POLICY PAPER 141

Preparing Youth for Agri-preneurship Development

NATIONAL ACADEMY OF AGRICULTURAL SCIENCES, NEW DELHI
November 2025

Preparing Youth for Agri-preneurship Development

NATIONAL ACADEMY OF AGRICULTURAL SCIENCES, NEW DELHI

November 2025

CONVENERS : Dr. R.C. Agrawal, Former Deputy Director General (Agricultural Education), Indian Council of Agricultural Research (ICAR), New Delhi

Dr. Seema Jaggi, Assistant Director General (Human Resource Development), Indian Council of Agricultural Research (ICAR), New Delhi

REVIEWERS : Prof. Anupam Varma, INSA Emeritus Scientist, ICAR-Indian Agricultural Research Institute, New Delhi

: Dr. S. L. Mehta, Former Vice Chancellor, Maharana Pratap University of Agriculture & Technology, Udaipur

EDITORS : Dr. V.K. Baranwal

Dr. R.K. Jain

CITATION : NAAS 2025. Preparing Youth for Agri-preneurship Development. Policy Paper No. 141, National Academy of Agricultural Sciences, New Delhi: 15 pp.

EXECUTIVE COUNCIL 2025

Published by Executive Director on behalf of
NATIONAL ACADEMY OF AGRICULTURAL SCIENCES
NASC, Dev Prakash Shastry Marg, New Delhi - 110 012, India
Tel: (011) 25846051-52; Fax: (011) 25846054
Email: naas-mail@naas.org.in; Website: www.naas.org.in

Preface

India boasts the world's largest youth population, providing both a dynamic workforce and a vast consumer market. This young generation is fuelling a culture of innovation and entrepreneurship. Entrepreneurship plays a vital role in driving economic growth and development by fostering innovation, generating employment and enhancing competitiveness. As this immense pool of young citizens joins the workforce, it has the potential to stimulate significant economic expansion driven by the country's shifting demographic structure.

Agriculture remains the cornerstone of India's economic growth and development, continuing to serve as a major source of employment across the nation. To effectively meet the evolving challenges within this sector, it is crucial to nurture a skilled, innovative and entrepreneurial human resource base. Agricultural education is central to this mission and forms an integral component of the national education framework, operating under the guidance of the National Agricultural Research, Education and Extension System and the leadership of the Indian Council of Agricultural Research (ICAR).

One of the ICAR's primary mandates is to promote and coordinate education in agriculture and allied sciences throughout the country. India's agricultural education network is extensive, encompassing ICAR Deemed Universities, State Agricultural Universities, Central Agricultural Universities and Central Universities with faculty of agriculture. This system has played a pivotal role in advancing the agricultural sector. However, emerging challenges, such as climate change, resource depletion and the growing need for food and nutritional security alongside policy shifts like the National Education Policy 2020, demand ongoing modernization and strengthening of the educational framework.

Addressing these multifaceted issues calls for a workforce that is not only well-trained and knowledgeable but also adaptive, innovative and entrepreneurial. Strengthening agricultural education is therefore essential to ensuring the long-term profitability, sustainability, and resilience of the sector. Preparing students for future realities, such as limited land availability and promoting diversification within agricultural education are vital steps toward securing India's agricultural future.

In view of the above, the Academy organized a brainstorming session on "**Preparing Future-Ready Youths for Entrepreneurship Development in Agriculture**" to inspire higher agricultural education Institutions to cultivate a new generation of youth engaged in agriculture and allied sectors while motivating all stakeholders, including educators and policymakers, to contribute towards realizing the vision of *Viksit Bharat*. I sincerely appreciate the efforts of the Conveners (Dr. R.C. Agrawal & Dr. Seema Jaggi), Reviewers (Prof. Anupam Varma & Dr. S.L. Mehta) and Editors (Dr. V.K. Baranwal & Dr. R.K. Jain) in bringing out the document.

