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Overview of Agronomy Discipline in Agricultural Education of Bachelor of Science (Honours) in Agriculture

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Abstract

The Dean Committee Report (DCR) is the most authentic recommendation for orientation of the agricultural education in India. As DCR is extensive, study of specific subject for its changes over the duration will be worthwhile. The present overview describes the agronomy subject for changes that occurred, relevance, background, and possible implications from 4th to 6th DCR (2007 to 2017; 2017 to 2024 and 2024 onwards). Maintaining same level of credit allocation (22, 21, 22, respectively during 4th, 5th, and 6th DCR), retaining the highest credits among all disciplines, increasing credits to elective courses (From 1, 4, and 16th respectively during 4th, 5th and 6th DCR), introduction of 'Principles and practices of natural farming (2 credits) and increasing credits of organic farming combined with conservation agriculture to four signifies the importance of agronomy in Bachelor of Science (Honours) Agriculture (B.Sc. Agric.) disciplines. As overall courses and credits are increased consistently; it emphasizes over the 4th to 6th DCR on specification/specialization individually on soil management, plant management, and water management.

Keywords:

Agriculture, agronomy, Dean's committee, elective courses

1. Rationale

The Dean Committee Report (DCR) is the holistic and details guidelines of agricultural education in India and this will also help in bringing the uniformity and desired standards in agricultural education throughout the India. The VIth DCR was published on 10th September, 2024 after forming a committee for 'implementation strategy for national education policy-2020 in agricultural education system' in September 2021 (Anonymous, 2024). Earlier Vth DCR was implemented across the India with finalizing the summary of discussion held on November 2015 (Anonymous, 2017). The major innovative thing in Vth DCR is student READY programme (Rural Entrepreneurship Awareness Development Yojana); while in case of VIth DCR it is national Education policy (NEP)-2020 (NEP, 2020) and flexibility through multiple entry and exit with

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providing certification for the students two times before completion of four years degree programme in B.Sc. Agric. At the same time curricula and course syllabus and academic regulation for new disciplines in agricultural education, natural farming is also an important and new thing. The DCR is also an important avenue for incorporation the recommendation of different education policies and frameworks developed in India for all sort of technical and non-technical education. The Department of Agricultural Education and Research as governing body, Indian Council of Agricultural Research as organizing body/society, Dean committee as a guiding agency, members of Dean's Committee as formulating agency, national education policy as a catalyst and central agricultural universities and state agricultural universities as implementation agencies are significantly contributing towards the success outcome of DCR in human resource development in agriculture. The DCR has significant importance towards institutional recognition, facilitation and visualization of different educational organization for higher education in India. The objectives of DCR is to update, augment and revise the course curricula and details of academic regulations in order to ensure the quality education with changing need of the time. This will provide important avenue for harnessing human resources and will expect to act as stimulants for different institutional and policy frame works developments across the agricultural institutions. The DCR describe the information on the minimum standards required for higher education in different disciplines of agriculture mostly at graduate level, course curricula and syllabus of different courses, the methods of delivery of courses, academic rules and regulations of proper functioning of colleges, introducing/merging/deleting of any specific source and policies related aspect of faculties and staffs (Anonymous, 2016). Besides that it will facilitate in accreditation, policy support, development support for infrastructure development and improvement of faculties competence for maintaining the standards in education. The huge information are being included in DCR in order to cater all most all needs of entire agricultural education system; hence study of these reports for disciplines or subject specific will bring out a specific information from a pool of information. Such type of study will also help in highlighting the major changes occurred and their significance. This also helps in facilitating the course planning, study of any subjective things being there in DCR and need development at university level. Therefore, attempt has made to study the agronomy subject across the three DCR with objective to highlight major changes and their relevance.

2. Methodology

The 4th, 5th and 6thDCR are studied for the courses and credits allocation as well as syllabus of these courses. These DCR are compared to determine the variation in courses and their role in agronomical education (Anonymous, 2007).

