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Educational progression and employment status of agriculture graduates of northern SAUs

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Abstract

Agriculture is the main source of livelihood for rural society in India. Establishment of SAU's and untiring efforts of agriculture scientists had resulted in green, blue and yellow revolutions. Today, the Indian council of Agricultural research through different state agricultural universities is imparting agriculture education at the level of diploma, degree, master's and doctoral level with a total intake capacity of approximately 35,000 students per year. The success of universities not only depends upon number of graduates or postgraduates enrolled but also on the professional attainment of their graduates and post graduates. Therefore, the present study was planned to study the enrolment and employment status of the agriculture graduates of Northern SAU's. Survey questionnaires were developed to collect primary and secondary data so as to elicit structured responses in quantifiable terms. Questionnaire was mailed to all these passed out students to know about their academic profile and career progression after the degree programme. In total, response of 2035 students was received. So, the sample size for the present study was 2035 agriculture graduates. Data indicated that all the universities were offering admissions in B.Sc. Agriculture programme through entrance exams. Findings further revealed that during the five years (2009-10 to 2013-14) out of total admission of 3969 students in B.Sc. Agriculture programme in selected Northern SAUs, 87.04 per cent passed out while 12.95 per cent dropped before completing their degrees and only 6.02 per cent students were admitted through ICAR-AIEEA (UG) in SAUs against 25% reserved seats. As far as educational progression of agriculture graduates is concerned 43 and 28 percent opted for master's and Ph.D. programme respectively after graduation. Nearly 52 percent of the agriculture graduates were found to be employed in public and private sector.

Keywords: agriculture, graduates, educational progression, employment status

Introduction

India is an agrarian society. Agriculture and its allied activities act as main source of livelihood for more than 80% of the population of rural India. It provides employment to approximately 52% of labour. Its contribution to Gross Domestic product (GDP) is between 14 to 15%. India achieved spectacular growth in agriculture sector since 1966. Today, our country is self-sufficient in most of the food grains despite with vast increase in population. The food grain production of India increased from 51 million tons in 1950 to about 273.38 million tons in 2016-17. India has achieved significant growth in agriculture, milk, fish, oilseeds, fruits and vegetables owing to green, white, blue and yellow revolutions. All these revolutions have brought prosperity for the farming community. Establishment of agricultural educational institutions and untiring efforts of scientists and researchers working in these SAU's resulted in such revolutions. (Rana *et al.*, 2018) [2].

In the early years of the 20th century, the British introduced formal education in agriculture primarily to produce revenue workers and landlords and not professional farmers. By 1947, India had 17 colleges of agriculture with an annual enrolment of about 1500 students. Considering the importance of Agriculture, the first State Agricultural University (SAU) was established in 1960 at Pantnagar (Nainital) on the pattern of the Land Grant Colleges of the United States by integrating education, research and extension education. Today, India has a large ICAR-AU network with 66 Agricultural Universities out of which 56 are State Agricultural Universities, 1 Central Agricultural University, Imphal, 5 deemed-to-be-universities (four of them are ICAR Institutes-IARI, IVRI, NDRI and CIFE, the fifth being Allahabad Agricultural Institute, Allahabad, 4 Central Universities having agricultural faculty

awarding various kinds of degrees in different disciplines of agricultural, veterinary and allied sciences.

The Agriculture education is imparted at the level of diploma, degree, master's and doctoral level with a total intake capacity of 35,000 students per year. As of now, it is estimated that there are 3,15,000 professionally qualified persons in agricultural sciences to which about 15000 graduates, 11,000 Masters and 2,500 Ph.D. in agriculture are added every year. The degrees awarded by the Universities associated with the ICAR are well recognized and accepted for higher education globally and prepares them even to start their own business units including the Agri. Clinics and Agro Service Centres. Large number of students is enrolled in agriculture education under SAU's every year. Hence, it is imperative to study their academic and career progression after graduation. So, the present study was planned to study the enrolment and retention of the agriculture graduates of Northern SAU's and to find out career progression of selected agriculture graduates.