November 2025
New Delhi

(Himanshu Pathak)
President, NAAS

Preparing Youth for Agri-preneurship Development

1. INTRODUCTION

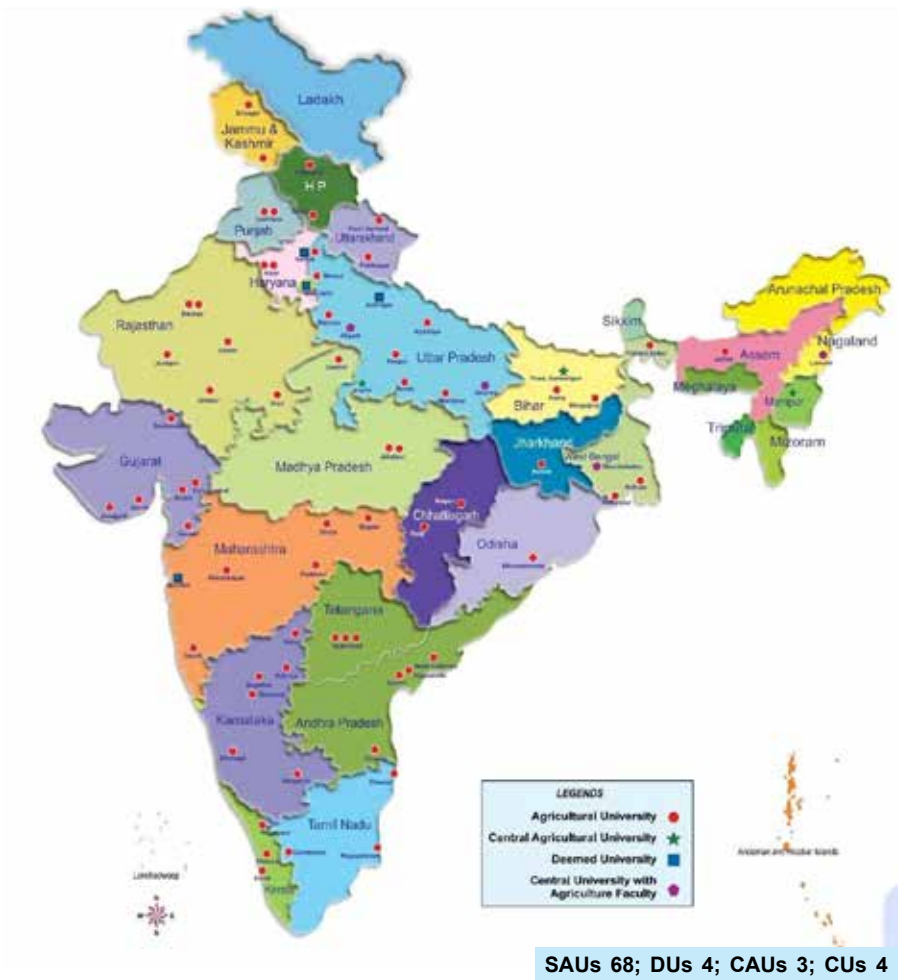
Agriculture has long been the backbone of India's economy, sustaining millions of livelihoods and delivering 18.4% (https://www.upag.gov.in/dash-reports/gvaagri) of the nation's Gross Value Added (GVA) in recent years. It remains the largest source of employment, especially in rural areas. Yet, the sector faces persistent and emerging challenges such as climate change, land degradation, fragmented small land holdings, limited technological integration in farming, optimizing water use, harnessing monsoon rains, over-reliance on monsoons, crop and livestock diseases, post-harvest losses, and highly volatile market prices. Addressing these complex issues requires a workforce that is not only skilled and knowledgeable but also innovative and entrepreneurial underscoring the vital role of agricultural education in securing the sector's future profitability and sustainability. There is the need for technology integration and entrepreneurship in agriculture to address challenges such as population growth and decreasing land holdings. Also, there is a need to prepare students for future scenarios with limited land availability and the importance of diversifying agricultural education to include animal husbandry. The education system should shift focus from producing job seekers to nurturing job creators through entrepreneurship and startup-ecosystem training. A brainstorming session on "Preparing Future-Ready Youths for Entrepreneurship Development in Agriculture" was organized to stimulate policy innovations and also Institutional reforms in academics, paving way in building students for more meaningful lives and work roles and enabling economic independence of learners capable of global competence. This would encourage higher agricultural education (HAE) Institutions to shape new generation youth in agriculture and allied fields and motivate all stakeholders, educationists, policy makers in contributing to fulfilling the aspiration of the *Viksit Bharat*.

2. AGRICULTURAL EDUCATION SYSTEM IN INDIA

Agricultural education, introduced during early 1960s, was designed on the lines of US Land-Grant system along with other Green Revolution programmes and has evolved considerably in terms of improved infrastructure, trained faculty, course structure and content, hands on practical training, etc. but still struggling to meet the expectations of the fast-changing landscape of agriculture. Agricultural education in India is undertaken through partnership and efforts of the Indian Council of Agricultural Research (ICAR) – Agricultural Universities (AUs) System comprising of 68 State Agricultural Universities (SAUs), 4 Research Institutes having Deemed-to-be-Universities (DUs) status, 3 Central Agricultural Universities (CAUs) and 4 Central Universities (CUs) with Agricultural

Faculty (Box 1). These Institutions impart education in Agriculture and Allied Sciences and are striving hard in imparting quality education to the students. The intake capacity of students in AUs has grown over the years. These Institutes enroll, on annual basis, about 30,000 students at UG level, over 15,000 at Masters' level and 5,000 in Ph.D. programmes. In addition, there are many private affiliated colleges enrolling thousands of students annually. In 2020, the available stock of agriculture graduates was 3,01,295 against a demand of 4,14,592, and horticulture graduates were 34,300 against a demand of 1,19,635, emphasizing that the gap between the demand and supply is wide (Tripathi *et al.*, 2024).

Box 1: Distribution of Agricultural Universities



India's advancement depends fundamentally on the strength and adaptability of its education system. HAE, in particular, occupies a pivotal role in driving sustainable agricultural development and ensuring food security. To remain effective and relevant, the system must continuously evolve to meet the rapidly changing demands of modern agriculture. India's agricultural education sector has seen remarkable growth. Improvements are visible in physical infrastructure, faculty expertise, curriculum design, and experiential learning opportunities. However, the sector still faces challenges like shortage of faculty, adequate number of hostels especially for girls, up-to-date laboratory equipments, to keep pace with rapid technological advancements and the shifting requirements of the agricultural and allied sectors.

Despite these significant strides, bridging the gap between education and employability requires ongoing curriculum modernization, stronger industry partnerships, greater emphasis on practical and digital skills, and continuous investment in faculty and student development. Only with these reforms can India's agricultural higher education system fully realize its potential as a catalyst for innovation, rural prosperity, and national progress.

ICAR has been instrumental in shaping and advancing HAE in India. As the principal regulatory body, ICAR establishes national policies, standards, and frameworks to ensure that agricultural education remains robust, innovative, and responsive to emerging challenges. Its leadership has been pivotal in cultivating a highly skilled workforce equipped to support India's food security and drive sustainable agricultural development.

ICAR's commitment to academic excellence is reflected in its ongoing curriculum revisions and the regular elevation of academic benchmarks. These updates are meticulously aligned with both national priorities and international standards, ensuring that graduates are well-prepared to navigate the evolving landscape of modern agriculture. Recently, ICAR has comprehensively restructured undergraduate degree programs based on the recommendations of the Sixth Deans Committee (Anonymous, 2024) (Box 2) in accordance with the National Education Policy (NEP) 2020 and implemented them from the academic session 2024-25. The new curriculum emphasizes skill development, digital learning, and flexibility through a choice-based credit system, facilitating easier mobility between institutions. Further, ICAR has introduced forward-looking courses in areas such as natural farming, agribusiness management, artificial intelligence and biotechnology to match industry and research demands.