3. Findings

Agronomy as a subject with multiple courses offered in Bachelor of Science (Honours) in Agriculture remained an important discipline throughout all DCR. The basics of agronomy are related to soil and plant and water management with different practices and developing principles for their efficient utilization and sustenance for further use. The soil, plant, and water are considered as basic resources for agricultural activities and hence, agronomy as a discipline will be an important core and major subject in Bachelor of Science in Agriculture. The total courses offered for agronomy in B.Sc. (Hons.) Agric. is highest among all other disciplines through the past 20 years as realized from 4th, 5th and 6th DCR. Even though the course credit more of less remained same the significant variation is observed across all three DCRs for variation in courses and status (core or elective and syllabus) as well as the introduction of new courses such as Principles of Organic Farming in 5th DCR and Principles and Practices of Natural Farming in 6th DCR. The course was undifferentiated with respect to their status in education in the 4th and 5th dean committees (Except elective courses of weed management in the 5th dean committee); while in the 6th Dean committee, the courses for agronomy fell into three different categories viz., core courses, common courses and elective courses with the highest credit hours for (each course 4 credits) elective courses. This indicates hierarchy among the courses with respective to their relative importance.

The courses were classified completely based on disciplines in the 4th DCR and as compulsory and elective courses in the 5th DCR. In the 6th DCR, the subject-wise classification is dismantled to a great extent and courses are classified as common courses, core courses, elective courses, skill enhancement courses, and online courses with much freedom to select the courses as compared to 4th and 5th Dean Committee Reports. The degrees are more firm with respect to their duration to get

a certificate of degree education in the 4th and 5th DCR; while arrangements are made in 6th DCR for different certifications after completion of different years in the entire degree. These certificates are 'UG-certificate in Agriculture' after completion of one year with 10-week internships and 'UG-diploma in Agriculture' after completion of 2 years with 10 weeks internship. This will be going to affect slightly the diploma colleges in agriculture as students are going to get the certificates of same and even more superior than the same. At the same time, the flexibility of registering for the courses will be given in 6th DCR with registration in the 2nd year for those holding a 'UG-Certificate in Agriculture' and the 3rd year for those holding 'UG-Diploma in Agriculture'. The other major changes in 6th DCR over 5th DCR are the introduction of skill enhancement courses, the introduction to two courses related to natural farming, the introduction of online courses for 10 credits, the grouping of all elective courses in single (7th) semester, removing model-based Experiential Learning Programme (ELP) (Skill Development and Entrepreneurship for 20 (0+20), the introduction of incubation and foundation course (*Deekshaarambh*) and making NCC (National Credit Course) (0+1), NSS (National Service Scheme) (0+1) and Physical education, first aid and yoga practices (for 2 credits) as common courses (with credit).

Besides the sources mentioned as common and core agronomy courses the other courses such as 'management of natural resources [4 (3+1)]' and 'climate resilient agriculture [4 (3+1)]' are introduced as electives courses (Table 1). The course or 'principles of organic farming [2 (1+1)]' offered in 5th DCR in 6th semester was revised as 'principles and practices of organic farming/ conservation agriculture [4 (3+1)]'. Similarly, 'geo-informatics, nano-technology and precision farming [2 (1+1)]' was revised

Table 1: Courses offered for Agronomy discipline in last three Dean Committee Reports

A. Courses offered for agronomy discipline as per fourth dean committee report (2007 to 2017)

Sl. No.	Course name	Credit Hours [Total (Lecture + Practical)]
1.	Principle of agronomy and agricultural meteorology	3 (2+1)
2.	Field crops-I (*Kharif*)	3 (2+1)
3.	Weed management	2 (1+1)
4.	Water management including micro-irrigation	3 (2+1)
5.	Field crops-II (*Rabi*)	3 (2+1)
6.	Farming systems and sustainable agriculture	2 (1+1)
7.	Practical crop production – I (*Kharif* crops)	1 (0+1)
8.	Practical crop production – II (*Rabi* Crops)	1 (0+1)
9.	Introductory agriculture (Ancient heritage, agriculture scenario and gender equity in agriculture)	1 (1+0)
10.	Organic farming	3 (2+1)
	Total	22 (13+9)

B. Courses offered for agronomy discipline as per Fifth Dean Committee Report (2017 to 2024)

S . No.	Course name	Credit Hours [Total (Lecture + Practical)]
1.	Fundamentals of agronomy	4 (3+1)
2.	Agricultural heritage^	1 (1+0)
3.	Introductory agro-meteorology & climate change	2 (1+1)
4.	Crop production technology – I (*Kharif* crops)	2 (1+1)
5.	Crop production technology – II (*Rabi* crops)	2 (1+1)
6.	Farming system and sustainable agriculture	1 (1+0)