Materials & Methods

The study was carried out under the extra mural project sanctioned by Education Division, Indian Council of Agricultural Research, New Delhi. Sample of the study were agriculture graduates of eight Northern SAUs namely Punjab Agricultural University (PAU) Ludhiana, Punjab; Chaudhary Charan Singh Haryana Agricultural University (CCSHAU) Hisar, Haryana; Chandra Shekhar Azad University (CSA) Kanpur, UP; Chaudhary Sarwan Kumar Himachal Pradesh Krishi Vishvavidyalaya (CSKHPKV) Palampur, Himachal Pradesh; SKUAST Jammu, J&K; SKUAST Srinagar, J&K; Maharana Pratap University of Agriculture & Technology (MPUAT), Udaipur and YS Parmar University of Horticulture and Forestry, Solan, Himachal Pradesh. All the agriculture

graduates of these Northern SAUs who had completed their B.Sc. programme during the period 2012-13 to-2016-17 were selected as sample for the study. The data was collected through primary and secondary sources. Information regarding students enrolment, their retention and dropout rate was taken from secondary sources i.e. records of the universities. The list of the students along with their contact numbers and e-mail ID's was procured from respective universities. Questionnaire was mailed to all these passed out students to know about their educational progression and employment status after the degree programme. In total, response of 2035 students was received. So; the sample size for the present study was 2035 agriculture graduates. Frequency and percentage was used to analyze the data.

Results & Discussion

Admission Criteria in B.Sc. Agriculture Programme

Table 1 discusses distribution of respondents according to admission criteria in B.Sc. Agriculture programme. No student took admission on the basis of merit in any of the selected university. All the universities were offering admissions in B.Sc. Agriculture programme through entrance exams. Majority (93.60%) of the students took admission through state entrance exam, out of which 363 were in CSA, 307 in HAU, 297 in PAU, 258 in MPUAT, 195 in SKUAST (Jammu), 156 in CSKHPKV, 149 in YS Parmar (Solan-Forestry), 132 in YS Parmar (Solan-Horticulture) and 49 in SKUAST (Srinagar). Amongst students, who got admission after qualifying ICAR-AIEEA (UG) (6.3%) highest number of students opted for HAU i.e. 35 followed by CSA(27), MPUAT (24), PAU (23), SKUAST, Jammu (9), CSKHPKV (4) and YS Parmar, Solan-Horticulture (4) and YS Parmar, Solan-Forestry (3).

Table 1: Distribution of Respondent's according to admission criteria in B.Sc. Agriculture Programme

Criteria & reasons of admission	PAU (n ₁ =320)	HAU (n ₂ =342)	CSA (n ₃ =390)	CSKHPKV (n ₄ =160)	MPUAT (n ₅ =282)	SKUAST, Jammu (n ₆ =204)	SKUAST, Srinagar (n ₇ =49)	YS Parmar, Solan, Horticulture (n ₈ =136)	YS Parmar, Solan, Forestry (n ₉ =152)	Total (n=2,035)
Criteria										
Merit	-	-	-	-	-	-	-	-	-	-
Entrance exam	297 (92.8)	307 (89.7)	363 (93.07)	156 (97.5)	258 (91.4)	195 (95.5)	49 (100)	132 (97.0)	149 (98.0)	1906 (93.6)
Through AIEEA Entrance exam	23 (7.1)	35 (10.2)	27 (6.92)	4 (2.5)	24 (8.5)	9 (4.4)	-	4 (2.9)	3 (1.97)	129 (6.3)

Table 2: Overall enrolment and retention of Students in B.Sc. Agriculture programme during XII FYP in selected Northern SAUs

Year of admission	Year of pass out	Students admitted	Students passed out	Students left/dropped	Students admitted through ICAR-AIEEA (UG)
2009-10	2012-13	748	663 (88.63)	85 (11.36)	64 (8.55)
2010-11	2013-14	729	618 (84.77)	111 (15.22)	47 (6.44)
2011-12	2014-15	839	725 (86.41)	114 (13.58)	44 (5.24)
2012-13	2015-16	805	718 (89.19)	87 (10.80)	44 (5.46)
2013-14	2016-17	848	731 (86.20)	117 (13.79)	40 (4.71)
Total		3,969	3,455 (87.04)	514 (12.95)	239 (6.02)