The Council is also investing in the digital transformation of agricultural education by expanding cloud-based platforms and developing virtual reality laboratories, making advanced experiential learning more widely accessible.

These reforms are designed to revitalize India's HAE system, addressing issues of access, equity, and relevance. By enhancing practical, professional, and employability-focused training, ICAR aims to produce graduates capable of leadership in global agriculture. The overarching mission is clear: to make agricultural education in

Box 2: Main Features of the Sixth Deans' Committee Report (Source: Anonymous, 2024)

1. **Multiple Entry & Exit**
   - Exit after 1st year: **UG Certificate**
   - Exit after 2nd year: **UG Diploma**
   - After 4 years: **UG Degree (Hons.)** *(No exit after 3rd year)*
2. **Academic Bank of Credits (ABC)**
   - Credit transfer system for student mobility across institutions.
3. **Increasing Enrolment**
   - Stand-alone **UG Certificate/Diploma** courses and increased UG intake to improve **GER** as per **NEP-2020**.
4. **Skill Development & Employability**
   - **Choice-based skill modules**, internships, and **industry/NGO collaborations** for job readiness.
5. **New-age& Interdisciplinary Courses**
   - **AI, Robotics, Machine Learning, Biotechnology, Nanotechnology, Bioinformatics** integrated into curricula.
6. **Induction Programme**
   - **Deeksharambh**: Two-week orientation for cultural integration, life skills and academic familiarization.
7. **Entrepreneurship Promotion**
   - **RAWE** and **Student READY** programmes for experiential learning and entrepreneurial skills.
8. **Progressive Skill Enhancement**
   - Skills in 1st & 2nd year, internships for early exits, and advanced training in the 4th year.
9. **Common Courses for Holistic Growth**
   - **Livelihood Systems, Entrepreneurship, Marketing, AI, Communication, Personality Development, Environment and Disaster Management.**
10. **Innovation & Project Work**
    - **Student projects** for creativity, critical thinking, and exposure to new technologies.
11. **New Degree Programmes**
    - **Natural Farming** (BPKP-based) and **Agribusiness Management** for sustainability and enterprise development.
12. **Values & Well-being**
    - **Study tours, NCC/NSS, yoga, meditation and cultural exposure** for ethics and social awareness.
13. **Online Learning**
    - **10 credits of online courses** in diverse disciplines for personal growth.
14. **Electives & Local Relevance**
    - Wide **basket of elective courses** with scope for locally designed programmes.
15. **Continuous Evaluation**
    - **20% progressive assessment** via quizzes, group tasks and creative problem-solving.

India more accessible, affordable, relevant, and internationally competitive, fostering a new generation of professionals who are prepared to drive innovation and sustainability in the agricultural sector.

3. STRENGTHS, CONSTRAINTS, CHALLENGES AND OPPORTUNITIES IN HAE

3.1. Strengths

HAE in the country has established institutional network with the presence of agricultural universities and colleges (SAUs, ICAR Institutes, CAUs) having focus on applied research in areas like crop sciences, horticulture, animal husbandry, fisheries, etc. There is availability of domain experts in agriculture and allied sectors. The course curriculum is oriented towards grassroots-level agricultural needs and rural livelihoods with policy and financial support from state and central government. The courses are practical oriented with hands-on training and establishment of more than 850 experiential learning units on different domains of agriculture and allied subjects. HAE system in India benefits from:

- Access to domain experts in diverse areas of agriculture and allied sciences.
- A curriculum tailored to grassroots agricultural needs and rural development, supported by comprehensive state and central government policies and funding.
- Strong emphasis on practical skills, highlighted by the establishment of more than 850 experiential learning units across a wide range of agricultural specialties.

3.2. Constraints

- Skill Gaps and Global Competitiveness: The need for newer skill sets to address climate resilience and sustainability is growing. Matching global education standards, attracting and retaining talent, and expanding digital access in rural areas remain difficult.
- Disconnect Between Policy and Implementation: While supportive policies exist, on-the-ground execution is often lacking, leading to gaps between policy intent and real-world outcomes.

3.3. Challenges

The challenges in HAE are: (i) need for newer skill sets to address evolving environmental concerns of climate change and sustainability; (ii) global competitiveness with difficulty in matching global education standards and retaining talent; (iii) attracting youth to agriculture; (iv) limited access to digital tools in rural/agricultural institutions; and (v) there is disconnect between policy frameworks and actual ground-level execution.

3.4. Opportunities

- ✦ To build trained human resource with new entrepreneurial skills and motivation to establish agri-based industry.
- ✦ To revolutionize agriculture by the use and application of AI, machine learning, precision farming, vertical farming and drones.
- ✦ To promote agri-startups through incubators in universities. Some of the key Government schemes for promotions of agri-startups are listed below (Box 3).

Box 3: Key Government Schemes for Promotions of Agri-startups in India

Scheme	Funding/ Support	Target Stage	Key Benefit
RKVY-RAFTAAR	Up to ₹25 L grant for POC & prototype	Idea to pre-seed	Grants for idea/pre-seed (up to ₹5 L) and prototype stages (up to ₹25 L) via 24 Agribusiness Incubators; mentorship and incubation support to accelerate commercialization.
Digital Agriculture Mission	₹2,817 Cr for DPI & data infrastructure	Ecosystem enabler	₹2,817 Cr outlay to build AgriStack (Farmer IDs, Geo-referenced maps, Crop Registry), Krishi Decision Support System, and Soil Profile Maps—enabling real-time data, transparent subsidy delivery, and precision farming.
AgriSURE Fund	₹750 Cr fund for early-stage investments	Seed & Series A	₹750 Cr alternative investment fund (₹250 Cr each from GoI, NABARD, and private) to invest in sector-specific AIFs, direct equity, and debt for early-stage agritechstartups, with a focus on post-harvest infrastructure, FPOs.
Agriculture Infrastructure Fund	Loans up to ₹2 Cr at subsidized rates	Infrastructure & scaling	Loans up to ₹2 Cr with 3% interest subvention for warehousing, cold-chain, and food processing units managed by banks/NBFCs, improving rural infrastructure and reducing post-harvest losses.
PM-FME	35% credit-linked subsidy	Micro food processors	Tax exemptions, self-certification compliance, and credit-linked subsidies (35%) for micro food processing enterprises to drive value addition and formalization of agri-processing businesses.

