purpose. Some importance of such assessment includes: (i) To check whether the water quality is in compliance with the standards, and hence, suitable or not for the designated use.

(ii) To monitor the efficiency of a system, working for water quality maintenance (iii) To check whether upgradation / change of an existing system is required and to decide what changes should take place

(iv) To monitor whether water quality is in compliance with rules and regulations. Water quality analysis is of extremely necessary in the sectors of:

- Public Health (especially for drinking water)
- Industrial Use

2. **METHODS OF WATER QUALITY ANALYSIS**

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Types of Water Tests

1. Physical Tests: pH, temperature, turbidity, total dissolved solids (TDS)

2. Chemical Tests: Bacteria, viruses, heavy metals, pesticides, volatile organic compounds (VOCs)

3. Biological Tests: Microbial analysis, biochemical oxygen demand (BOD), chemical oxygen demand (COD)

Benefits of Water Testing

1. Improved Public Health: Prevents waterborne diseases.

2. Environmental Protection: Preserves aquatic life.

3. Economic Benefits: Increases property value.

4. Regulatory Compliance: Meets national and local water quality standards.

Steps for Water Testing

1. Select Testing Method: Laboratory or field testing.

2. Collect Water Samples: Proper sampling techniques.

3. Choose Certified Laboratory: Accredited laboratory.

4. Interpret Results: Accurately understand test results.

5. Implement Recommendations: Adjust water treatment and management practices.

Measurement of Water Quality Parameter: -

pH, Electrical Conductivity (EC) and Total Dissolved Solids (TDS) are crucial water quality parameters. Here's an overview:

pH

1. Measures water acidity or alkalinity (0-14 pH units).

2. Affects aquatic life, corrosion, taste and odor.

3. Optimal range: 6.5-8.5 for drinking water.

4. Factors affecting pH: Water source, treatment processes, contamination, temperature.

Electrical Conductivity (EC)

1. Measures water's ability to conduct electricity (µS/cm).

2. Indicates total dissolved solids (TDS) and water hardness.

3. Optimal range: 100-500 µS/cm for drinking water.

4. Factors affecting EC: TDS, water temperature, salinity, contamination.

Total Dissolved Solids (TDS)

1. Measures dissolved solids in water (mg/L).

2. Includes ions, minerals, metals and other inorganic compounds.

3. Optimal range: 100-500 mg/L for drinking water.

4. Factors affecting TDS: Water source, treatment processes, contamination

Interrelationships

1. pH affects EC and TDS.

2. EC influences water hardness and corrosion.

3. TDS impacts water taste, odor and aesthetic quality.

Measurement Methods

1. pH meters (digital or portable).

2. EC meters (digital or portable).

3. TDS meters (digital or portable).

4. Laboratory analysis (titration, spectrophotometry or ion chromatography).

Regulatory Limits

1. Drinking water: EPA (pH: 6.5-8.5, EC: 100-500 µS/cm, TDS: 500 mg/L).

2. Aquatic life: EPA (pH: 6.5-8.5, EC: 200-1,000 µS/cm, TDS: 1,000 mg/L).

3. WHO guidelines: pH (6.5-8.5), EC (250-500 µS/cm), TDS (500 mg/L).

Likewise, Chlorine, Carbonate and Bicarbonate are essential water quality parameters. Here's an overview:

Chlorine

1. Definition: Disinfectant and sanitizer added to water (mg/L or ppm).

2. Importance: Kills bacteria, viruses and other microorganisms.

3. Optimal range: 0.5-2.0 mg/L for drinking water.

4. Health effects: Excessive levels (>5 mg/L) cause eye and skin irritation, respiratory issues.

5. Measurement methods: Colorimetry, spectrophotometry, titration.

Carbonate (CO_3^{2-})

1. Definition: Anion present in water (mg/L or ppm).

2. Importance: Affects pH, water hardness and alkalinity.

3. Optimal range: 50-200 mg/L for drinking water.

4. Health effects: Generally non-toxic, but high levels affect pH and water quality.

5. Measurement methods: Titration, spectrophotometry, ion chromatography.

Bicarbonate (HCO3-)

1. Definition: Anion present in water (mg/L or ppm).

2. Importance: Affects pH, water hardness and alkalinity.

3. Optimal range: 100-300 mg/L for drinking water.

4. Health effects: Generally non-toxic, but high levels affect pH and water quality.

5. Measurement methods: Titration, spectrophotometry, ion chromatography.

Interrelationships

1. Chlorine affects bacterial growth and water disinfection.

2. Carbonate and bicarbonate influence pH and water alkalinity.

3. Chlorine and carbonate/bicarbonate interact in water treatment processes.

Regulatory Limits

1. Drinking water: EPA (Chlorine: 0.5-2.0 mg/L, Carbonate: 50-200 mg/L, Bicarbonate: 100-300 mg/L).

2. Aquatic life: EPA (Chlorine: 0.2-1.0 mg/L, Carbonate: 20-100 mg/L, Bicarbonate: 50-200 mg/L).

3. WHO guidelines: Chlorine (0.5-2.0 mg/L), Carbonate (50-200 mg/L), Bicarbonate (100-300 mg/L).

Frequency of Testing

1. Drinking Water: Regular testing (annually or biennially)

2. Surface Water: Regular testing (seasonally or annually)

3. Groundwater: Regular testing (annually or biennially)

Best Practices

1. Regular testing.

2. Certified laboratories.

3. Accurate interpretation.

4. Implement recommendations.

5. Monitor water quality.

Conclusion

Water quality testing provides valuable insights into water safety, sustainability and environmental health. Here's a conclusion.

1. Regular water quality testing is essential for ensuring public health, environmental protection and economic sustainability.
2. Water quality parameters (pH, Temperature, Turbidity, Total Dissolved Solids, Chlorine, Carbonate, Bicarbonate) impact water suitability for drinking, irrigation and aquatic life.
3. Testing frequency and methods (laboratory analysis, field testing, online monitoring) depend on water source, usage and regulatory requirements.

References:

1)Water Quality: An Introduction by Claude E. Boyd - This book provides a basic understanding of water quality, emphasizing physical, chemical, and biological factors. [1] [2]

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3) Handbook of Drinking Water Quality by John De Zuane - This book combines information from various sources, providing immediate access to data and guidelines needed to understand drinking water parameters. [4]

4) Water Quality Regulations by the US EPA - This book provides an in-depth look at water quality regulations.

5) Introduction to Drinking Water Quality Testing - This guide offers an overview of drinking water quality testing.

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Agricultural Engineering - Boon for Agriculture

Akshay Bandu Tamsekar *

Agricultural engineering is a field that combines engineering, biology and environmental science to improve farming and Agri business. The first use of agricultural engineering was the introduction of irrigation in large scale agriculture in the NILE & Euphrates River before 2000 B.C. large irrigation structure were also present in Baluchistan and India before Christian Era. In other part of Asia, agriculture engineering was heavily present in Chaina. In South America Irrigation was practiced in Peru Incase and in North America by the Azteas.

Agricultural engineering is a dynamic field that contributes significantly to global food security and sustainable agriculture. By designing efficient machinery, promoting sustainable practices, developing innovative food processing technologies, and driving rural development, agricultural engineers play a vital role in ensuring a food-secure future. As technology continues to advance, agricultural engineers will be at the forefront of developing innovative solutions to address the challenges of a growing population and changing climate.

Agricultural engineering, a fascinating blend of science and technology, plays a pivotal role in addressing the global challenges of food security and sustainable agriculture. It involves applying engineering principles to agricultural practices, aiming to optimize crop production, improve food processing, and enhance rural development.

One of the core areas of agricultural engineering is the design and development of efficient agricultural machinery. From tractors and harvesters to irrigation systems and precision farming tools, these machines streamline agricultural operations, reducing labour costs and increasing productivity. Additionally, agricultural engineers work on developing sustainable agricultural practices, such as soil conservation techniques, water management strategies, and integrated pest management systems. These practices help preserve natural resources and minimize the environmental impact of agriculture.

