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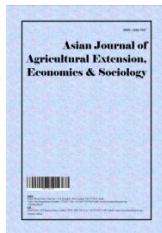
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## **Educational Progression and Employment Status of Agriculture Post Graduates of Northern SAUs, India**

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### **Authors' contributions**

*This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.*

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### **ABSTRACT**

India is an agrarian society. Agriculture and its allied activities act as the main source of livelihood for the rural society in India. Today agriculture education in India is imparted at diploma, Undergraduate, master's, and doctoral levels. The success of any nation depends not only on the number of enrollment for higher education but also on the professional accomplishment of its graduates and postgraduates. Therefore, the present study was planned to study the enrolment and employment status of the agriculture postgraduates of Northern State Agricultural Universities SAUs. Survey questionnaires were developed to collect primary and secondary data to elicit structured responses in quantifiable terms. The questionnaire was mailed to the students who had completed their M.Sc. degrees. The responses of 2457 students were received. Thus, the sample size for the present study was 2457 agriculture postgraduates. The data revealed that during the five years (2010-11 to 2014-15) out of the total admission of 3716 students in the M.Sc. Agriculture program, 91.57% completed their degree while 8 percent dropped out without completion and only 14 % students were admitted through Indian Council of Agricultural Research-All India Entrance Examination for Admission ICAR-AIEEA (UG) in SAUs against 25% reserved seats. As far as educational progression and employment status of agriculture postgraduates were concerned 54% were employed in public and private sectors, 35% were pursuing Ph.D., while the rest 11% had no progression after M.Sc. Thus the majority of the students were engaged in jobs after completing their M. Sc while some of them did not have any progression.

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## 1. INTRODUCTION

In India, the agricultural education system at present is based on the 74 Agricultural Universities (AUs), prepared on the Land-Grant pattern of the USA to integrate teaching, research, and extension. These, together with ICAR's 106 institutes and hundreds of centers make up the National Agricultural Research and Education System (NARES), which is the largest in the world. The NARES, have been the harbinger of the Green, Yellow, White, and Blue Revolutions known as the Rainbow Revolution. They have generated the desired scientific manpower, teachers, and technologies and their transfer to transform India from a Ship-to-Mouth situation to a Right-to-Food status [1].

The establishment of higher agricultural education institutions has been the major contributor to this success, besides government policies and the high receptivity of the farming community. The skillful human resource developed in these institutions was involved not only in generating new technologies but also in the assessment, refinement, and dissemination of these technologies to the farming community. For realizing the potential of agriculture and for its sustenance and diversification, human resource development is very important. Agricultural human resource development, which is a continuous process, is being carried out through cooperative efforts of the various components of the Indian Council of Agricultural Research (ICAR). This working apparatus is comprised of the Agricultural Universities (AUs) System which consists of 53 State Agricultural Universities (SAUs), 5 Deemed to be universities (DUs), four Central Universities (CUs), and one Central Agricultural University (CAU) with Agriculture faculty. Over the years, the Agricultural Universities in India, set up on the 'land grant' pattern of the USA, have contributed vastly to human resource development as well as the augmentation of agricultural productivity in the country [2].

At present, the Gross Enrollment Ratio (GER) in agricultural education is up to one percent which signifies that only one percent of the students at the PUC (Pre University Course) level, who are eligible for agricultural and allied sciences education, are being admitted in higher agricultural educational institutions. At present, every year 25,000 students at the UG level, 15,000 at the master's level, and Ph. D programs are enrolling

themselves in 350 constituent colleges, along with enrolment in private agriculture colleges. ICAR-Agricultural Universities system with approximately 23,000 scientists in teaching, research, and extension offers 11 UG degree programs and 93 disciplines in PG program, having 52 percent students from rural areas [3]. Given the current scenario, it is important to know the status of students in higher agricultural education. Therefore, the present research was planned to know the educational progression and employment status of agriculture postgraduates in Northern SAU.