RKVY: Rashtriya Krishi Vikas Yojana; RAFTAAR: Remunerative Approaches for Agriculture and Allied Sector Rejuvenation; PM-FME: Pradhan Mantri Formalisation of Micro Food Enterprises

(Source: Department of Agriculture and Farmers Welfare (https://agriwelfare.gov.in/en/Major), Ministry of Food Processing Industries (https://pmfme.mofpi.gov.in/) and NABARD (https://www.nabard.org/content1.aspx?id=23&catid=23&mid=530)

- NEP 2020 encourages agricultural universities to offer multidisciplinary degrees, integrating subjects like economics, data science, environmental sciences, and entrepreneurship with core agricultural studies. This allows students to gain hybrid skills and prepares them for diverse roles in agri-systems and agribusiness.
- Students can now earn certificates after one year, diplomas after two, with academic credits banked digitally for flexible progression or reentry, making agricultural education more accessible and adaptable to individual needs.
- The establishment of an Academic Bank of Credits enables seamless credit transfer across institutions and programs, allowing learners to customize their educational journey and gain cross-disciplinary exposure, such as combining agri-technology with business or computing.
- With a strong focus on internships, field-based learning, incubation hubs, and value-chain training, NEP 2020 enables agricultural institutions to expand hands-on and practical exposure, closely linking classroom learning with contemporary rural and industry needs.
- The policy calls for multidisciplinary research centers, public-private partnerships, and increased student involvement in translational projects, promoting a culture of innovation and real-world problem solving within universities.
- HAE can now leverage digital platforms, MOOCs (Massive Open Online Courses) and remote learning, making quality education more widely available, especially important for rural and remote learners. Digital tools also enhance extension, skilling and lifelong learning for professionals and farmers.
- NEP's emphasis on regional languages, scholarships, and support for disadvantaged groups is set to widen participation in agricultural education and produce professionals equipped to address local and national challenges.
- Agri-universities are encouraged to collaborate regionally, expand their offerings as part of multi-disciplinary clusters, and strengthen governance to align with national and international standards. ICAR's enhanced role as a standard-setting and accrediting body ensures nationwide coordination and quality assurance.

4. SELF-EMPLOYMENT, ENTREPRENEURSHIP AND AGRI-STARTUPS

Farming as a self-employment activity not only sustains rural communities but also fosters social cohesion by keeping people connected to their local environment. Self-employment in agriculture encourages entrepreneurship, drives innovation, and promotes diversification of agricultural products.

4.1. Factors Encouraging Entrepreneurship in Agriculture

- **Changing Aspirations:** Today's rural youth increasingly view farming not as a low-income occupation but as an opportunity to create scalable, branded, and technology-driven agribusiness ventures.
- **Digital Democratization:** Expanding internet connectivity in rural areas exposes youth to global markets, the latest farming techniques, and innovative agribusiness models via platforms like YouTube, WhatsApp groups, and online courses.
- **Policy Support:** Initiatives such as Agri-Startups under RKVY-RAFTAAR, Farmer Producer Organizations (FPOs), and schemes like HADP (in Jammu & Kashmir) provide tangible pathways and incentives for agri-entrepreneurship.
- **Climate and Sustainability Trends:** Growing consumer demand for organic, sustainable, and traceable food products opens niche markets ideal for young agricultural entrepreneurs.
- **Technological Innovations:** Affordable technologies—such as solar dryers, micro-irrigation systems, and precision agriculture tools—have lowered entry barriers, enabling youth to launch agribusinesses even on a small scale.

4.2. Factors Restricting Entrepreneurship in Agriculture

- **Fear of Failure and Social Pressure:** Many families discourage risk-taking, favoring the perceived security of government jobs over entrepreneurial ventures in agriculture.
- **Fragmented Landholdings:** Small and scattered farms limit the scalability and profitability necessary to develop sustainable agricultural businesses appealing to youth.
- **Lack of Customized Financial Products:** The predominance of asset-backed and rigid agricultural loans restricts young entrepreneurs' access to tailored financing solutions, especially those without land or initial capital.
- **Outdated Training Models:** Current training programs primarily focus on traditional farming techniques rather than business management, branding, and agribusiness entrepreneurship.
- **Limited Post-Harvest Infrastructure:** The scarcity of nearby storage, processing, and packaging facilities hampers value addition and discourages innovations extending beyond the farm gate.

5. RECOMMENDATIONS

The recommendations with action plan that emerged during the session with regard to innovations and reforms in HAE framework on developing future-ready youths for entrepreneurship in agriculture are listed below:

(i) Dynamic Curriculum with Modernized Education Strategy

Immediate Actions (0-12 months)

- ✦ Form Curriculum Modernization committees at each agricultural university with industry representatives, farmers, and international experts.
- ✦ Conduct comprehensive curriculum audit of existing programs to identify gaps in agri-food system coverage.
- ✦ Launch pilot programs integrating precision farming, agri-tech, and climate-smart agriculture modules in 10 leading universities.
- ✦ Establish Academic Bank of Credits (ABC) registration for all agricultural universities under NEP 2020 framework.

