

Transforming Agriculture Students

to lead Indian Farming sector

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For any doctrine, philosophy or institution to grow and strengthen the quality of torch-bearers is the primary determinant. Agriculture is considered as an assembly of science and art which requires a consistent support of visionary people. It is an attempt to compile various paradigms of imparting quality education to agriculture graduates for enabling them to successfully lead their corresponding arenas in future. Howsoever, the overall educational process can be broadly classified as delivered knowledge and self-acquired knowledge. Empirically, theoretical and practical sessions cover majority of graduation studies focus on delivered knowledge. Indubitably, the extended understanding will be possible by promoting self-reading, experimenting, initiating, establishing, organizing, interacting and celebrating from students' participation. Obviously, it is the prime duty of the teachers to facilitate an amicable platform for the students to nurture themselves to pursue their passion and future path.

Key words: Agriculture students, Indian Farming, Transformation

Introduction

India, an agrarian country, at present has 64 State Agricultural Universities, 3 Central Agricultural Universities and 4 Deemed Agricultural Universities are engaged in higher education of agriculture in India. There is a need to attract the young generations towards education for agriculture, creating the interest in learning process, improving their skill sets and transforming them to be leaders in respective fields. Thus, they can contribute for upliftment of farming communities and ensuring profitability in agriculture. From our experiences, we attempted to compile various attributes those needs prime focus for improving agricultural education.

Theoretical and conceptual basics

The detailed understanding on the theoretical basics is essential for the students to be a worthwhile graduate. The teachers should keep in mind that each one sitting in the class be

able to learn the basics. This objective can be served only if case studies or practical utility of the knowledge is shared among students. It not only will help the students to keep the knowledge in long term memory, but also, to be handy when they are entering their services. Agricultural graduates are plant doctors, and hence a proper diagnosis of a field problems must be precisely understood only if theoretical knowledge of good standards is imparted. As a component of extension education, thorough understanding on the various laws, policies, regulations, etc., related to agriculture should also be taught. This will help students in understanding the feasibility of activities related to farming, agripreneurship and marketing.

Library visiting habit

The timetable for every semester must include a slot for spending a couple of hours in library. Initially,

this could be difficult to impose among all the students. But once the process is set, they will acquire a habit of reading and updating their basics. Once they taste the benefits of quality reading, it will be easy for teachers to make the students understand the basic concepts and theories. The students may also procure a personal copy a book that they find worthy for their future endeavor.

Participation in agricultural activities

Practical classes which provides opportunity to engage in different agricultural activities are to be promoted. Students shall be compulsorily involved in land preparation activities, sowing of different crops, nutrient management, weed management, activities, pest and disease management practices, insect rearing and seed production activities. With theory classes going hand-in-hand, practical involvement of students in

all field activities not only improves students' skill and knowledge but also improves the understanding of problem and recommending suitable solutions. Involvement of students in agriculture activities makes them worthy agriculturist for serving the farmers.

Establishment of student farms

In agriculture institutes, students farm is the place or part of field where agriculture students cultivate crops as a part of their practical sessions. They should be engaged in all field activities from land preparation to harvesting and threshing of crops. It helps students to apply all proven package of practices practically and to prepare a balance sheet of costs and returns while cultivating crops by themselves. Such farms shall be created to raise both locally grown as well as exotic crops so that the physiological and agronomic aspects of various crops will be understood. Students may also be encouraged to establish biodiversity park for appreciating and understanding the need and value of conservation of biodiversity as a learning process.

Educational tour

Frequent visits of agriculture students to different agriculture universities, research institutes and industries give exposure on ongoing research activities and advanced techniques used by the institutes. Students also get opportunity for interaction with other students, teachers and scientists. It not only inspires the students but also build their confidence to set their future targets. Also travelling to various places will positively improve their thought process.

Regular fields visits

Regular visits of students to farmer's field gives better field exposure so that they can see diversity of crops, soils, land preparation methods, prevalent cropping systems, irrigation methods, nutrient management practices and other crop management practices. It also helps to identify crop disease, insect infestation, weed

infestation and nutrient deficiency symptoms. The students must also be given opportunities to interact with farmers. The biodiversity and its interaction with ecosystem can also be imbibed by the students.

Interaction with farmers

Students can get this opportunity for interaction with farmers during their field visits and Rural Agricultural Work Experience (RAWE) program. Through interactions with farmers, students would get understanding about farmer's practices, crop production and productivity, cost of cultivation and various marketing processes that helps in understanding real lacuna in agricultural production systems. Students must also be oriented to record or collect indigenous technology knowledge (ITKs) through the farmers' interactive sessions.

Exposure of meteorological observatories

Visits to meteorological observatories gives better exposure of different instruments that records weather and climate parameters. Observing the functioning of meteorological instruments to agriculture students will help to understand the basis of daily weather forecast and climate change predictions. Students can also understand and correlate between different weather parameters and crop production. It helps to develop innovative techniques or models for forecasting and combating unfavorable weather conditions and climate change.