Enrolment and retention of Students

Table 2 gives a comprehensive view of enrolment and retention of students in B.Sc. Agriculture programme during XII FYP in selected Northern SAUs. A cursory glance at the table reveals that pass out percentage during all these years was almost similar ranging from 84 to 89 percent. In 2009-10, 748 students took admission, out of which 88.63 per cent passed out in the year 2012-13 while 11.36 per cent students left/ dropped. In 2010-11, 729 students took admission, out of

them 84.77 per cent passed out in the year 2013-14 while 15.22 per cent students left/dropped, which is highest among all years. In 2011-12, 839 students took admission out of which 86.41 per cent passed out in the year 2014-15 with a dropout of 13.58 per cent. In 2012-13, 805 students took admission out of them 89.19 per cent passed out in the year 2015-16 and 10.80 per cent students left/dropped. In 2013-14, highest number of students (848) took admission, out of them 86.20 per cent passed out in the year 2016-17 and 13.79 per

cent students left/dropped. Overall dropout rate was 12.95 percent which is quite high and cannot be ignored. Therefore it is suggested to strengthen the advisory mechanism of SAUs where students may share their problems with advisors freely and advisors may help them to cope up with studies and other problems.

Data of the students admitted through ICAR-AIEEA (UG) also reveals almost similar trend for these years, i.e. in 2009-10(8.55%), 2010-11(6.44%), 2011-12(5.24%), 2012-13 (4.71%) 2013-14 (5.46%) with an overall of 6.02 percent which was less than availability of seats i.e. 25 percent. This can be attributed to lack of awareness among school students to appear for ICAR-AIEEA (UG) for admission in B.Sc. agriculture programme. Every year, Indian Council of Agricultural Research conduct AIEEA-UG examination for filling 15% seats of Bachelor degree at SAUs in various agricultural disciplines. On the basis of AIEEA-UG examination, NTS is also awarded on merit ranks. The test is conducted at National level and aspiring students have to opt for states other than their own. Besides, having a feather in their cap of being ICAR nominee, the students learn many life skills when they join the new state. Therefore, there is need to create awareness among intermediate students to appear in the foresaid exam.

Educational Progression of Agriculture Graduates

Table 3 depicts educational progression of Agriculture graduates of selected Northern SAUs. Data reveals that majority of the agriculture graduates opted for M.Sc. (43.8%) followed by Ph.D. (29.5%) after their graduation. The university wise trend reveals a large percentage of students in SKUAST (53), YS Parmar, Solan, Forestry (51.9%), YS Parmar, Solan, Horticulture (47%), CSKHPKV (45%), CSA (44.3%), PAU (43.4), SKUAST, Jammu (42.6%), HAU (41.8%) and MPUAT (39%) had sought admission in M.Sc. programme after graduation.

However, data also points towards no progression among 23.3 percent of the overall graduates in all the universities. It may be due the reason that many of them got jobs after graduation and few may not proceed for higher education due to socio cultural factors prevailing in the society. Negligible percentage (0.34) of the students opted for diploma after graduation and that too were found only in PAU (0.93%) and MPUAT (1.4%). MBA pursuers after graduation was very few (less than 3%) except PAU (8.75%) and CSA (8.2%). This may be contributed to the fact that eligibility for teaching, research and extension jobs in universities and college is Master's and Ph.D. degrees.

Table 3: Educational progressions of Agriculture graduates of selected Northern SAUs

Educational Qualification	PAU (n ₁ =320)	HAU (n ₂ =342)	CSA (n ₃ =390)	CSKHPKV (n ₄ =160)	MPUAT (n ₅ =282)	SKUAST, Jammu (n ₆ =204)	SKUAST, Srinagar (n ₇ =49)	YS Parmar, Solan, Horticulture (n ₈ =136)	YS Parmar, Solan, Forestry (n ₉ =152)	Total (n=2,035)
B.Sc. (No progression)	56 (17.5)	72 (21.0)	86 (22.0)	42 (26.25)	93 (32.9)	49 (24.0)	9 (18.3)	32 (23.5)	36 (23.6)	475 (23.3)
B.Sc.+ Diploma	3 (0.93)	-	-	-	4 (1.4)	-	-	-	-	7 (0.34)
B.Sc. + M.Sc.	139 (43.4)	143 (41.8)	173 (44.3)	72 (45)	110 (39)	87 (42.6)	26 (53.0)	64 (47.0)	79 (51.9)	893 (43.8)
B.Sc. +MBA	28 (8.75)	8 (2.3)	32 (8.2)	-	6 (2.1)	5 (2.45)	-	-	-	79 (3.88)
B.Sc. + M.Sc. + PhD	94 (29.3)	119 (34.7)	99 (25.3)	46 (28.7)	69 (24.4)	63 (30.88)	14 (28.5)	40 (29.4)	39 (25.6)	581 (28.5)