Short-term Actions (1-2 years)

- ✦ Develop 50+ cross-sectoral modules covering agro-ecology, digital agriculture, rural entrepreneurship across diverse agro-ecosystem contexts.
- ✦ Create interdisciplinary degree programs linking agriculture with data science, economics, and environmental studies.
- ✦ Design specialized elective courses in financial management, business modeling, marketing research, and strategic planning.
- ✦ Scale Student Rural Entrepreneurship Development Yozana (READY), Rural Agricultural Work Experience (RAWE) programs to all agricultural universities with standardized experiential learning units.
- ✦ Launch Knowledge Grid platform connecting teaching, research, innovation, and production across universities.

Medium-term Actions (2-3 years)

- ✦ Integrate agriculture electives in CBSE and state board curricula with pilot implementation in 1000+ schools.
- ✦ Establish online certification programs through university platforms under NEP 2020 hybrid learning models.
- ✦ Develop bio-economy focused curricula emphasizing bio-inputs, sustainable practices, and environmental entrepreneurship.

- ✦ Create training modules for 10,000+ school science teachers on agriculture education.
- ✦ Establish 100+ school agriculture clubs and demonstration gardens.

(ii) Integrating Technology in Teaching

Immediate Actions (0-12 months)

- ✦ Establish digital infrastructure with high-speed internet and learning management systems in all universities.
- ✦ Launch 20+ online courses on digital agriculture, AI applications, and drone technology through university platforms.

Short-term Actions (1-2 years)

- ✦ Develop comprehensive e-learning platforms with multilingual content and mobile accessibility.
- ✦ Integrate AI and drone modules into core curriculum with hands-on training facilities.
- ✦ Create simulation software for hydroponics, precision irrigation, and climate-smart farming practices.
- ✦ Launch Massive Open Online Courses (MOOCs) partnership with platforms like Study Webs of Active-learning for Young Aspiring Minds (SWAYAM), and Coursera for wider access.

Medium-term Actions (2-3 years)

- ✦ Establish Centers of Excellence for digital agriculture with advanced simulation and modeling capabilities.
- ✦ Create augmented reality (AR) applications for field-based learning and pest identification.
- ✦ Develop blockchain modules for supply chain management and food traceability.
- ✦ Build IoT-enabled smart campus farms for real-time data collection and analysis.

(iii) Strengthening Research and Innovation

Immediate Actions (0-12 months)

- ✦ Establish Research Innovation Councils at each university with industry and farmer representation.
- ✦ Launch seed funding programs of ₹50 lakhs per university for student-led research projects.

- Create collaborative research agreements with 100+ agribusiness companies and international institutions.

Short-term Actions (1-2 years)

- Build 25+ Agri-Innovation Labs with maker spaces and prototyping facilities across leading universities.
- Launch Annual Agri-Hackathons in partnership with general universities targeting 10,000+ participants.
- Establish dual-degree programs (Agriculture + Business/Technology) with 10+ partner institutions.
- Create climate resilience research centers focusing on drought-resistant crops and carbon farming.

Medium-term Actions (2-3 years)

- Develop joint Ph.D. programs with international/national universities in climate-smart agriculture and precision farming.
- Establish Innovation and Technology Parks in 15+ agricultural universities for startup incubation.
- Create multi-university research consortiums for addressing complex agricultural challenges.
- Launch industry-sponsored research chairs and Centers of Excellence.

(iv) Promotion of Agripreneurship and Agri-Startups

Immediate Actions (0-12 months)

- Establish business incubation hubs in 30+ agricultural universities with dedicated infrastructure.
- Launch Agri-Youth Innovation Fund with sufficient corpus for startup support and mentorship.
- Create student-run farms and cooperatives on university land for experiential learning.
- Develop entrepreneurship fellowships/stipends for student entrepreneurs.

Short-term Actions (1-2 years)

- Launch 'micro-enterprise farming models' including mobile soil-testing units and organic vegetable farms.
- Create agripreneurship simulation games/apps for virtual business learning and risk management.

- ✦ Develop credit transfer systems for student entrepreneurs with flexible exit/re-entry options.

Medium-term Actions (2-3 years)

- ✦ Create network of student-faculty startup programs modeled on IIT framework.
- ✦ Establish waste-to-wealth enterprises focusing on carbon farming and water-efficient agriculture.
- ✦ Build comprehensive case study compendium of successful agri-entrepreneurs.

(v) Gender-Inclusive Agripreneurship

Immediate Actions (0-12 months)

- ✦ Establish women-led incubation cohorts in 20+ universities with dedicated mentoring and funding.
- ✦ Launch targeted scholarship programs for women, tribal, and rural students.

Short-term Actions (1-2 years)

- ✦ Develop Self Help Group-linked enterprise programs connecting university incubators with existing women's groups.
- ✦ Create female-friendly rural startup policies with flexible working arrangements and childcare support.
- ✦ Launch financial literacy modules integrated with agripreneurship training for women entrepreneurs.

Medium-term Actions (2-3 years)

- ✦ Establish women-only innovation labs with focus on food processing and value addition.
- ✦ Create mentorship networks connecting successful women agripreneurs with students.
- ✦ Develop gender-sensitive curriculum addressing women's roles in agriculture and entrepreneurship.

(vi) Faculty Capacity Building

Immediate Actions (0-12 months)

- ✦ Launch comprehensive faculty training programs on entrepreneurship education for faculty members.
- ✦ Establish industry immersion programs with 6-month sabbaticals in agribusiness companies.

- ✦ Create innovation incentive schemes with awards for patents and consultancy projects.

Short-term Actions (1-2 years)

- ✦ Develop international faculty exchange programs with leading global agricultural universities.
- ✦ Establish teaching assistantship programs following BSMA recommendations for young researchers.
- ✦ Create research grant schemes per faculty for innovative projects.
- ✦ Launch recognition awards for outstanding innovation in instruction and scholarship.