'Earn While Learn' programmes

Earn while learn programs helps the students to learn how to build a startup and become a successful entrepreneur in future. The gap between theory and what is being practiced can be nullified by implementing such programs during final year of the degree program. During the course of EWLP, students are asked to come up with feasible ideas of their interest, practice it on the lab/ land and generate revenue out of their output with their own

efforts. Such an exercise makes them understand the agony of farmers and entrepreneurs in producing and selling the produce. The EWLP is imperative to bring in high quality professional competence to agriculture graduates as it benefits the them in acquiring skills, competence and confidence. Ultimately, the students may turn up with entrepreneurial ideas, resulting in transformation into job providers than job seekers in the agriculture sector.

Economic surveys

Conducting surveys are inevitable in any academic areas, as it generates information and provides base for decision and policy making. During the course works and RAWE, the students should be encouraged to go outside and meet the farmers with structured questionnaire/ schedule to collect firsthand information from the farmers. This gives them understanding about the practices being followed by the farmers and cost incurs at each stage of cultivation. Any decision on farm involves cost element and ignoring the cost element, one should consider this while suggesting/ guiding farmers for improvements. The process of analysis and interpretation of the collected data further helps the students in improving their analytical skills, critical thinking and decision making ability.

Industrial attachment trainings and internships

The industrial environment is totally different from the classroom environment, as it involves high amount of professionalism, technological interventions and management of human resources, which can't be simulated in any educational institution. Industrial Training is a period of practical learning and an integral part of the education that turns a student into professional. Such trainings help students to get familiarized with various materials, machines, processes, products and their applications along with relevant aspects of management. By working closely with industry professionals,

students would also get to learn a horde of intrapersonal and interpersonal skills. Industrial attachment trainings also benefit the students to deeply understand the requirements from the industry and prepare themselves to chase career in the high tech industrial requirements.

Rural Agricultural Work Experience Program

The Rural Agricultural Work Experience (RAWE) Program provides practical experience and create awareness to the students in real-life situation concerning rural agriculture. It will provide an opportunity for students to understand the village situations in relation to agriculture and allied activities, to work with farmers and identify their problems, and offer suitable extension tools in transferring the latest technologies what they have learned in the classroom to overcome said problems. RAWE offers right exposure to the students to acquire Indigenous Technical Knowledge being practiced in a region. Thus, farmers and students get equally benefitted out of the program. Largely, the program will help in boosting the self-confidence of the students in handling real life problems related to agriculture and contribute toward rural development. To facilitate the learning process of students, proper channelizing needs to be done. Promoting working rapport with farmer groups, NGOs, FPOs, *kisan* unions, *kisan* morchas, *kisan* sanghatans, etc. will definitely reorient the purview of students towards agriculture.

Hands on experience for various research activities in laboratories

It is highly noticed that students showing enthralling research aptitude may not outperform in academic grounds. The faculty must earn projects that help the interested group of students for exploring research. The practical classes may be organized into various random groups where the experimental set up may be developed by students. The protocols may be provided to those students who have a taste of trial and

error, and setting hands on various procedures. The proper maintenance of lab notes and data analysis needs to be taught to students. In labs, various technical learning activities other than basic research can be undertaken by students. It includes learning the various post-harvest management and processing aspects. The experience with extraction of various metabolites, product diversification, shelf life increase, etc. will be handy for students in establishing an agri-enterprise.

Involvement in various scientific research projects undertaken by faculty

Being under graduate students of science, B.Sc. (Ag.) students are budding scientists with ambitious ideas. Enthusiasm and zeal of students can be cultivated by assigning them and engaging them into certain components of the research projects. Various works shall be allocated during the initial part of each semester, where the students will find ample time to work on the project. The faculty may also give some remuneration on his own behalf and provide recognition in authorship. For students showing genuine research aptitude, training on how to write a project proposal can be assigned to do so. Such an early approach in training will enhance their confidence in the due course of time.

Teaching writing skills and inspiring to write articles

A good science teacher should encourage and compel students to write articles and bulletins on the core and/or related fields of agriculture. In case of research, once the data is recorded and analyzed, students should be taught to reach a scientific principle as well as hypothesis that resulted from the said study. This helps in inculcating interpretation of results and further discussion and technical writing of results obtained out of the research experiment. In the process, students will get to learn how to use websites related to scientific literature such as Google Scholar, ResearchGate, Pubmed, ScienceDirect, etc., besides calculation of Impact factor, H index,

I10 index, etc. may also be taught to them. This will fix a benchmark for the students to perform quality research and papers during their future scientific endeavor.

Promoting the development of various prototypes

Students are the abode of various ideas who can contribute to agricultural engineering, extension, animal husbandry, agronomy, software development, breeding, biotechnology, etc. A good faculty must be open to various ideas and guide the students to ward off various practical difficulties in implementing those ideas. Development of an idea into a prototype must be promoted by the faculty and the inputs in terms of human resource and financial may be provided. The students may also be motivated to apply for patents or copyrights that will help them in earning a deserving job in future.

