aesa Sharing, learning and networking for innovation **Blog: 265 (February 2026)** Agricultural Extension in South Asia

WHY MEDICAL EDUCATION PRODUCES PRACTITIONERS AND AGRICULTURE DOES NOT

In this blog, Alagu Niranjan draws a unique comparison between the education systems of agriculture and medicine and critiques the gaps in agricultural education.

CONTEXT

Has agriculture become just another science degree? This question compelled me to examine what has gone wrong in our discipline as a whole. The problem does not lie with farmers, nor with the complexity of agricultural systems, but begins much earlier—within our universities, our curricula, and our pedagogy.

Agriculture is fundamentally a practical discipline that produces practitioners, not merely generates knowledge, but applies it in real-world situations. Agricultural graduates are expected to advise farmers to keep their farms both healthy and wealthy. In other words, we are not meant to be skilled labourers on farms/organisations; we are meant to be advisors, practitioners, and problem solvers. Serving farmers is implicit in the very name of our degree. Yet the uncomfortable question remains: *do we really serve farmers?*

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In reality, most agricultural professionals serve governments, corporations, companies, and organisations that work with or for farmers. In doing so, we often become intermediaries—passing on information, products, or services—rather than practitioners of agriculture. Whether we are truly practising agriculture or merely transmitting knowledge is a critical distinction that we rarely address.

To understand this failure, it is helpful to compare agriculture with another practising discipline that carries significant responsibility: medicine. Medical sciences operate under strict professional, ethical, and regulatory frameworks because their practice directly affects human lives. Agriculture, despite dealing with livelihoods, food security, environmental sustainability, and national economies, has not developed an equivalent professional seriousness or rigour. The contrast between medical and agricultural training exposes deep structural weaknesses in our discipline.

The table below summarises the key structural differences between agricultural and medical education.

Comparison between Medical and Agricultural Training

Theme	Dimension	Medicine (MBBS)	Agriculture (B.Sc. Agri)
I. Disciplinary Nature & Regulation	Disciplinary status	Regulated professional practice	Applied science with limited regulation
	Risk & accountability	High risk, strict public accountability	Lower immediate risk, limited accountability
	Regulatory oversight	Strong national & international bodies	Weak or inconsistent oversight
	Licensing to practice	Mandatory	Generally absent
	Global standardization	High	Low
II. Educational Philosophy & Curriculum	Training goal	Practice-ready professionals	Broadly educated graduates
	Curriculum philosophy	Competency-based, outcome-driven	Content-based, knowledge-driven
	Curriculum structure	Integrated (horizontal & vertical)	Subject-wise, compartmentalised
	Professional identity formation	Strong and early	Weak or delayed
III. Teaching–Learning Environment & Methods	Learning environment	Hospitals, clinics, skills labs	Classrooms, labs, university farms
	Early practice exposure	From early years	Usually late in the program
	Nature of practicals	Real cases, supervised responsibility	Demonstrations, limited responsibility
	Teaching methods	Case-based, problem-based	Lecture-centred
	Problem-solving focus	Central	Secondary
	Team-based learning	Integral	Minimal
IV. Supervision, Assessment & Feedback	Supervision & feedback	Continuous, structured	Limited, irregular
	Assessment philosophy	Ability to perform safely	Knowledge retention
	Practical assessment	Structured (Objective Structured Practical Examination - OSPE)	Mostly unstructured
	Workplace-based assessment	Mandatory	Rare
	Logbooks/portfolios	Compulsory	Optional or absent
V. Internship, Ethics &	Internship	Mandatory, supervised, rotational	Variable
	Ethics & safety training	Core and assessed	Peripheral

Professional Development	Continuing Professional Development (CPD) culture	Mandatory lifelong learning	Optional
	Graduation requirement	Demonstrated competence	Credit completion
	Practice readiness at graduation	High	Variable

DISCIPLINARY NATURE AND PROFESSIONAL REGULATION

Medicine is a regulated professional practice with clear boundaries, licensing requirements, and strong national and international oversight. Risk and accountability are explicit; errors have consequences. A medical graduate cannot practice without a license, and incompetence is publicly unacceptable.