Another significant contribution of agricultural engineering lies in food processing technology. Engineers develop innovative methods to process and preserve food, ensuring its quality, safety, and nutritional value. They design efficient food processing plants, optimize storage facilities, and develop packaging solutions to extend the shelf life of agricultural products. Furthermore, agricultural engineers play a crucial role in rural development by designing and implementing infrastructure projects, such as rural electrification, irrigation systems, and transportation networks. These initiatives improve the living standards of rural communities and promote economic growth in agricultural regions. In recent years, agricultural engineering has embraced technological advancements to revolutionize the industry. Precision agriculture, a cutting-edge technology, utilizes GPS, remote sensing, and data analytics to optimize crop management practices. By collecting and analysing data on soil conditions, weather patterns, and crop health, farmers can make informed decisions to maximize yields and minimize resource use. Additionally, agricultural engineers are exploring the potential of automation and robotics in agriculture. Autonomous tractors, drones, and robotic harvesting systems are being developed to increase efficiency and reduce labour requirements.

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- **Agriculture engineer design and develop equipment and systems for agriculture including:-**
  - **Farming tools**:- Tractor, irrigation system and crop storage facility .
  - **Climate Control** :-System to increase the comfort and productivity of livestock.
  - **Refrigeration:** - System to increase storage capacity and efficiency .
  - **Animal Waste disposal**:-Solution to improve animal waste disposal .
  - **Fertilizer Application** :- System to improve efficiency in fertilizer application.
  - **Harvesting System**:- Automated system for harvesting.
- **Agricultural Engineering Departments**
  1) Farm Machinery & Power
  2) Agriculture Process Engineering
  3) Renewable Energy
  4) Irrigation and Drainage Engineering
  5) Farm structure
  6) Soil and water conservation engineering.

Reference:

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5) Principles of Agricultural Engineering by Fedorenko, A.M.

IMPORTANCE OF PLANT BREEDING AND METHODS OF BREEDING

Yogesh Shamrao Wakode*

Introduction:

Plant breeding can be defined as an art, a science, and technology of improving the genetic makeup of plants in relation to their economic use for the man kind. From times immemorial, the plant breeding has been helping the mankind. With knowledge of classical genetics, number of varieties have been evolved in different crop plants. In order to combat the global alarm created by population explosion, the food front has to be strengthened which is serious challenge to those scientists concerned with agriculture. Advances in molecular biology have sharpened the tools of the breeders, and brighten the prospects of confidence to serve the humanity. The application of biotechnology to field crop has already led to the field testing of genetically modified crop plants.

Objective

To impart knowledge to the students on the principles and procedures of plant breeding in self and cross pollinated crops to develop the high yielding varieties / hybrids

By the end of the course, the students will be able to

- learn breeding procedures in self and cross pollinated crops
- understand exploitation of heterosis utilizing male sterility and other methods
- know about the various population improvement programmes study about the fundamentals of mutation, polyploidy and wide hybridization and their role in crop improvement.

Importance of plant Breeding

Genetics and plant breeding play crucial roles in driving crop improvement efforts, ensuring sustainable food production and addressing global challenges such as population growth and climate change. This review article provides a comprehensive overview of the role of genetics and plant breeding in crop improvement, The article explores the fundamental principles of genetics, including inheritance patterns and genetic variation, and their implications for trait expression in crops. It discusses the application of genetic markers and quantitative trait loci (QTL) mapping, along with the emerging field of genomic selection, in facilitating the selection of desirable traits for plant breeding programs. Traditional breeding methods, hybridization, and the integration of advanced molecular breeding tools are explored as means to enhance crop performance. Additionally, the potential of genome editing technologies, such as CRISPR-Cas9, in accelerating the breeding process and enabling precise modifications in plant genomes is discussed. The article also addresses important considerations in crop improvement, such as balancing yield improvement with agronomic traits, enhancing resistance against biotic and abiotic stresses, and incorporating socio-economic and environmental factors. Germplasm conservation and utilization for future breeding endeavours are emphasized.

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METHODS OF PLANT BREEDING

Various approaches (viz., selection, hybridization, mutation, etc) that are used for genetic improvement of crop plants are referred to as plant breeding methods or plant breeding procedures or plant breeding techniques. The choice of breeding methods mainly depends on the mode of pollination, mode of reproduction, gene action and breeding objective of crop species. Plant breeding methods are generally classified on the basis of application of crop improvement (general methods, special methods and population improvement approaches) and hybridization (methods involving hybridization and methods not involving hybridization)

Brief account of breeding methods:

Plant introduction is applicable to all three groups of crop plants, viz., self pollinated, cross pollinated and asexually propagated species. It is an old est and rapid method of crop improvement. The introduced material may be used in three ways viz., directly as a variety**,** As a variety after selection**,** As a parent in the hybridization for development of variety or hybrid

Pureline selection is applicable to self-pollinated species. It is also used sometimes in cross pollinated species for development of inbred lines. A single best pure line is released as a variety. Thus a pureline variety is homozygous and homogeneous population.

Mass selection is common in cross pollinated species and rare in self-pollinated and asexually propagates species. In self-pollinated crops, a mass selected variety is a mixture of several purelines. Thus it is a homozygous but heterogeneous population. In cross pollinated species, a mass selected variety is a mixture of several hetero and homozygotes. Thus, it is a heterozygous and heterogeneous population.Progeny selection is used in cross pollinated species. A variety developed by this method is heterozygous and heterogeneous population because it consists of several hetero and homozygotes.

Pedigree method is applicable to both self and cross pollinated species. In self pollinated crops progeny of a single best homozygote is released as a variety. Thus a variety developed by this method has a homozygous and homogeneous population. In cross pollinated species, it is used for developed of inbred lines. Bulk nad single seed descent methods are used in self pollinated species. Progeny of a single best homozygote is released as a varie ty by these methods. Thus, varieties developed by these methods are homozygous and homogeneous.

Backcross method is applicable in all three groups of crop species. This method is used for transfer of oligogenic characters from a donor source to a well adapted variety. This method is also used for development of multilines, Isogenic lines and transfer of male sterility. This method is more effective in transferring oligogenic characters than polygenic traits.

Multiline varieties are developed in self pollinated species. They are mixture of several Isogenic lines, closely related lines or unrelated lines. Thus a multiline variety is a homozygous but heterogeneous population.

Clonal selection is used in asexually propagated species. In this method progeny of a single best clone is released as a variety. Such variety has heterozygous but homogeneous population.

Heterosis breeding is used in/all the three groups. However, it is common in cross pollinated and asexually propagated species and rare in self pollinated species. A hybrid variety has homogeneous but heterozygous population. Synthetic and composite varieties are developed in cross pollinated species. Such varieties consist of several homozygotes and heterozygotes and thus constitute a heterogeneous population.

Mutation breeding is common in self pollinated and asexually propagated species and rare in cross pollinated species. A mutant variety differs from parent variety in one or few characters. A mutant differs from a segregant in two main ways. Firstly, the frequency of segregants is very high and that of mutant is extremely low (0.1%). Secondly, mutant differs from parent variety in one or few characters, where as a segregant differs from parent material in several characters.

Polyploidy breeding is common in asexually propagated species and rare in self and cross pollinated species. A polyploidy variety differs from parent variety in chromosome numbers and exhibit gigant morphological characters.

Distant hybridization is used in all the three types of crop species. However, this method is used for transferring some desirable genes from wild species to the cultivated ones. Generally, backcross method is used for transfer of oligogenic characters and pedigree method for transfer of polygenic characters.

Transgenic breeding is applicable to all three types of crop species. This method is used to solve specific problems which can not be solved by conventional breeding techniques. This method will serve as a tool and can not be used as a substitute for conventional breeding methods.

Recurrent selection is common in cross pollinated species and rare in other two groups. It is used for accumulating favourable genes in a population i.e., for population improvement. Other approaches which are used for population improvement include disruptive mating, diallel selective mating (DSM) and biparental mating. DSM is used in self pollinated species and other two techniques can be used both in self and cross pollinated species.

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Best of Entomology

Kishor Vikram Age*

Sericulture:

Sericulture is an agro-based industry, it involves rearing of silkworm for the production of raw silk which the yarn is obtained out of cocoons spun by certain species of insects. The major activities of sericulture comprises of food-plant cultivation to feed the silkworms which spin silk cocoons and reeling the cocoons for unwinding the silk filament for value added benefits such as processing and weaving. Although there are several commercial species of silkworms, *Bombyx mori* is the most widely used and intensively studied.

Types of silkworm

In India, all the four types of silkworms are being exploited commercially. They are, Mulberry, Tasar, Eri and Muga silkworms. Except mulberry silkworm, all others are considered as wild types. Mulberry silkworm is a domesticated variety which has been exploited for over 4000 years.