Employment and Occupational Status of Agriculture Graduates

Further an endeavour was made to find out the employment status of Agriculture graduates. An appraisal of table 4 reveals that majority of the graduates (33.12%) were still continuing their education. There were 9.58 per cent graduates who were not still engaged in any professional work. The finding also reveals that 5.30 per cent respondents were home makers. Employment status was studied for public and private sector separately. In public sector 0.39, 3.88 and 0.58 per cent respondents were engaged in University, College and school teaching respectively. Some of respondents were working as ARS (0.19%), SRF/RF (1.13%), Project fellow (0.34%), Extension officer (0.68%), Field investigator (0.44%), Banks (5.35%), Food inspector (0.19%), ADOs (1.62%), Agriculture coordinator (1.32%), Horticulture inspector (0.34%), Plant

protection officer (0.54%), Agriculture technical assistant (1.62%) and Farm manager (0.09%). In private sector 1.13, 3.19 and 0.49 per cent respondents were engaged in University, College and school teaching respectively. A large number of respondents (7.61%) were engaged in their own businesses, in banks (6.97%), as Managers (5.45%) and as Product executive (5.11%). Negligible no of respondents were working in Co-operative societies like IFFCO (0.63%) and KRIBHKO (1.52%) while few were working as Quality chemist (0.24%), lab executive (0.63%) and Food quality inspector (0.19%). Employment in public as well as private sector was highest among PAU, Ludhiana graduates. Thus, it could be concluded that graduated students from PAU were better placed as compared to the graduates from other selected universities.

Table 4: Employment and occupational status of Agriculture Graduates

Employment and occupational status	Total no. of Respondent's f (%)									
	PAU (n ₁ =320)	HAU (n ₂ =342)	CSA (n ₃ =390)	CSKHPKV (n ₄ =160)	MPUAT (n ₅ =282)	SKUAST, Jammu (n ₆ =204)	SKUAST, Srinagar (n ₇ =49)	YS Parmar, Solan, Horticulture (n ₈ =136)	YS Parmar, Solan, Forestry (n ₉ =152)	Total (n=2,035)
• Pursuing Higher Education	87 (27.18)	119 (34.79)	152 (38.97)	51 (31.87)	82 (29.07)	63 (30.88)	17 (34.69)	49 (36.02)	54 (35.52)	674 (33.12)
Unemployed										
• Homemaker	9 (2.81)	11 (3.21)	7 (1.79)	15 (9.37)	12 (4.25)	19 (9.31)	8 (16.32)	16 (11.76)	11 (7.23)	108 (5.30)
• Not engaged	12 (3.75)	34 (9.94)	23 (5.89)	19 (11.87)	31 (10.99)	24 (11.76)	6 (12.24)	20 (14.70)	26 (17.10)	195 (9.58)