Medium-term Actions (2-3 years)

- ✦ Build faculty entrepreneur programs encouraging faculty-led startup initiatives.
- ✦ Establish Centers of Teaching Excellence for continuous pedagogical development.
- ✦ Create industry-academia fellowship programs with joint appointments and shared responsibilities.

(vii) Industry-Academia-Farmer Linkages and Centres of Excellence

Immediate Actions (0-12 months)

- ✦ Establish Industry Advisory Boards in all 77+ agricultural universities with quarterly meetings.
- ✦ Create MoUs with leading agri-corporates for R&D, training, and placement programs.
- ✦ Launch mandatory internship programs with placements in agribusinesses, NGOs, and government agencies.

Short-term Actions (1-2 years)

- ✦ Open Centers of Excellence for collaborative research and prototype development.
- ✦ Develop live project partnerships connecting students with 1000+ real agricultural challenges.
- ✦ Create joint patent programs with industry partners and shared facility agreements.

Medium-term Actions (2-3 years)

- ✦ Build comprehensive PPP framework leveraging CSR funding for infrastructure and program support.

- Create inter-university linkage programs connecting agricultural and general universities.
- Establish farmer-led curriculum committees ensuring practical relevance of education programs.

(viii) Globalization of Agricultural Education

Immediate Actions (0-12 months)

- Sign partnership agreements with global agricultural universities for student and faculty exchange.
- Establish dual-degree program framework with leading international institutions.
- Create international benchmarking standards for curriculum quality and academic delivery.

Short-term Actions (1-2 years)

- Launch joint research programs addressing global food security and climate change challenges.
- Develop international student mobility schemes with sufficient students participating annually.
- Create INIHE (Indian Network for Internationalization of Higher Education, a pioneering consortium launched by the Association of Indian Universities) partnerships for systematic internationalization of agricultural education.

Medium-term Actions (2-3 years)

- Establish overseas campuses or collaboration centers in key agricultural regions.
- Develop global certification programs recognized internationally for agricultural professionals.
- Create international agricultural research consortiums addressing trans-boundary challenges.

(ix) Grassroots Implementation and Community-Based Action

Immediate Actions (0-12 months)

- Establish Agricultural Education Council of India for unified regulation and financial sustainability.
- Transform some KVKs into rural entrepreneurship hubs with startup support and market linkages.
- Deploy mobile agri-vans with soil testing labs and startup advisory services.

Short-term Actions (1-2 years)

- ✦ Create WhatsApp helplines and mobile apps reaching 1 million+ rural youth with enterprise advice.
- ✦ Establish youth FPOs and SHGs with comprehensive business training and incubation support.
- ✦ Build district agri-demo centers in all 750+ districts for localized technology training.

Medium-term Actions (2-3 years)

- ✦ Create network of village mentors through NGOs, Panchayats, and progressive farmers.
- ✦ Launch annual innovation expos in villages showcasing youth-led agricultural innovations.
- ✦ Establish agriculture clubs in schools and ITIs with hands-on learning programs.

India's transformation must pass through its farms. Agriculture is no longer just a food-producing sector. It is a generator of jobs, innovation, and dignity. With the right policy frameworks, educational reforms and grassroots momentum, a generation of agri-entrepreneurs can be unleashed who are proud, profitable and prepared. Preparing future-ready youth for entrepreneurship in agriculture demands not just support, but a revolution in approach with lower risks, expanding possibilities and recognizing youth not as passive beneficiaries but as co-creators of the future rural economy.

The goal is to build an enabling ecosystem where young Indians can confidently innovate, lead and thrive through agri-based enterprises ensuring food security, rural prosperity and national self-reliance. The way forward lies in convergence between government, academia, industry and the community. With knowledge, Indian agriculture can be reimagined as a space for invention, inclusion and inspiration.

REFERENCES

Anonymous (2024). Sixth Deans' Committee Report. Indian Council of Agricultural Research, Agricultural Education Division. ISBN: 978-81-7164-284-7

Tripathi, Hema, Agrawal, R.C. and Pathak, H. (2024). Strategic perspectives for human resource requirements in agriculture and horticulture sectors in India. *Current Science* **127(7)**, 834-840. https://DOI:10.18520/cs/v127/i7/834-840