Life Cycle of Mulberry Silkworm:

- **Egg** : 11-14 days
- **Larval**: 20-24 days in multivoltine species, 24-28 days in uni and bivoltine races. First three instars are referred as "young age" or "Chawki worms.
- **Pupa**: 12-15 Days
- **Adult(Moth)**: 3-10 days depending on the season and races

Rearing house for mulberry silkworm

A separate house is ideal for rearing of silkworm. The rearing house should have sufficient number of windows to permit cross ventilation. Rearing house has to be built in such a way to provide optimum temperature of 26-28^{0}c and RH of 60-70% for the growth of silkworm at minimum operational cost.

Silkworm Rearing Procedure:

(Chawki) Rearing:

Eggs about 48 hours before hatching should be kept in dark condition. Sprinkle chopped tender mulberry leaves of size 0.5 to 1 cm^2 over the hatched larvae. The larvae crawl on to the leaves. Clean the bed and feed regularly upto I & II Instar

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Late Age Silkworm Rearing:

They are reared in bamboo trays. Newspapers are spread over the trays to absorb excess moisture in leaves and faecal pellets up to fifth instar. Then transfer mature larvae to mountage for spinning. The silk worms complete spinning in 2 to 3 days. Harvest the cocoon when pupae are fully formed and hard.

Why Sericulture?

- High employment potential
- Five crops can be taken in one year under tropical conditions
- Women friendly Occupation
- Ideal Program for Weaker Sections of the Society
- Sericulture can be practiced even with very low land holding
- Eco-friendly Activity

Apiculture Meaning:

Apiculture or bee-keeping is the art of caring for, and manipulating colonies of honeybee in large quantity, over and above their own requirement.

Honey bees are social insects they live in colony. Work of colony management is distributed to different caste of honey bees. Male bees called as Drone and Female bees called Queen. Their roe is only colony multiplication and taking care of young one.

Species of honey bee:

1. ***Apis dorsata*** (The rock- bee) - largest honeybee

2. ***Apis indica*** (The Indian bee) **-** not so ferocious and can be domesticated

3. ***Apis florea*** (The little bee)- Honey yield is poor

4. ***Apis mellifera*** (The European bee) - It is easily domesticated.

Bee Pasturage:

The plants that yield nectar and pollen are collectively termed “bee pasturage”. The fruit trees, ornamental plants and forest trees comprise important bee pasturage. Nectar is the sweet secretion of the flowers. It is raw material for honey. Pollen provides the raw material necessary for the major food of the brood

Method of beekeeping

- In the modern method of beekeeping, the honeybees are raised in brood chambers in wooden boxes.
- Brood chambers possess a wooden platform with an opening for the entry and exit to the bees at the bottom.
- Normally a few frames coated with **wax sheets** with hexagonal imprints are placed in the chamber vertically. It is done with the help of wires.
- The bees once transferred make cells along the margins of the given hexagonal imprints. Each wax sheet is commonly called the **comb foundation**.

- It provides a foundation for the bees, so that the honey bees can build combs on either side of the wax sheets. A chamber will have more farmers for expanding the colonies.
- A **super** is an upper-story hive box placed normally over the brood chamber. It is used for storing surplus honey. In order to provide proper ventilation, light and protection a cover having holes is placed over the super.
- Honey is stored in frames on which bees build their comb

Bee Products:

1. Honey: Honey is a food material for the bees and their larvae. Large quantities of honey are stored in the hive to meet the demands in scarcity
2. Beeswax: secreted by the wax glands located on the underside of the last four abdominal segments (4^{th} to 7^{th}) of the worker bee.
3. Bee Venom

Mexican beetle (Zygogramma bicolorata)

Introduction :

Based on well documented success by Mexican beetle, *Zygogramma bicolorata* Pallister (Coleoptera: Chrysomelidae), in other countries where they were introduced, beetle were imported from Mexico to India. After in-depth labor atory and field studies, it was found host specific, which can eat only *Parthenium*, hence, its' use was permitted by Government of India. Therefore, Mexican beetles can be multiplied and released anywhere in India for *Parthenium* suppression.

Biology

Beetles are off white or light reddish in colour, eggs are laid generally on ventral side of the leaves and hatch in 4-7 days. The grubs feed for 10-15 days on the leaves and on maturity enter into soil and pupate below up to 15 cm depth. Beetles emerged after 8-12 days. The beetle completes its life-cycle in 22-32 days. Insect completes 5-6 generations under field conditions. The female can lay up to 2500 eggs during its life span.

BIOFERTILIZER PRODUCTION

Santosh Namdeorao Ambhore*

Biofertilizer Meaning: -

Biofertilizers are microbial inoculants or carrier based preparation containing living or latent cells of efficient strains of Nitrogen fixing , Phosphate solubilizing and cellulose decomposing microorganisms intended for seed or soil application and designed to improve soil fertility and plant growth by increasing the number and biological activity of beneficial microorganisms in the soil.

Need of Biofertilizers:-

With the introduction of green revolution technologies the modern agriculture is getting more and more dependent upon the steady supply of synthetic inputs, which are products of fossil fuel. Adverse effects are being noticed due to the excessive and imbalanced use of these synthetic inputs. Use of such natural products like biofertilizers in crop cultivation will help in safeguarding the soil health and also the quality of crop products.

Rhizobium biofertilizer: - The genus Rhizobium has the capacity to invade the roots of the leguminous crops and fix the atmospheric nitrogen in symbiotic relationship.

Procedure for production of ***Rhizobium*** **bio fertilizer :**

1. **Prepared a starter culture**: - Inoculate a pure colony of *Rhizobium* into yeast extract mannitol (YEM) broth. In incubate the broth on a rotary shaker at 28-30^0 C for 4 days.
2. **Prepare a mass culture**: - Use the starter culture to prepare a mass culture.
3. **Prepare a carrier**: - Mix a powdered carrier material, such as charcoal / talcum powder, or farm yard manure with the broth. The carrier should have moisture content of 5% and a near neutral pH.
4. **Mix the carrier and inoculant**: -Mix the carrier and inoculant in a sterile tray. The inoculant should make a up 40-50% of the carrier water holding capacity.
5. **Cure the inoculant**: - Spread the inoculant on a clean surface and cover with polythene. Cure for t2-3 hour at room temperature.
6. **Packaging:** - Package the rhizobium bio fertilizer in polythene bags and seal with an electric sealer.

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PRODUCLTION OF AZOLLA BIOFERTILIZER UNIT: -

Azolla is a water fern that assimilated atmospheric nitrogen in association with nitrogen fixing blue green algae *Anabaena azollae*. About 20-30 kg nitrogen can be saved per hectare per season by using Azolla as dual cropping of green manure.

Azolla can be used as livestock feed, green manure, or to suppress weeds in rice fields.

Procedure for Production:-

Construct tanks that are 2 meters long, 1 meter wide and 0.5 meters deep. Add 10 centimeters of soil to the bottom of the tank, then add 1-1.5 kilogram of cow dung per square meter. Every week, add 5 gm of single super phosphate (SSP) per square meter. Fill the tank with water until its 10-15 centimeters above the soil. Add a fresh Azolla inoculum and remove any foam or scum.

Procedure for BedS :- Pour water into a bed to a depth of 10 cm. Spreads 1.5 kg. of azolla seed material across the bed . The azolla should grow quickly and fill the bed in 1-2 weeks . Once a week, add 10 gm of SSP to 500gm of cow dung and add it to the bed . Harvest 0.5-1 kg of azolla daily. On an average 10 kg of azolla can be produce within a week.

Benefits of Azolla:

1) Soil Fertility: - Azolla can improve soil fertility by fixing nitrogen from the atmosphere and adding organic carbon to the soil. It can also help maintain soil fertility by decomposing and providing nutrient – rich humus.
2) Crop yield:- Azolla can increase crop yield and quality by improving soil fertility , reducing weeds and enhancing microbial biomass .
3) Livestock feed: - Azolla is a rich source of protein, vitamin and minerals and can be used as a low-cost dietary supplement for livestock, poultry and fish.
4) Mosquito control: - Azolla also known as the mosquito fern because is restricts mosquito breeding.
5) Environmental Benefits:-Azolla can help reduce green house gas emissions and contribute to greener, more sustainable lifestyle.
6) Bioremediation:- Azolla can be used for environmental bioremediation.
7) Bioenergy:- Azolla can be used to produce bioenergy.