Agriculture, in contrast, is treated largely as an applied science with limited regulation. In India, there is no mandatory licensing to practice as an agricultural advisor. Accountability for poor advice is minimal, even though the consequences, such as crop failure, farmer indebtedness, environmental degradation, or food safety risks, can be severe. The absence of regulatory oversight has lowered professional standards and weakened practitioners' sense of responsibility. When no one is accountable, professionalism becomes optional.

EDUCATIONAL PHILOSOPHY AND CURRICULUM DESIGN

Medical education is unapologetically practice-driven. Its primary goal is to produce graduates who are ready to practice safely and effectively. The curriculum is competency-based and outcome-driven, designed around what a graduate must be able to *do*, not merely what they must *know*. Integration across subjects and early professional identity formation are central features.

Agricultural education, however, remains largely content-based. Curricula are compartmentalised into subjects—soil science, agronomy, agricultural engineering, entomology, extension, economics, etc.—and are often taught in isolation. The goal is broad exposure rather than demonstrated competence. Students graduate having studied agriculture, but not necessarily having learned how to diagnose problems, manage uncertainty, or make responsible decisions in real farming contexts. Professional identity as an agricultural practitioner is weak or delayed, if it forms at all.

TEACHING–LEARNING ENVIRONMENT AND METHODS

Medical students learn in hospitals, clinics, and skills laboratories where real problems, real patients, and real consequences dominate the learning process. From early years, they are exposed to practice under supervision. Problem-solving is not an add-on; it is the core of learning.

Agricultural students, by contrast, are largely confined to classrooms, laboratories, and university farms. Practical sessions are often demonstrations rather than participatory experiences. Exposure to real farmers and real farm problems is limited and usually comes late in the program. Teaching remains lecture-centred, and problem-solving is treated as secondary to theoretical knowledge. Team-based learning, so critical in medical practice, is minimal in agricultural training.

SUPERVISION, ASSESSMENT, AND FEEDBACK

Assessment reveals what a discipline truly values. Medicine assesses the ability to perform safely under supervision. Continuous feedback, structured practical examinations, workplace-based

assessments, and compulsory logbooks ensure that students demonstrate competence before graduation.

Agriculture largely assesses knowledge retention. Practical assessments are often unstructured, feedback is limited, and workplace-based evaluation is rare. Logbooks don't even exist. Graduation is based on credit completion rather than proof of readiness for practice. As a result, competence varies widely among graduates.

INTERNSHIP, ETHICS, AND PROFESSIONAL DEVELOPMENT

In medicine, an internship is mandatory, supervised, and rotational. Ethics, patient safety, and communication skills are core components of training and are formally assessed. Continuing professional development is compulsory throughout a medical career.

In agriculture, internships are variable, inconsistent, and poorly supervised. Ethics and safety training are peripheral, despite their importance in advising farmers and managing environmental risks. Continuing professional development remains optional, reinforcing the idea that learning ends at graduation.

LESSONS FOR AGRICULTURAL SCIENCES

The purpose of comparing agriculture with medicine is not to mindlessly copy medical education, but to learn from its professional mindset. Medicine recognises that practice carries responsibility, risk, and ethical obligation. Agriculture must reclaim this same identity.

Farmers do not just need information brokers or product sales agents; they need competent, ethical, and accountable practitioners. Until agricultural education shifts from content delivery to competence development, from institutional comfort to field-based responsibility, and from vague service claims to measurable accountability, agriculture will continue to produce graduates who know about farming but are not prepared to practice it.

Agriculture has not become "just another science degree" by accident; it has been shaped that way by our training systems and professional complacency. Medical sciences demonstrate that an alternative is possible. Whether agriculture is willing to accept this challenge will determine not only the profession's future but also the well-being of farmers and the food systems we claim to serve.

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