Employed										
Public sector										
Teaching										
• University	1 (0.31)	3 (0.87)	2 (0.51)	-	2 (0.70)	-	-	-	-	8 (0.39)
• College	29 (9.06)	17 (4.97)	7 (1.79)	5 (3.12)	7 (2.48)	3 (1.47)	2 (4.08)	4 (2.94)	5 (3.28)	79 (3.88)
• School	3 (0.93)	8 (2.33)	-	-	-	-	1 (2.04)	-	-	12 (0.58)
Research										
• ARS	-	1 (0.29)	2 (0.51)	-	-	1 (0.49)	-	-	-	4 (0.19)
• SRF/RF	7 (2.18)	3 (0.87)	3 (0.76)	2 (1.25)	4 (1.41)	2 (0.98)	-	2 (1.47)	-	23 (1.13)
• Project fellow	2 (0.62)	1 (0.29)	1 (0.25)	2 (1.25)	-	-	1 (2.04)	-	-	7 (0.34)
Extension	4 (1.25)	5 (1.46)	2 (0.51)	-	2 (0.70)	1 (0.49)	-	-	-	14 (0.68)
Field investigator	-	-	1 (0.25)	-	1 (0.35)	-	-	-	7 (4.60)	9 (0.44)
Bank	12 (3.75)	26 (7.60)	29 (7.43)	9 (5.62)	14 (4.96)	8 (3.92)	2 (4.08)	4 (2.94)	5 (3.28)	109 (5.35)
Food inspector	-	1 (0.29)	3 (0.76)	-	-	-	-	-	-	4 (0.19)
Agriculture development officer	18 (5.62)	8 (2.33)	4 (1.02)	-	2 (0.70)	1 (0.49)	-	-	-	33 (1.62)
Agriculture co-ordinator	2 (0.62)	3 (0.87)	7 (1.79)	2 (1.25)	6 (2.12)	3 (1.47)	1 (2.04)	2 (1.47)	1 (0.65)	27 (1.32)
Horticulture inspector	-	1 (0.29)	3 (0.76)	-	-	1 (0.49)	-	2 (1.47)	-	7 (0.34)
Plant protection officer	-	-	5 (1.28)	3 (1.87)	3 (1.06)	-	-	-	-	11 (0.54)
Agriculture technical assistant	3 (0.93)	8 (2.33)	7 (1.79)	5 (3.12)	4 (1.41)	3 (1.47)	1 (2.04)	-	2 (1.31)	33 (1.62)
Farm manager	-	-	2 (0.51)	-	-	-	-	-	-	2 (0.09)
Private Sector										
Teaching										
• University	4 (1.25)	6 (1.75)	7 (1.79)	1 (0.62)	1 (0.35)	2 (0.98)	1 (2.04)	1 (0.73)	-	23 (1.13)
• College	16 (5.00)	9 (2.63)	5 (1.28)	3 (1.87)	14 (4.96)	5 (2.45)	3 (6.12)	4 (2.94)	6 (3.94)	65 (3.19)
• School	7 (2.18)	-	-	-	3 (1.06)	-	-	-	-	10 (0.49)
Bank	19 (5.93)	22 (6.43)	34 (8.71)	19 (11.87)	17 (6.02)	16 (7.84)	-	7 (5.14)	8 (5.26)	142 (6.97)
Manager (Product, Marketing, Assistant, territory)	15 (4.68)	13 (3.80)	27 (6.92)	3 (1.87)	25 (8.86)	14 (6.86)	1 (2.04)	8 (5.88)	5 (3.28)	111 (5.45)
Product executive (bayer, indogulf and other MNC Companies)	22 (6.87)	16 (4.67)	14 (3.58)	7 (4.37)	18 (6.38)	17 (8.33)	1 (2.04)	5 (3.67)	4 (2.63)	104 (5.11)
Quality chemist	5 (1.56)	-	-	-	-	-	-	-	-	5 (0.24)
Lab executive	8 (2.5)	-	-	2 (1.25)	3 (1.06)	-	-	-	-	13 (0.63)
Food quality inspector	3 (0.93)	-	-	-	1 (0.35)	-	-	-	-	4 (0.19)
Co-operative										
• IFFCO	4 (1.25)	3 (0.87)	5 (1.28)	1 (0.62)	-	-	-	-	-	13 (0.63)
• KRIBHKO	6 (1.87)	4 (1.16)	13 (33.33)	2 (1.25)	4 (1.41)	2 (0.98)	-	-	-	31 (1.52)
Any other (Business, Entrepreneurship etc.)	22 (6.87)	20 (5.84)	25 (6.41)	9 (5.62)	26 (9.21)	19 (9.31)	4 (8.16)	12 (8.82)	18 (11.84)	155 (7.61)

Conclusion

It can be concluded that admission in B.Sc. agriculture is conducted through entrance exam in all the selected SAU's. Dropout rate among agriculture graduating students is also quite high and cannot be neglected, there is need to strengthen counselling system and to pay individual attention to students so that they may not leave their studies in between without any valid reason. Enrolment of students through AIEEA-UG

examination conducted by Indian Council of Agricultural Research was also low and there is need to create awareness among intermediate students by contacting directly CBSE Board or UGC so that students may be aware about the opportunity.

Regarding educational progression majority of the students opted for M.Sc. and Ph.D. in their respective fields after graduation. As far as career progression of the agriculture

graduates was concerned, it was found that majority of the students were engaged in public and private sectors, and only few percentage of the students were found to be engaged in entrepreneurship or business sector. Indian council of Agricultural Research has restructured the course curricula to develop much needed skills and entrepreneurial mind-set among the graduates to take up self-employment, to enhance rural livelihood and food security, sustainability of agriculture and be propeller for agricultural transformation. So, it is expected that with the implementation of this programme agriculture graduates opting for entrepreneurial activities will be enhanced which will create employment opportunities in rural areas for others too.

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