PRODUCTION OF LIQUID & SOLID FORMULATION OF *TRICHODERMA VIRIDAE*

1. Pour the 100 ml of Potato Dextrose Broth medium poured in 250 ml capacity conical flasks and Autoclave at 15 psi pressure for 30 min.
2. Inoculate the flasks with the 1 ml of spore suspension of Trichoderma viridae separately and incubated at 28 degree C for 15 days.
3. The spore suspension was subjected to spore counting and it was carried out.

Formulation:-

1. The spore suspension thus obtained by above methods were used for formulation with different carrier materials talc powder. The mycelial mat along with the broth was homogenized and mixed with carrier material in the ratio 1:2. Carboxyl methyl cellulose was added @ 5gm /kg of the product. Then the product was shade dried to reduce the moisture content to 12% and packed in opaque polythene bags and stored at room temperature. The spore load at the time of packing was 2.0 x 10^6 cfu/g in the product.

Benefits of *Trichoderma*

1. **Plant Growth** :- Trichoderma can promote plant growth, improve the root system and enhance flowering .
2. **Disease Control** :- Trichoderma can prevent and control soil – borne , leaf, and panicle diseases . It can also help plant development resistance to diseases and pest .
3. **Soil Improvement:** - Trichoderma can improve soil fertility and bio remediate soil contaminated with pesticides and herbicide.
4. **Environmental Benefits:** - Trichoderma is non -toxic, eco-friendly, and does not negatively impact non - target organisms.
5. **Easy to apply:** - Trichoderma is easy to apply with existing equipment and leaves no residues.
6. **Compatible with Other Bio - agent:** -Trichoderma is compatible with other bio-agents.

Trichoderma is a free – living soil fungus that can be used as a biofertilizer of bio -fungicides. It can be applied to seeds, nursery beds, and cutting and seedlings.

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“Agricultural Meteorology and Food Security”

Prof.T.A.Chavhan*

As the world surrounded with the challenges of climate change, food security has become a pressing concern. With the global population projected to reach 9.7 billion by 2050, ensuring that everyone has access to nutritious and sufficient food is a mountainous task. Indian economy is predominantly rural and agriculture oriented with 85% of land holdings are less than 2ha which depends on erratic monsoon rains. In India the cultivable land is 143 M ha and there is very little possibility of extending it further. Therefore to meet the requirement of food grains of increasing population is effective utilization of time and space. The time concept refers to the increasing the intensity of cropping. Therefore to insure this efficient agro meteorological services plays crucial role. Agricultural meteorology, the study of the relationship between weather and agriculture, plays a critical role in addressing this challenge. Agricultural meteorology is not just about predicting the weather; it's about understanding how weather patterns impact crop yields, soil health, and water availability. By analyzing data on temperature, precipitation, and other weather factors, agricultural meteorologists can provide farmers with valuable insights to inform their decision-making. This can help farmers optimize planting and harvesting schedules, reduce crop losses due to weather-related events, and improve overall agricultural productivity. One of the most significant applications of agricultural meteorology is in the field of climate-smart agriculture.

As the climate continues to change, farmers need to adapt to new weather patterns and extreme weather events. Agricultural meteorologists can help farmers develop strategies to mitigate the impacts of climate change, such as using drought-tolerant crops, implementing conservation agriculture practices, and leveraging weather-based insurance products. In addition to supporting farmers, agricultural meteorology also plays a critical role in ensuring food security at the national and global levels. By analyzing weather patterns and their impacts on agricultural production, policymakers can make informed decisions about food imports and exports, price controls, and emergency response measures. This can help prevent food shortages and price spikes, which can have devastating impacts on vulnerable populations.

Despite its importance, agricultural meteorology remains a relatively underfunded and understaffed field. Many countries lack the infrastructure and expertise needed to provide accurate and reliable weather forecasts and warnings. This can have serious consequences, particularly in developing countries where agriculture is a critical sector of the economy. To address these challenges, governments, international organizations, and civil society must invest in agricultural meteorology and climate-smart agriculture. This includes supporting research and development, building capacity and infrastructure, and promoting the use of weather-based decision support tools. In conclusion, agricultural meteorology is a critical component of ensuring food security in the face of climate change. By providing farmers with accurate and reliable weather information, supporting climate-smart agriculture, and informing policy decisions, agricultural meteorologists can help ensure that everyone has access to nutritious and sufficient food. As the world continues to grapple with the challenges of climate change, it's time to recognize the importance of agricultural meteorology and invest in this vital field.

Recommendations: 1. Governments and international organizations should increase funding for agricultural meteorology research and development. 2. Countries should invest in building capacity and infrastructure for agricultural meteorology, including weather observation networks and forecasting systems. 3. Policymakers should promote the use of weather-based decision support tools and climate-smart agriculture practices. 4. Civil society organizations should raise awareness about the importance of agricultural meteorology and food security. By working together, we can ensure that agricultural meteorology plays a critical role in achieving food security and sustainable development. Tushar Arvind Chavhan Asst. Prof of Agronomy

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Post Harvest Management & Value Addition of Fruits & Vegetables

Miss.Shital Kishor Gajbhiye *

Introduction:

Fruits and vegetables, which are among the perishable commodities, are important ingredients in the human dietaries. Due to their high nutritive value, they make significant nutritional contribution to human well-being. They are the cheaper and better source of the protective foods. If they can be supplied in fresh or preserved form throughout the year for human consumption, the national picture will improve greatly.

The perishable fruits and vegetables are available as seasonal surpluses during certain parts of the year in different regions and are wasted in large quantities due to absence of facilities and know-how for proper handling, distribution, marketing and storage. Furthermore, massive amounts of the perishable fruits and vegetables produced during a particular season result in a glut in the market and become scarce during other seasons. Neither can they all be consumed in fresh condition nor sold at economically viable prices.

In developing countries agriculture is the mainstay of the economy. As such, it should be no surprise that agricultural industries and related activities can account for a considerable proportion of their output. Of the various types of activities that can be termed as agriculturally based, fruit and vegetable processing are among the most important. Therefore, fruit and vegetable processing has engaged the attention of planners and policy makers as it can contribute to the economic development of rural population. The utilization of resources both material and human is one of the ways of improving the economic status of family.

India has made a fairly good progress on the Horticulture map of the world with atotal annual production of fruits and Vegetables touching over 131 million tonnes during 1998-99. Today, India the second largest producer of the Fruits (44 million Tonnes) and Vegetables (87.5 million Tonnes) as mentioned in Indian Horticulture Database-2000 published by National Horticulture Board. Our share in the world production is about 10.1 per cent in fruits and 14.4 per cent in vegetable. India produces 41.7% of the World mangoes, 25.7% of the bananas and 13.6 per cent of the world onion. The overall productivity of fruits is 11.8 tonnes per hectare and vegetable is 14.9 tonnes per hectare.

History-

Fruit and vegetable processing was first started in an organized manner in 1857, mainly to make pickles and chutneys with a view to meeting the export requirement and canning of fruits and vegetables was started in 1927. The introduction of modern techniques of processing and preservation by addition of chemical preservatives could also be said to have been started from the same time. During the period 1927-1940, the processing and preservation was mainly in the manufacture of soft drinks like squashes, juices, cordials, barley water etc. From 1940 onwards the industry diversified the product mix and it started making canned fruits and vegetables, jams, jellies, and marmalades, tomato products, fruit juices, etc. In the initial stages of development from

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1927 onwards the tendency was to locate the manufacturing units mainly in the consuming centre like Mumbai, Kolkata, Chennai. Although this tendency, which is helpful for marketing finished products, still continues, the efforts made by various developmental agencies in the country have resulted in installation and commissioning of fruit and vegetable preservation units in the fruit growing areas in order to retain the maximum flavour and aroma of the raw materials.

Features :- Post harvest management includes practices that help to reduce losses and extend the quality and shelf life of agricultural produce.

Scope: -

1)Preservation of quality

2) Increasing shelf life

3)Reduction of losses

4) Value addition and Marketability

5) Food Safety and hygiene

6) Economic benefit

7) Facilitating International trade

8) Employment Generation

Selection of fruits and vegetables

- Fruits and vegetables should be absolutely fresh.
- Fruits should be ripe, but firm, and uniformly mature. Over-ripe fruits should be rejected because they are infected with microorganisms and give a poor quality product. Unripe fruits should be rejected because they generally shrivel and toughen on canning.
- All vegetables except tomatoes should be tender.
- Tomatoes should be firm, fully ripe and of deep red colour.
- Fruits and vegetables should be free from dirt.
- They should be free from blemishes, insect damage or mechanical injury.