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Sl. No.	Course name	Credit Hours [Total (Lecture + Practical)]
7.	Practical crop production - I (*Kharif* crops)	2 (0+2)
8.	Practical crop production - II (*Rabi* crops)	2 (0+2)
9.	Principles of organic farming	2 (1+1)
10.	Geo-informatics and nanotechnology and precision farming	2 (1+1)
11.	Rainfed agriculture & watershed management	2 (1+1)
12.	Rural agricultural work experience – Agronomy	3 (0+3)
12.	Weed management#	3 (2+1)
	Total	28 (13+15)

C. Courses offered for agronomy discipline as per sixth Dean Committee Report (2024 towards)

Sl. No.	Course name	Credit Hours [Total (Lecture + Practical)]
Common course		
1.	Farming based livelihood systems	3 (2+1)
Core courses		
2.	Fundamentals of agronomy	3 (2+1)
3.	Crop production technology-I (*Kharif* Crops)	3 (1+2)
4.	Crop production technology-II (*Rabi* Crops)	3 (1+2)
5.	Water management	2 (1+1)
6.	Weed management	2 (1+1)
7.	Introductory agroforestry	2 (1+1)
8.	Dry land agriculture/ rainfed agriculture and watershed management	2 (1+1)
9.	Principles and practices of natural farming	2 (1+1)
Elective courses		
10.	Principles and practices of organic farming/ conservation agriculture*	4 (3+1)
11.	Geo-informatics and remote sensing, precision farming*	4 (3+1))
12.	Management of natural resources*	4 (3+1)
13.	Climate resilient agriculture*	4 (3+1)
		22+16* (11+11) + (12+4)*

(^: The course does not exactly belong to agronomy; while it is being given course title as that of other agronomy sources; #: Elective course to be offered in 4th or 5th or 6th semester; *: Elective courses).

as 'geo-informatics and remote sensing, precision farming [4 (3+1)]'. The two courses offered in 5th DCR in 5th and 6th semester viz., 'practical crop production – I (*Kharif* Crops) (0+2)' and 'practical crop production – I (*Rabi* Crops) (0+2)' are merged with other two courses in 6th DCR viz. 'crop production technology – I (*Kharif* Crops)' and 'crop production technology – I (*Rabi* Crops)'. In case of skill enhancement courses (SEC), Agronomist should either assist other disciplines or may take lead in SEC based on the expertise achieved such as bio-fertilizer production, seed production technology and post-harvest processing technology. The reducing the credit of some courses such as 'fundamentals of agronomy (from 4 to 3), practical crop production I and II (from 4 to 2) will be worthy; while introduction of 'water management' and 'weed management' as a core courses will be much impactful rather than just discussion it along crop production technology or enlisting it as an elective course, respectively. The course 'introduction to agro-meteorology and climate changes' was offered as

agronomy courses in 5th DCR; while in 6th DCR it was enlisted separately as course of agricultural meteorology with same credit in both DCR [2 (1+1)]. The course 'farming system and sustainable agriculture' was offered for 2 (1+1), 1 (0+1), respectively in 4th and 5th DCR [in some universities for 3 (2+1) credits for 5th DCR]; while in 6th DCR it was completely changes to a new course 'farming based livelihood systems' for 3 (2+1) credits. The course related with discussion of historical perspective of agriculture offered in 4th DCR as 'introductory agriculture', 5th DCR as 'agricultural heritage; while removed in 6th DCR considering each fundamental courses will be in up to describe the heritage information related with that particular subject. The introduction of course 'principles and practices of natural farming' will be worthy considering present impact of natural farming on policy and institutional activities in agricultural science (Tamboli and Nene, 2013). This has been done without reducing the significance of organic farming for which a new elective source with four credits (Two credits in 5th DCR) as 'principles and practices of organic farming/ conservation agriculture' in 6th DCR. So, overall there is a significant increase in credits for Agronomy in 6th Dean Committee Report if the elective courses are also taken into consideration (Figure 1).