NAAS DOCUMENTS ON POLICY ISSUES

Policy Papers

81.	Climate Resilient Livestock Production	2016
82.	Breeding Policy for Cattle and Buffalo in India	2016
83.	Issues and Challenges in Shifting Cultivation and its Relevance in the Present Context	2016
84.	Practical and Affordable Approaches for Precision in Farm Equipment and Machinery	2016
85.	Hydroponic Fodder Production in India	2017
86.	Mismatch between Policies and Development Priorities in Agriculture	2017
87.	Abiotic Stress Management with Focus on Drought, Flood and Hailstorm	2017
88.	Mitigating Land Degradation due to Water Erosion	2017
89.	Vertical Farming	2019
90.	Zero Budget Natural Farming - A Myth or Reality?	2019
91.	Loan Waiving versus Income Support Schemes: Challenges and Way Forward	2019
92.	Tropical Wilt Race-4 Affecting Banana Cultivation	2019
93.	Enhancing Science Culture in Agricultural Research Institutions	2020
94.	Payment of Ecosystem Services	2020
95.	Food-borne Zoonotic Diseases	2020
96.	Livestock Improvement through Artificial Insemination	2020
97.	Potential of Non-Bovine Milk	2021
98.	Agriculture and Food Policy for the Five Trillion Dollar Economy	2021
99.	New Agricultural Education Policy for Reshaping India	2021
100.	Strategies for Enhancing Soil Organic Carbon for Food Security and Climate Action	2021
101.	Big Data Analytics in Agriculture	2021
102.	WTO and Indian Agriculture: Issues, Concerns, and Possible Solutions	2022
103.	Antimicrobial Resistance	2022
104.	One World One Health	2022
105.	Sugarcane-based Ethanol Production for Sustainable Fuel Ethanol Blending Programme	2022
106.	Utilization of Wastewaters in Urban and Peri-urban Agriculture	2022
107.	Certification of Quality Planting Material of Clonally Propagated Fruit Crops For Promoting Agricultural Diversification	2022
108.	Agri-Startups in India: Opportunities, Challenges and Way Forward	2022
109.	Emergency Preparedness for Prevention of Transboundary Infectious Diseases in Indian Livestock and Poultry	2022
110.	Strategies and Approaches for Promotion of Sustainable Bivoltine Sericulture in India	2022
111.	Food Fortification : Issues and Way Forward	2022
112.	Gender and Nutrition based Extension in Agriculture	2022
113.	Contract Farming for Transforming Indian Agriculture	2022
114.	Promoting Millet Production, Value Addition and Consumption	2022
115.	Waste to Wealth – Use of Food Waste as Animal Feed and Beyond	2022
116.	Sustaining the Pulses Revolution in India: Technological and Policy Measures	2022
117.	Road Map for Rehabilitation of 26 Mha Degraded Lands in India	2022
118.	Entrepreneurship for Quality Fodder Production	2022
119.	Secondary Agriculture - Challenges, Opportunities and Way Forward	2022
120.	Scaling up Innovative Agricultural Extension Models	2022
121.	Self-sufficiency in Edible Oil Production	2022
122.	Beyond Price Support and Subsidy	2023
123.	Impact of COVID 19 on Livestock (Animal Health and Dairy/Poultry/Meat/Feed Industry)	2023
124.	Enhancing Agri-Infrastructure and Agri-Business Development through Public-Private Partnerships (PPPs) in India	2024
125.	Food Safety Strategies for Indian Fisheries Sector	2024
126.	Milk vs Plant Based Dairy Analogues: Myths and Facts	2024
127.	Seaweed Farming and Utilisation	2024
128.	Ethics in Research Publication	2024
129.	Greening of Indian Livestock and Poultry Sector: Policy Options for Developing Sustainable Approaches	2024
130.	Multiple Uses of Solar Energy in Agriculture and Agro-Processing	2024
131.	Smart Animal Farming: Perspective Planning	2025
132.	Strategies and Policies for Enhancing the Global Footprint of Indian Spices	2025
133.	Agrivoltaics for Sustainable Crop and Energy Production	2025
134.	Cellular Fish Meat Production: Prospects and Challenges	2025
135.	Accelerating Farm Mechanization to Achieve the Goal of Viksit Bharat	2025
136.	Crop Grouping and Harmonization of Maximum Residue Limits: Solution to Off-Label use of Pesticides	2025
137.	Restoration and Improvement of Soil Health	2025
138.	Climate Adaptive Conservation of Aquatic Genetic Resources	2025
139.	dsRNA-Biopesticides for Crop Protection	2025
140.	Underutilized Fruits and Vegetables for Nutritional and Health Security	2025

Status / Strategy Papers

1.	Role of Social Scientists in National Agricultural Research System (NARS)	2015
2.	Towards Self-sufficiency of Pulses in India	2016
3.	Strategy for Transformation of Indian Agriculture for Improving Farmers Welfare	2016
4.	Sustaining Soybean Productivity and Production in India	2017
5.	Strengthening Agricultural Extension Research and Education - The Way Forward	2017
6.	Strategy on Utilization of Glauconite Mineral as Source of Potassium	2017
7.	Vegetable Oil Economy and Production Problems in India	2017
8.	Conservation Policies for Hilsa and Mahseer	2018
9.	Accelerating Seed Delivery Systems for Priming Indian Farm Productivity Enhancement: A Strategic View Point	2018
10.	Renewable Energy: A New Paradigm for Growth in Agriculture	2018
11.	Rumen Microbiome and Amelioration of Methane Production	2019
12.	Harnessing Full Potential of A1 and A2 Milk in India: An Update	2019
13.	Development and Adoption of Novel Fertilizer Materials	2019
14.	Innovations in potato seed production	2021
15.	Potential of Transgenic Poultry for Biopharming	2022
16.	Need for Breeding Tomatoes Suitable for Processing	2022
17.	Biofortification to Address Malnutrition in India: Present Status and Way Forward	2022
18.	Drudgery Reduction in Agriculture through Improved Farm Machinery	2022
19.	Maize for Bioethanol Production in India: Prospects and Strategy	2024
20.	Strategy for Upscaling Carbon Farming in India	2025
21.	Honeybees : Harbinger of Sweet Revolution	2025

Policy Briefs

1.	To Accelerate Utilization of GE Technology for Food & Nutrition Security and Improving Farmers' Income	2016
2.	Innovative Viable Solution to Rice Residue Burning in Rice-Wheat Cropping System through Concurrent Use of Super Straw Management System-fitted Combines and Turbo Happy Seeder	2017
3.	Soil Health: New Policy Initiatives for Farmers Welfare	2018
4.	Uniform Policy for Fish Disease Diagnosis and Quarantine	2019
5.	Saving the Harvest: Reducing the Food Loss and Waste	2019
6.	Better Management of Pesticides in India: Policy Perspectives	2019
7.	Regulatory Framework for Genome Edited Plants: Accelerating the Pace and Precision of Plant Breeding	2020
8.	Covid-19 Pandemic: Impact and New Normal in Agriculture	2020
9.	Direct Benefit Transfer of Fertilizer Subsidy: Policy Perspectives	2020
10.	Harmonization of seed regulations for sustainable food security in India	2020
11.	Towards Revision of Biological Diversity Act 2002	2021
12.	Limitations of Global Hunger Index and Way Forward	2022
13.	Regulation for Genetically Modified (GM) Foods and Detection of Unauthorized GM Food Events	2022