Process:-

Selection of fruit and Vegetable → Grading → Washing → Peeling → Cutting → Blanching → cooling → filing & syruping or brining → Exhausting → Sealing → Processing → Cooling → storage

References:

1) Fruit and vegetable preservation (Principles and practices) , R.P.Shrivastava & Sanjeev kumar.

Key Concepts of Agricultural Economic

Prof. A.B.Ingle*

Agricultural Economics: Understanding the Economics of Farming Agricultural economics is a branch of economics that deals with the study of the production, distribution, and consumption of agricultural products. It applies economic principles to agriculture, helping farmers, policymakers, and other stakeholders make informed decisions. Agricultural economics is a branch of economics that deals with the study of the production, distribution, and consumption of agricultural products. It applies economic principles to agriculture, helping farmers, policymakers, and other stakeholders make informed decisions.

Agricultural economics plays a critical role in ensuring food security, reducing poverty, and promoting environmental sustainability. By applying economic principles to agriculture, we can improve the livelihoods of farmers, rural communities, and society as a whole.

Importance of Agricultural Economics :

Agricultural economics plays a vital role in:

1. Food Security: Ensuring that everyone has access to nutritious food.
2. Poverty Reduction: Improving the livelihoods of rural communities.
3. Environmental Sustainability: Promoting eco-friendly farming practices.
4. Economic Growth: Contributing to a country's economic development.

Key Concepts in Agricultural Economics :

1. Supply and Demand: Understanding how the supply of agricultural products interacts with demand to determine prices.
2. Elasticity: Measuring how changes in price or income affect the demand for agricultural products.
3. Production Economics: Analyzing the optimal use of inputs (e.g., labor, land, capital) to produce agricultural outputs.
4. Market Structures: Examining the characteristics of different market structures (e.g., perfect competition, monopoly) in agriculture.

Applications of Agricultural Economics:

1. Farm Management: Helping farmers optimize their production and marketing decisions.
2. Agricultural Policy: Advising on policies, trade agreements, and regulations that impact agriculture.
3. Agricultural Research: Conducting research on new technologies, crops, and farming practices.
4. International Trade: Analysing global agricultural markets and trade patterns

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Challenges Facing Agricultural Economics:

1. Climate Change: Addressing the impacts of climate change on agriculture.

2. Food Waste: Reducing food waste throughout the supply chain.

3. Sustainability: Promoting environmentally friendly and socially responsible farming practices.

4. Globalization: Understanding the impacts of globalization on agricultural trade and markets.

Conclusion

Agricultural economics plays a critical role in ensuring food security, reducing poverty, and promoting environmental sustainability. By applying economic principles to agriculture, we can improve the livelihoods of farmers, rural communities, and society as a whole.

I hope you found this souvenir informative and helpful!

Agricultural economics is a fascinating field that applies economic principles to agriculture. Here's a brief overview:

Key Concepts in Agricultural Economics:

1. Supply and Demand: Understanding how the supply of agricultural products interacts with demand to determine prices.

2. Elasticity: Measuring how changes in price or income affect the demand for agricultural products.

3. Production Economics: Analysing the optimal use of inputs (e.g., labor, land, capital) to produce agricultural outputs.

4. Market Structures: Examining the characteristics of different market structures (e.g., perfect competition, monopoly) in agriculture.

5. Risk Management: Understanding how farmers and agricultural businesses manage risks such as weather, pests, and market fluctuations.

Agricultural Economics in Practice:

Agricultural economists work in various roles, including:

1. Government Policy: Advising on agricultural policies, trade agreements, and regulations.

2. Farm Management: Helping farmers optimize their production and marketing decisions.

3. Agricultural Research: Conducting research on new technologies, crops, and farming practices.

4. International Trade: Analysing global agricultural markets and trade patterns.

Real-World Applications

Agricultural economics has many practical applications, such as:

1. Sustainable Agriculture: Developing economic incentives for environmentally friendly farming practices.

2. Food Security: Analysing the economic factors that affect access to nutritious food.

3. Rural Development: Understanding the economic challenges and opportunities facing rural communities.

Branches of Agricultural Economics

1. Production Economics: Studies the optimal use of inputs (e.g., labor, land, capital) to produce agricultural outputs.

2. Market Economics: Examines the characteristics of agricultural markets, including supply and demand, prices, and market structures.

3. Farm Management: Helps farmers optimize their production and marketing decisions.

4. Agricultural Policy: Advises on policies, trade agreements, and regulations that impact agriculture.

5. Environmental Economics: Studies the economic impact of environmental policies on agriculture.

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Lumpy Skin Disease Report

Prof.V.V.Mane*

Introduction

Lumpy skin disease (LSD) caused by the lumpy skin disease virus (LSDV) is an OIE notifiable, vector-borne disease of cattle and Asian water buffalo that causes substantial economic losses. Its name originates from the clinical presentation of the disease generally associated with the appearance of skin nodules that may cover the entire body of the animal during severe infection. While mortality rates in cattle are often low, the relatively high mortality of LSD once introduced into native populations can lead to significant income losses for farmers brought about by decreased milk production, damaged hides, and emaciation of animals, infertility and abortions. Subsequent trade bans or other movement restriction in affected countries place economic strain on the cattle industry, severely impacting on all factors along the value chain.

Since the first observation of the disease was observed in Zambia in 1929, LSD has spread progressively and extensively throughout Africa, the Middle East, Southeastern Europe, Central Asia, and more recently South Asia and China. Currently, the disease is endemic in several countries across Africa, parts of the Middle East and Turkey.

LSD was introduced into Bangladesh, China, and India, beginning from July 2019. In 2020 the disease then spread to other parts of China and India as well as Nepal and Bhutan.

In India the cases of Lumpy skin disease infected cattle's are increasing day by day, which is resulting into the death of animals. Farmers are facing huge loss due to the increase in numbers of LSD in cattle. Looking towards this situation Bhausaheb Mane Arogya Pratisthan and College of Agriculture, Umarkhed under the National Service Scheme (NSS) organized a free LSD vaccination campaign with the help of students and Veterinary doctors in the villages of Umarkhed Taluka viz. Chatari, Unchavadad, Kopra, Sindagi Kupati, Dighadi, Tiwadi (Juni), Tiwadi (Navin) Takli (Juni), Takli (Nawin). Around 1537 cattle's including cow, calves, heifers, bulls and bullocks got vaccinated

Epidemiology of lumpy skin disease (LSD)

Apart from foot-and-mouth disease (FMD), lumpy skin disease is one of the economically most important viral diseases of cattle and Asian water buffaloes since rinder pest was eradicated globally. LSD typically reduces milk yield, causes severe emaciation, permanent damage to hides, several secondary complications, months-long chronic debility (Davies, 1991), and incurs movement or trade bans.

THE VIRUS

The lumpy skin disease virus belongs to the genus Capripox Virus within the Poxviridae family and shares high antigenic similarities with the sheep pox virus (SPPV) and the goat pox virus (GTPV), two other members of this genus. While sheep pox virus and goat pox virus serologically cross react with lumpy skin disease virus they do not cause disease in species other than their respective host.

THE HOST

Lumpy skin disease is an infectious disease of cattle (Bos indicus) and Asian water buffalo (Bubalus bubalis). Breeds of exotic cattle (Bos Taurus) with high milk production are more susceptible than African/Asian indigenous cattle.

Vector control

Control of vector population in the premises and the animal body should be carried out using insecticide, repellents and other chemical agents. Affected Premises, vehicles plying through the affected animal holdings should be carried with appropriate disinfectants. Regular and thorough cleaning, disinfection of other premises where susceptible livestock are kept addition to clearing or limiting vector breeding sites.

Need of Vaccination

1. Shortage of skilled human resource and vaccine.

2. Indian vaccine for LSD is under trial and it may take next 4-5 months to come into use.

3. According to Government protocol the vaccination programs implemented within the radius of 5 km from disease identified location and most of the technical human resource is engaged in vaccinating 5 km radius protocol of the villages of infected location.