Participation in various exchange programmes

In the academic carrier, the exchange and sandwich programmes play important role to collaborate internationally. MoUs with foreign universities must be a regular and compulsory initiative in the schools for creating ambience of knowledge sharing, student sharing and internships. It helps faculty and students to exchange their culture, knowledge and experiences. It will add value to the institute as well as university in terms of reputation gained through international linkage and employability. These exchange programs are advantageous for students to shape their career in well-defined directions. Such type of programs help to broaden the perspectives and thought processes of students.

Guest lectures of various stalwarts in agriculture sciences

Interactions with various knowledgeable personalities will ignite the young minds. Everyone has the ingenuity to idolize the respectable personalities in their field of interest and get motivated to dream a career or a passion. The

students will be shared with the various agriculture associated movements occurring around the globe. The personal interaction with the stalwarts will also help the students to formulate their own career paths.

Personality development training from experts

Proper understanding of manners and etiquettes is essential for a good leader. The agricultural graduates are destined to be leaders in their corresponding career paths. Towards this objective, a proper understanding on decent behavioral norms needs to be enriched as well as inculcated. The personality development sessions should be provided to the students from the beginning of each semester and intensively during the last semester.

Training for public communication skills

A good leader should have a set of skill sets among which communication skill stands at the forefront. This is essential as the agri-graduates are meant to serve the masses that interlink farmers, politicians, bureaucrats, and so on. To promote communication skills, giving oral presentation assignments as well as providing training from professional trainers are effective. The various tricks, do's and don'ts in communication will be imbibed when several live training sessions provided. The training may be given every year and with an intensive one during RAWE programme. At the end of the final semester, training for group discussions and attending interviews must be provided.

Participation in agriculture fairs and conferences

There are two aspects regarding fairs and conferences. First is being an attendee and the other being an organizer. If an agriculture fair or conference is organized by the agriculture institutes it gives ample opportunity to students for mutual sharing or exchange of their ideas with farmers, teachers, scientists and people from different industries. It gives an opportunity for industries to launch products/ techniques

developed. If the event is organized by students themselves, the hardships in organizing will be understood that becomes handy while facing similar circumstances. For instance, 'Mango Fest' is regularly organized by the students of KAU, Padanakkad campus every year that adds to considerable revenue of the university.

Celebration of various agriculturally important days

The teachers should take necessary initiatives to celebrate the various days that commemorate a focal theme. For instance, World Soil Day, World Forestry Day, National Science day, etc. may be celebrated to impart awareness about various social events and causes. The development of a model citizen can thus be ensured from the students once they reach the pass-out stage. An active participation of all the students must be ensured in this regard by the faculty. The students shall also be motivated to involve in organizing the events which will promote leadership skills. For instance, 'Bail Pola' (Marathi: cattle festival) is celebrated jointly by students and faculty of SAST every year to commemorate the interdependence of farmers with livestock.

Participation in various extracurricular activities

"A sound mind is a sound body" is depicting the importance of extracurricular activities such as sports and cultural events, and yoga. Timely registration with the authorities for NSS, NCC, etc. must be done from the part of the institute. If these go hand in hand with academic excellence, the students' personality will excel. Several researches proved that students participating in extracurricular activities show better performance in competitive world. These activities help students to know about their capabilities to handle different situations, develop life skills and survival knowledge. Such activities are an essential element of the showcasing the reputation of the university.

Motivating for higher studies in agriculture

India is a country that offers ample

opportunities for pursuing higher agricultural education. Advancing to higher education level in agriculture will open a new arena for the students to earn jobs of higher standards. It's the duty of all teachers to inspire and orient the students to earn higher educational qualification in their subjects of interest. Now a days students are getting to know that agriculture education is leading to an ocean of job opportunities, provided they earn quality skill based knowledgeable education from coveted institutes.

Motivating students to pursue job oriented competitive exams

Our new generation is inspired by the quote 'This is competitive world, don't stop'. There is always neck-to-neck competition in all sector to get opportunities. Students are to be motivated and educated for becoming graduates, masters and doctorates so as to earn their dream jobs. At the end of B.Sc. (Ag.) course, students should also have an upper-hand in cracking competitive exams as toppers. Teachers are the sculpturer of students' future and motivating and training students to reach great heights serves the basic purpose of curriculum. With a quality education, experience and exposure, students will deliver better services for the upliftment of farming community and eventually mankind.

CONCLUSION

Agriculture is a dynamic field where several opportunities and challenges come up practically on a daily basis. The agricultural education is provided in a short span of four years. If the students need to be taught the updates, embracing the self-learning habit is the only way. The practical understanding and technological advancements must be unboxed to students by the faculty. The students will surely be motivated enough to imbibe the knowledge, develop their understanding and practically implement at the right point of time.

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