NAAS DOCUMENTS ON POLICY ISSUES*

Policy Papers

1.	Agricultural Scientist's Perceptions on National Water Policy	1995
2.	Fertilizer Policy Issues (2000-2025)	1997
3.	Harnessing and Management of Water Resources for Enhancing Agricultural Production in the Eastern Region	1998
4.	Conservation, Management and use of Agro-biodiversity	1998
5.	Sustainable Agricultural Export	1999
6.	Reorienting Land Grant System of Agricultural Education in India	1999
7.	Diversification of Agriculture for Human Nutrition	2001
8.	Sustainable Fisheries and Aquaculture for Nutritional Security	2001
9.	Strategies for Agricultural Research in the North-East	2001
10.	Globalization of Agriculture: R & D in India	2001
11.	Empowerment of Women in Agriculture	2001
12.	Sanitary and Phytosanitary Agreement of the World Trade Organization Advantage India	2001
13.	Hi-Tech Horticulture in India	2001
14.	Conservation and Management of Genetic Resources of Livestock	2001
15.	Prioritization of Agricultural Research	2001
16.	Agriculture-Industry Interface: Value Added Farm Products	2002
17.	Scientists' Views on Good Governance of An Agricultural Research Organization	2002
18.	Agricultural Policy: Redesigning R & D to Achieve It's Objectives	2002
19.	Intellectual Property Rights in Agriculture	2003
20.	Dichotomy Between Grain Surplus and Widespread Endemic Hunger	2003
21.	Priorities of Research and Human Resource Development in Fisheries Biotechnology	2003
22.	Seaweed Cultivation and Utilization	2003
23.	Export Potential of Dairy Products	2003
24.	Biosafety of Transgenic Rice	2003
25.	Stakeholders' Perceptions On Employment Oriented Agricultural Education	2004
26.	Peri-Urban Vegetable Cultivation in the NCR Delhi	2004
27.	Disaster Management in Agriculture	2004
28.	Impact of Inter River Basin Linkages on Fisheries	2004
29.	Transgenic Crops and Biosafety Issues Related to Their Commercialization in India	2004
30.	Organic Farming: Approaches and Possibilities in the Context of Indian Agriculture	2005
31.	Redefining Agricultural Education and Extension System in Changed Scenario	2005
32.	Emerging Issues in Water Management The Question of Ownership	2005
33.	Policy Options for Efficient Nitrogen Use	2005
34.	Guidelines for Improving the Quality of Indian Journals & Professional Societies in Agriculture and Allied Sciences	2006
35.	Low and Declining Crop Response to Fertilizers	2006
36.	Belowground Biodiversity in Relation to Cropping Systems	2006
37.	Employment Opportunities in Farm and Non-Farm Sectors Through Technological Interventions with Emphasis on Primary Value Addition	2006
38.	WTO and Indian Agriculture: Implications for Policy and R&D	2006
39.	Innovations in Rural Institutions: Driver for Agricultural Prosperity	2007
40.	High Value Agriculture in India: Prospects and Policies	2008
41.	Sustainable Energy for Rural India	2008
42.	Crop Response and Nutrient Ratio	2009
43.	Antibiotics in Manure and Soil A Grave Threat to Human and Animal Health	2010
44.	Plant Quarantine including Internal Quarantine Strategies in View of Onslaught of Diseases and Insect Pests	2010
45.	Agrochemicals Management: Issues and Strategies	2010
46.	Veterinary Vaccines and Diagnostics	2010
47.	Protected Agriculture in North-West Himalayas	2010
48.	Exploring Untapped Potential of Acid Soils of India	2010
49.	Agricultural Waste Management	2010
50.	Drought Preparedness and Mitigation	2011
51.	Carrying Capacity of Indian Agriculture	2011
52.	Biosafety Assurance for GM food Crops in India	2011
53.	Ecolabelling and Certification in Capture Fisheries and Aquaculture	2012
54.	Integration of Millets in Fortified Foods	2012
55.	Fighting Child Malnutrition	2012
56.	Sustaining Agricultural Productivity through Integrated Soil Management	2012
57.	Value Added Fertilizers and Site Specific Nutrient Management (SSNM)	2012
58.	Management of Crop Residues in the Context of Conservation Agriculture	2012
59.	Livestock Infertility and its Management	2013
60.	Water Use Potential of Flood-affected and Drought-prone Areas of Eastern India	2013
61.	Mastitis Management in Dairy Animals	2013
62.	Biopesticides – Quality Assurance	2013
63.	Nanotechnology in Agriculture: Scope and Current Relevance	2013
64.	Improving Productivity of Rice Fallows	2013
65.	Climate Resilient Agriculture in India	2013
66.	Role of Millets in Nutritional Security of India	2013
67.	Urban and Peri-Urban Agriculture	2013
68.	Efficient Utilization of Phosphorus	2014
69.	Carbon Economy in Indian Agriculture	2014
70.	MOOC for Capacity Building in Indian Agriculture: Opportunities and Challenges	2014
71.	Role of Root Endophytes in Agricultural Productivity	2014
72.	Bioinformatics in Agriculture: Way Forward	2014
73.	Monitoring and Evaluation of Agricultural Research, Education and Extension for Development [AREE4D]	2014
74.	Biodrainage: An Eco-friendly Tool for Combating Waterlogging	2015
75.	Linking Farmers with Markets for Inclusive Growth in Indian Agriculture	2015
76.	Bio-fuels to Power Indian Agriculture	2015
77.	Aquaculture Certification in India: Criteria and Implementation Plan	2015
78.	Reservoir Fisheries Development in India:Management and Policy Options	2016
79.	Integration of Medicinal and Aromatic Crop Cultivation and Value Chain Management for Small Farmers	2016
80.	Augmenting Forage Resources in Rural India:Policy Issues and Strategies	2016

Continued on inside cover

***For details visit web site: http://naas.org.in**