4. There is also shortage of vaccine in the of Government Veterinary Department Maharashtra, to overcome this situation it was very needful to vaccinate the domestic animals of farmer at other location beyond the protocol of Government (beyond the area of 5 km radius). Taking this as an opportunity College of Agriculture, Umarkhed with its NSS volunteers and final year (RAWE) students in collaboration with Bhausaheb Mane Aarogya Pratishthan organized the workshop on 20 Sept 2022 with the help of experts of Govt. Veterinary department and trained 120 students for practice of vaccination. This activity was conducted to create extra human resource for vaccinating the animals in rural area.

Objectives

1. To create the awareness among farmers regarding control and spread of LSD, as it affects mostly deshi/indigenous cattle which is associated with the economy of marginal farmer.

2. To prevent the spread of the infection in the selected villages of Umarkhed.

3. To organize animal vaccination campaign against the Lumpy skin disease in the selected villages

4. To avail the vaccines in selected villages of Umarkhed taluka for vaccination campaign.

5. To strengthen and help the Veterinary Department by providing trained professionals from agriculture college, during such critical situation.

Transmission

LSD is transmitted primarily mechanically by blood-feeding insects. Other routes of spread are iatrogenic, through direct or indirect contact and artificial insemination. Various flying and non-flying blood-feeding insects can transmit LSDV mechanically and play a major role in within-herd as well as between-herd transmission. Potential arthropod vectors vary by region (Coetzer et.al., 2018).

LUMPY SKIN DISEASE VECTORS

LSDV can be transmitted by various blood-feeding arthropods but is not known to replicate in vectors. Therefore, transmission is mechanical but not biological in nature. Potential vectors are as follows:

1) Mosquitos: Aedes aegypti, Anopheles stephensi, Culex quinquefasciatus

2) Flies: Stomoxys calcitrans, Haematobia imitans, Prostomoxys sp., Haematopota spp., Biomyia fasciata

3) Mites: Culicoides nubeculosus

4) Ticks: Rhipicephalus appendiculatus, Rhipicephalus decoloratus, Amblyomma hebraeum

Sources: Kitching and Mellor, 1986; Chihota et al., 2001; Wamwayi, 2004; Tuppurainen, Babiuk and Klement, 2018; Sohier et al., 2019.

Symptoms of LSD

The characteristic nodular skin lesions appear on head, neck, chest, abdomen, perineum, genitalia, udder and limbs. The centre of the lesion often ulcerates and with time a scab forms on top (Tuppurainen, Alexandrov and Beltrán Alcrudo, 2017).

The incubation period in naturally infected animals may be up to 28 days. Clinical signs in cattle, besides the skin nodules, include lachrymation, nasal discharge, high fever (>40.5°C), appetite loss, enlarged subscapular and prefemoral lymph nodes, sharp drop in milk yield, necrotic plaques in oral and nasal mucous membranes and reduced fertility Buffaloes may also show skin lesions (Elhaig, Selim and Mahmoud, 2017).

Appreciation

The college work was appreciated from all levels for implementing the innovative idea by the Shri. shivaji Shikshan Sanstha, Puasd. Taking note of this, Dr. P.D.K.V., Akola university honored college during the annual sports board committee meeting and also put forward the report submitted by the college and also to encourage this work, council also admit that they will proceed this report to Advisory Council of the National Service Scheme (NSS) and the state Government so that in this way the other agriculture college should observe and involve during such type of pandemic situation in agriculture so as to utilizes strength of agricultural students.

Library and Information Science

Miss. Sangita. Laxamnrao Shinde*

Introduction :

A Library is a place that provides access to information and community services. It is a collection of resources. Such as a books ,magazines, newspapers, DVDS, and manuscripts, that are organized and maintained for use .The word "Library" comes from the Latin word liber, which means "Book".

Purpose :

Libraries are essential to a community because they allow people to learn & come together. They can be used for educational pursuits, personal needs, and community engagement.

Services :

Libraries offer a variety of services, Including book clubs, computer classes, and access to online databases, e-books, and audiobooks.

Functions :

Libraries can serve as self-education centers, community information centers, and cultural centers.

History :

The world's oldest known library was the library of Ashurbanpal, which was founded in the 7 th century B.C. in Ninevch, modern day Iraq. The first public libraries in the west were established under the Roman Empire .

Library and Information Science :

This interdisciplinary field of study focuses on the documentation of History, Knowledge , Memory and Stories,Library and Information Science professionals collect ,organize preserve,and provide access to materials.

Inportance of Library :

A collection of books is called a library. It is a place that plays many primary and functional roles in the lives of both readers and learners .many people like to visit Libraries weekly ,and book aficionados pay their visit religiously every day .A book warms favorite location is library.
Extraverts explore the unexplored territory in the numerous novels the library offers, while introverts take sanctuary in its quite books. A person with resources goes to the library to improve their talents, while a person with limited resources goes to the library because books are the best cost effective way to learn new skills .It is the only place that provides something to all who seek comfort under his root.

Libraries play a vital role in providing people with reliable content. They encourage and promote the process of learning and grasping knowledge. The book worms can get load of books to read from and enhance their knowledge

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Access to information :

Libraries Provide free access to a wide range of information resources , including books. Databases, and digital platforms. This is especially important for people who may not have internet access or cant afford to buy resources.

Community Building :

Libraries are community centers that help people connect with other .They offer a variety of activities. Such as baby story times , events for the elderly, and study groups for teenagers. Libraries also support non-english speakers by collecting books in different languages and hiring multilingual staff.

Literacy :

Libraries play a critical role in enhancing literacy and encouraging reading among all age groups.

Economic Development:

Libraries contribute to the economic prosperity of the community by providing resources for business development and job skills training .

Cultural Heritage :

Libraries play a vital role in preserving cultural heritage.

Educational Material :

Libraries provide access to educational material that may not be available elsewhere.

Reference Material :

Libraries provide reference material that can help with homework & overall development.

Agriculture Library

Agricultural libraries are collections of knowledge and information about agriculture including books, Journals &reports. They serve a wide range of users ,from individual farmers to large corporations.

Agricultural libraries provide access to information on a variety of topics including :

- Crops ,Cropping Systems.
- Animal Care & Use .
- Nutrition &Health.
- Water Resources.
- Horticulture.
- Agricultural Economics.
- Agricultural Entomology.
- Food Safety Research.

Conclusion :

Inconclusion ,libraries are in dispensable pillars of knowledge and learning in our society. They not only provide access to in formation but also foster a sense of community and intellectual curiosity .As we embrace the digital age .It is essential to recognize and support the enduring importance of libraries in preserving our cultural heritage and promoting lifelong learning.

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Students Section

The Role of Traditional Knowledge in Sustainable Agriculture in Maharashtra.

Bhumika Sunil Khadse *

"Agriculture is not just a source of food, but a way of life." These profound words by M.S. Swaminathan resonate deeply in the context of Maharashtra's agricultural heritage. For centuries, agriculture has been an integral part of the state's culture, economy, and identity. The traditional knowledge systems, passed down through generations, have played a vital role in shaping Maharashtra's agricultural practices.

Historically, Maharashtra has been a hub of agricultural innovation and sustainability. The region was once home to the Satavahana Empire (230 BCE - 220 CE), which was known for its advanced irrigation systems and agricultural practices. The empire's rulers encouraged farmers to adopt sustainable practices, such as crop rotation and soil conservation, which helped to maintain soil fertility and prevent erosion.

During the Maratha Empire (1674-1818 CE), Maharashtra's agricultural sector continued to thrive. The Maratha rulers promoted the use of traditional crops, such as millet and sorghum, which were well-suited to the region's climate and soil conditions. They also encouraged farmers to adopt innovative practices, such as the use of organic manure and pest control methods.

Rajshree Shahu Maharaj, a pioneering leader from Kolhapur, Maharashtra, significantly contributed to sustainable agriculture by promoting the use of ash as a natural fertilizer, encouraging farmers to burn farm waste in the farm itself, reducing soil erosion, increasing soil fertility, and minimizing the need for chemical fertilizers, thereby promoting eco-friendly and sustainable agricultural practices in Maharashtra.

Agricultural sustainability, in this context, refers to the practice of producing food in a way that is environmentally sound, socially responsible, and economically viable. It involves managing agricultural resources in a way that maintains their productivity and functionality over time. Sustainable agriculture prioritizes the use of natural resources, such as soil, water, and biodiversity, while minimizing the use of external inputs, such as chemical fertilizers and pesticides. By adopting sustainable agricultural practices, farmers can reduce their environmental footprint, improve their livelihoods, and contribute to a more food-secure future.