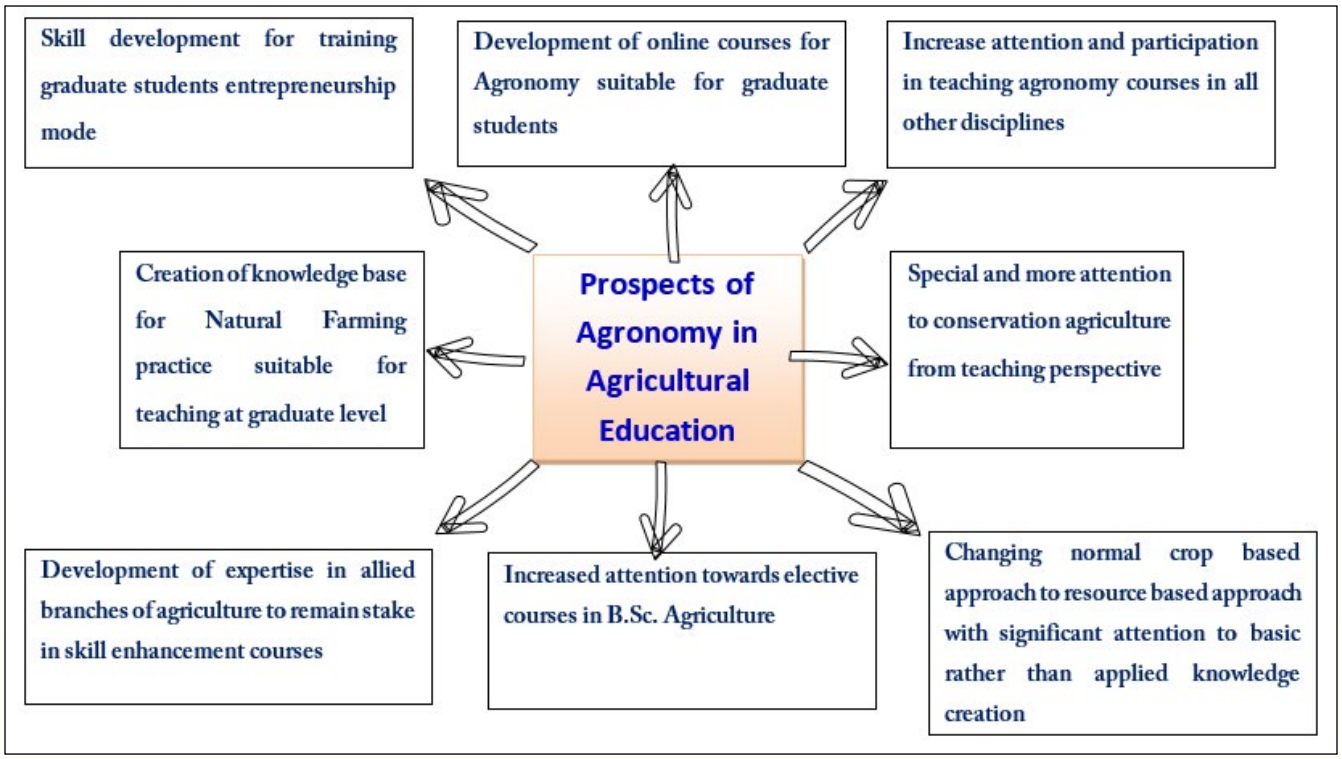

Figure 1: Perspective of agronomy discipline in agricultural education

4. Activities to be done for agronomy educationists related to DCR

Agronomy practitioners should develop modern course curricula that contain an introduction to the course, objective, and student-teacher teaching-learning outcome expected along the lecture-wise course schedule for theory and practical portion based on VIth DCR. Identifying the subjective things and setting the specification for them (choosing among the options, decisions in online courses, describing the syllabus for courses for which decision has to be taken at the university level, etc.) and identifying any discrepancies in course credit hours and syllabus if any are the other important activities need to be done at institute/university level. Besides that institutions/ universities/colleges reorient the academic programme and arrangement for making up to the standard established by DCR for focusing the accreditation of institutes/universities/colleges.

5. Conclusion

In nutshell, the development of expertise individually for

soil, plant, and water management (and allied enterprises) is needed for effective delivery of agronomy courses. This can be judged from more weightage to elective courses related to soil, plant, and water management (four credits for each course and four courses) as well as incorporation of skill enhancement courses which mostly need input production and produce processing knowledge of allied enterprises rather than only crop cultivation and resource knowledge management.

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