Enrollment No:VV-863 (II year)

The role of traditional knowledge in sustainable agriculture cannot be overstated. Traditional knowledge systems have been instrumental in promoting sustainable agricultural practices, such as soil conservation, biodiversity conservation, and efficient water management. For example, traditional farmers in Maharashtra have developed unique methods of soil conservation, such as contour farming and terracing, which reduce soil erosion and promote soil fertility. Similarly, traditional knowledge systems have helped preserve crop diversity, with many indigenous communities in Maharashtra cultivating unique crop varieties that are adapted to local conditions.

Moreover, traditional knowledge systems have also contributed to climate change resilience in Maharashtra's agriculture. Traditional farmers have developed unique coping mechanisms to deal with climate-related stresses, such as droughts and floods. For instance, traditional farmers in Maharashtra have developed techniques such as "dryland farming" (growing crops in areas with limited rainfall) which promotes climate resilience. Similarly, traditional knowledge systems have helped promote agroforestry practices, which reduce soil erosion and promote biodiversity.

Furthermore, traditional knowledge systems have also played a crucial role in promoting climate-smart agriculture in Maharashtra. For example, traditional farmers in the state have developed innovative practices such as "mulching" (covering the soil with organic matter to retain moisture and suppress weeds.) This practice helps to reduce soil temperature, conserve water, and promote soil health, thereby enhancing climate resilience.

Despite the significance of traditional knowledge systems in sustainable agriculture, there are several challenges and limitations that need to be addressed. One of the major challenges is the loss of traditional knowledge due to urbanization and migration. Many indigenous communities in Maharashtra are migrating to urban areas in search of better livelihood opportunities, leading to a loss of traditional knowledge and skills. Another challenge is the limited recognition and support for traditional knowledge systems. Traditional knowledge holders often lack formal recognition and support, making it difficult for them to access markets, credit, and other resources.

To address these challenges, it is essential to recognize and support traditional knowledge systems in Maharashtra. This can be achieved through several strategies, such as documenting and preserving traditional knowledge, providing formal recognition and support to traditional knowledge holders, and promoting community-led initiatives that integrate traditional knowledge into sustainable agriculture practices.

In conclusion, traditional knowledge systems have played a vital role in promoting sustainable agriculture in Maharashtra. These systems have contributed to soil conservation, biodiversity conservation, climate change resilience, and efficient water management. By recognizing and supporting traditional knowledge systems, we can promote sustainable agriculture practices that are adapted to local conditions and contribute to a more sustainable food future.

Thank you..!

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Impact of RAWE Programme on rural life

Diptesh Kharad*

'Rural Awareness Work Experience' (RAWE) Programme is a comprehensive integrated Programme of B.Sc. (Hons) Agriculture degree. It is an important proficiency, a confidence building Programme. Its aim is to improve the quality of life of rural families and provide them knowledge regarding various technologies of modern agriculture as well as traditional practices through extension methodologies. In this the students are given in- depth knowledge about the principles and practices of agriculture through theory and practical in the field under rural situations. RAWE Programme helps the students to create competence, capability, capacity building, skills, expertise, in short a holistic development. However, it requires an individual's total commitment, involvement, participation, reception, active interest, dedication, skill, curiosity, vision and mission.

Realizing the need of acquisition of knowledge coupled with skills in the field of agriculture by the students of state agricultural universities an innovative concept of Rural Awareness Works Experience (RAWE) a 9 weeks Programme is introduced in the course curriculum of B.Sc. (Hons.) Agriculture degree Programme. The final year VII semester students are deputed in the villages, where they interact with rural community in general and farmers in particular to understand their problems, apply knowledge and skills they acquired during first six semesters of the degree Programme. The objectives of RAWE Programme is to provide an opportunity to the students to understand the rural situation in relation to agriculture and allied activities, to impart diagnostic and remedial knowledge to the students relevant to real field situations through practical training.

As this Programme is of 9 weeks, 1st week is for general orientation and training by various facilities. By forming a group of 6 Students each, villages are allotted to each group. After allotment, each group is ready for attachment to their specific villages. All the students have to select a progressive farmer as host farmer after attachment which are recommend by Programme officer under chairmen of RAWE Programme. During this period each group have to stay in the village throughout entire RAWE semester. In this period students have to perform various demonstrations of Agronomy, Agricultural Botany, Agricultural Entomology, Plant Pathology, Agricultural Engineering, Animal Husbandry and Dairy Science, Horticulture, Soil Science and Agricultural Chemistry, Agricultural Economics and Extension Education in relation to the production environment of plants and animals by the help theory and practical. This demonstrations are very needful to perform as it helps to aware farmers about various technologies and methodologies. By performing, they understood proper methods, doses and knowledge about practices. But in farmers there are several misleading factors which effects in step back from demonstrations such as their own methods of cultivation, listening of other farmers, not judging the right guidance, lack of acceptance etc. Hence, RAWE students have to boosts their acceptance ability by using various extension methodologies. By this, famers are encouraged and can able to change their practice and methods by judging the practical performed in front of them.

The RAWE program has a profound impact on social life in rural areas, fostering community building, social networking, and cultural preservation. By promoting agricultural education and environmental awareness, RAWE helps to improve the overall well-being of rural communities. This Programme not only helps to develop the confidence among the students but also boosts the rural social life. Hence need of such programs are necessary in rural areas.

Role of Women in Rural Society

By Chetna Chandramohan Dubey (2nd Year)

Women constitute half of the world's population, symbolizing half of its potential power. By nature, women fulfill their roles with great responsibility and possess the capability to build healthy families, robust societies, and strong nations.

Poetic Lines on Women:

In the field, gold she sows,
With a pure heart, her seed grows.
Even in small things, she cares,
Her love is beyond compare.
In the face of challenges, she stands tall,
Her courage and spirit never fall.
With a deep connection to the land and earth,
She cultivates hope and gives our future rebirth.

Let us honor her, this rural queen, who works tirelessly from dawn till dusk, making the land serene.

Rural societies have long been characterized by traditional gender roles, often relegating women to secondary status. However, women in these communities play a pivotal role in the social, economic, and environmental fabric of their surroundings.

Women are key players in agricultural production, processing, and marketing. Many rural women engage in subsistence farming, animal husbandry, and forestry, contributing significantly to their households and economies.

Challenges Faced by Women in Rural Society

1. Limited Access to Education and Healthcare:

Rural women often face significant barriers to education and healthcare, exacerbating existing inequalities.

2. Economic Marginalization:

Women in rural societies frequently lack control over land, resources, and economic decision-making, perpetuating their marginalization.

3. Social and Cultural Barriers:

Cultural and patriarchal norms often restrict rural women’s participation in public life and decision-making processesDespite these challenges, rural women are the backbone of agricultural production. According to the Food and Agriculture Organization (FAO), women constitute approximately 43% of the agricultural labor force in developing countries. Their contributions to food security, poverty reduction, and sustainable development are invaluable.

However, their lack of access to education, healthcare, and economic opportunities, combined with limited control over resources, continues to marginalize them socially and economically. Patriarchal norms and cultural barriers further hinder their participation in leadership roles.Yet, rural women are agents of change and resilience. They are innovators, entrepreneurs, and leaders driving positive transformations in their communities. Empowering rural women through education, training, and access to resources can have a profound impact on rural development.

Conclusion

The role of women in rural society is vital to the social, economic, and environmental well-being of these communities. Despite significant challenges, rural women demonstrate immense resilience and potential. By empowering them through education, training, and access to resources, we can foster equitable, sustainable, and prosperous development for all.

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My College Social Events And Their Impact On Campus Life –

Tanvi Wasnik and Vanshika Ramdhani

Social events are an essential part of college life at my college these events bring students together provide entertainment and posture a sense of unity among everyone on campus from cultural festivals and sports tournaments to workshop and fun gatherings social events make college life vibrant and enjoyable they provide a break from academic pressure and how was us to showcase our talent interact with purse and create unforgettable memories.

Throughout the year, my college organised several social events that cater to different interest. One of the most awaited events is our annual cultural festival. This festival is 2 days celebration with music, dance, drama and art. Students from different departments come together to showcase their creativity through competitions like dance battle, singing contracts and fashion show.

Another highlight of our college events is the sport meet for students who enjoy physical activities, this is the most exciting time of the year various sports like cricket football, Volleyball, badminton and kho-kho are organise. Teams complete enthusiastically and the event promotes sportsmanship, teamwork and healthy competition among students.

The Fresher's event at College of Agriculture, Umarkhed was held on 23th September, 2024 in the college campus. The theme was" Krushifesta" It filled the entire college with excitement, talent, and enthusiasm. The event was graced by the presence of The Chief Guest Dr. R.M.Khan .The event showcased the incredible talents of the new students as they stepped into the college life with great zeal and vigour. The event started with the auspicious lighting of Panchdeep, following with introduction of fresher's students. After introduction dance forms Including classical, Western, Punjabi, which presented a diverse cultural view within our college. Also, some students were performed some singing performance, mime, one act Play. The Fresher's walked the ramp showcasing their style and confidence, leaving a lasting impression. The Ramp Walk was divided into four parts and the selected participants went through a talent round. The esteemed judges evaluated all the rounds and ad selected Top 3 Contestants who faced a final question round. The College Fresher's event at College of Agriculture, Umarkhed was an unforgettable day because of the diligence of the Convenor and members of fresher's team VV Batch respectively which was not only celebrated the talents of the incoming students but also fostered a sense of community and camaraderie among the student body. It set the stage for a memorable college journey for all involved.

We also have seminars and workshops that are focus on learning outside the classroom for that experts are invited to talk about important topics like career guidance, mental health, and skill development. These events provide students with valuable knowledge and prepare them for life after college.

Apart from this, there are many smaller events like fresher's party, farewell celebrations, festival gatherings like (Ganesh Chaturthi and Chhatrapati Shivaji Maharaja Jayanti) the fresher's party will come new students to the college allowing them to feel comfortable and make new friends. Farewell parties on the other hand are emotional movements were graduating students share their experiences and memories before stepping into the next phase of life.

Social events in my college player significant role shaping students' life first day provide opportunities for student to develop new

skills and showcase their talents with their its performing on stage, organising an event or participating in sport every student friend something to enjoy and learn from.

III year and II year students

Social event promotes unity and teamwork organising large events required collaboration between students, teachers and staff. It teaches us importance of leadership communication and time management events provides a break from routine academic schedule, college life can be stressful with assignments, exams and projects this event provides a break from the routine academic schedule college life can bstressful with assignment exams and project this event allows us to relax have fun and bond with friends to our studies with renewed energy.

The social events are an integral part of my college experience. They help us learn, grow and make lifelong memories beyond entertainment these events teach a teamwork time management and confidence skill that will help us in the future. These events have not only made my time here enjoyable but have also given me experiences that I will cherish forever.

The Impact of Sports on Student Life

By Sagar Dube (4Th Year)

"*Sports teach you to be resilient, to be disciplined, and to work hard*." - Sachin Tendulkar

These words of wisdom from the legendary Indian cricketer, Sachin Tendulkar, succinctly capture the essence of sports and their impact on student life. The qualities of resilience, discipline, and hard work that sports instil in individuals are invaluable in shaping their personalities, academic performance, and future careers.

The Ancient Indian Tradition of Physical Education.

The ancient Indian epic, the Mahabharata, describes the importance of physical education and sports in the development of young princes. The epic describes how the princes were trained in various physical activities such as archery, wrestling, and chariot racing to develop their physical strength and endurance.

Unlocking a Healthier Tomorrow: The Physical Health Benefits of Sports for Students

Participating in sports is a powerful way for students to develop a strong foundation for lifelong physical health. Regular exercise helps build robust bones and muscles, boosts cardiovascular health, and enhances flexibility and coordination (World Health Organization, 2018).

By embracing sports, students can:

- Develop strong bones and muscles

- Improve cardiovascular health

- Enhance flexibility and coordination

- Maintain a healthy weight

- Reduce the risk of obesity and related diseases

Investing in physical health through sports can have a lasting impact on students' overall well-being, setting them up for a healthier, happier future.

Empowering Minds: The Mental Health Benefits of Sports for Students

Participating in sports offers a wide range of mental health benefits that can have a lasting, positive impact on students' lives.

Exercise has been proven to:

- Reduce symptoms of anxiety and depression

- Improve mood and overall sense of well-being

- Enhance cognitive function and concentration

By embracing sports, students can:

- Develop emotional resilience and coping skills

- Improve their self-esteem and confidence

- Enhance their focus and concentration

- Build strong, supportive relationships with teammates

- Reduce stress and anxiety

Scoring High: The Positive Impact of Sports on Academic Performance

Participating in sports can have a transformative impact on students' academic performance. Research has consistently shown that students who engage in regular physical activity tend to:

- Attend school more regularly

- Achieve higher grades

- Demonstrate improved cognitive function (Eime et al., 2013)

Sports also teach valuable life skills that are essential for academic success, including:

- Discipline and self-motivation

- Effective time management and organization

- Teamwork and collaboration

Challenges and Recommendations: -

While sports have numerous benefits for students, there are also challenges that need to be addressed. Some of the challenges include:

- Limited access to sports facilities and equipment

- Insufficient funding for sports programs

- Pressure to perform and win, which can lead to stress and burnout

To overcome these challenges, schools and educational institutions can take the following steps:

- Invest in sports infrastructure and equipment

- Provide opportunities for students to participate in various sports and physical activities

- Emphasize the importance of sportsmanship, teamwork, and fair play

- Provide support and resources for students to manage stress and pressure

Some inspiring stories of Indian sports personalities:

1. *Milkha Singh*: Known as the "Flying Sikh," Milkha Singh was an Indian athlete who overcame poverty and adversity to win numerous international medals, including a gold medal at the 1958 Asian Games.

2. *Sachin Tendulkar* : Regarded as one of the greatest cricketers of all time, Sachin Tendulkar's journey from a young boy from Mumbai to a global sports icon is a testament to his dedication and perseverance.

3. *P.T. Usha* : Known as the "Queen of Indian Athletics," P.T. Usha's remarkable career spanned over two decades, during which she won numerous international medals, including four Asian Games gold medals.

6. *Abhinav Bindra*: India's first and only individual Olympic gold medalist, Abhinav Bindra's journey to the top of the shooting world is a testament to his dedication, perseverance, and passion for the sport.

8. *Neeraj Chopra*: India's first Olympic gold medalist in athletics, Neeraj Chopra's journey from a small village in Haryana to the top of the javelin throw world is a testament to his dedication, perseverance, and passion for the sport.

These inspiring stories of Indian sports personalities are a testament to the power of hard work, determination, and passion in achieving success in the world of sports.

★Conclusion:-

In conclusion, sports have a profound impact on student life, providing numerous physical, mental, and social benefits. By prioritizing physical education and sports programs, encouraging student participation, and emphasizing valuable life skills and values, we can help students reap the rewards of sports and achieve their full potential. As educators, policymakers, and parents, it is our responsibility to ensure that all students have access to quality sports programs and opportunities to develop their physical, emotional, and social skills.

Thank you..!

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Impact of RAWE Programme on Rural life

Diptesh Kharad*

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Deeksha Arambh

Shruti Anil Maske* & Samata Mahendra Aghame*

The purpose of Deeksha Arambh students induction programme is to help new students adjust and feel comfortable in the new environment inculcate in them the ethos and culture of the institution help them build bonds with other students and faculty members and expose them to a sense of longer purpose and self-ex-ploation. Mentoring and connecting with faculty members is the most important part of induction. Hopefully, it would set up a healthy relationship between the students and the faculty. College is place where we go for perceiving formal education after completing School education. The College of Agriculture, Umarkhed the college has is **Oxy Campus** and with natural beauty. By this Deeksha Arambh programme, students gain 50% idea of Agriculture degree on the very beginning course.

List of activities included:-	**List of Departments**
A Physical activity	1. Agronomy
1. Mentoring.	2. Agril. Entomology
2. Familiarization to dept./Branch.	3. Horticulture
3. Creative arts and Cultures	4. Soil Science
4. Literary activity.	5. Agril. Extension
5. Lectures by Eminent People	6. Plant Pathology
6. Visits to local Area	7. Animal Husbandry & Dairy Science
7. Extra-Curricular Activities in College	8. Genetics & Plant Breeding
8. My Role Model	9. Agri. Economics
9. College campus	10. Agri. Engineering
10. Department choice	11. Computer Science

We have been explained all above and we are satisfied with the course.

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*I semester /year students B.Sc. (Hons.) Agriculture, College of Agriculture, Umarkhed Dist. Yavatmal.