## 2. METHODOLOGY

The study was carried out under the extramural project sanctioned by the Education Division, Indian Council of Agricultural Research, New Delhi. M.Sc. agriculture students 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, constituted the sample of the study.

All the students who had completed their M.Sc. program during the period 2012-13 to 2016 from selected Northern SAUs were chosen as the sample for the study. Secondary sources i.e. records of the Universities were considered for obtaining the data regarding students' enrolment, retention, and dropout. Contact numbers and e-mail IDs of the students were procured from the respective universities. Questionnaires were E-mailed to all the passed-out M.Sc. students to get information regarding their educational and employment status. In total, the response from 2457 students was received. Thus, the sample size for the present study was 2457 agriculture postgraduates. Data analysis was done through frequency and percentage.

## 3. RESULTS AND DISCUSSION

### 3.1 Overall Enrolment and Retention of Students

Table 1 gives a comprehensive view of the overall enrolment and retention of students in the

M.Sc Agriculture program during XII FYP in selected Northern SAUs. It is indicated from the table that the highest number of students admitted in the M.Sc. Agriculture program was 803 in the year 2014-15 while the lowest was 670 in the year 2011-12. The maximum number of students who completed their degree was 93.29 percent in the year 2012-13 followed by 92.29 percent in the year 2015-16. An almost equal percentage of students i.e. 91.74 percent and 91.04 percent completed their degrees in 2014-15 and 2013-14 respectively while 89.66 percent of the students completed in 2016-17 which was the lowest in all the years under consideration. It can be seen from the tabular data that the drop-out rate has increased over the years. The highest dropout of the students was 10.33 percent in the year 2016-17 while the lowest was 6.70 percent in the year 2012-13. Overall during this five-year period, out of 3716 students admitted in M.Sc Agriculture program in selected Northern SAUs, 91.57 percent of students completed their degrees while 8.42 percent dropped out before completion.

Thus, from 2010-11 to 2014-15, a total of 3874 students were admitted to the M.Sc Agriculture degree program in selected Northern SAUs, out of which 91.57 percent completed their degrees while the remaining 8.42 percent dropped out. The results of the study indicate consistent dropout of the students from higher agricultural education. There could be various reasons for this trend ranging from socio-economic factors, lack of enthusiasm, interest loss, and uncertain prospects to job placements. According to the report of the National Statistical Office (NSO) of the Indian government, one out of every eight students enrolled in school or college drops out before completion of their studies [4]. Economic insecurity was reported as the major factor for college dropout in the study conducted by Nishat et al. [5]. In another study conducted by

Castleman and Meyer [6] new academic demands were seen as the main reason for students' dropout. Guzman et al. [7] stated that family influence was one of the main factors for the discontinuation of the educational process.

Further analysis of Table 1 shows the number of students admitted to the M.Sc. degree program through ICAR-AIEEA (PG). The highest percentage of students i.e. 17.16 percent were admitted in the year 2013-14 through ICAR-AIEEA while the lowest percentage was 12.08 percent in the year 2014-15. An equal percentage of students i.e. 14.78 percent and 14.53 percent were admitted in the years 2011-12 and 2010-11 respectively followed by 13.34 percent in the year 2012-13. Thus only 14 percent were the ICAR nominees despite 25 percent reserved seats. A similar finding was noted in the study conducted by Mittal et al. [8] where students admitted through ICAR-AIEEA(PG) in Home Science were only 2.62 percent. The result indicates that in spite of the financial assistance provided by ICAR-AIEEE to the students they were reluctant to go for further higher education in agriculture.

Table 2 shows the distribution of respondents according to admission criteria in M. Sc Agriculture program. A total of 2102 students were admitted through the entrance exam, out of which 461 students were admitted in PAU, 453 in CSA, 312 in HAU, 248 in MPUAT, 202 in CSKHPKV, 159 in YS Parmar (Solan-Forestry), 132 in YS Parmar (Solan, Horticulture), 123 in SKUAST (Jammu) and 12 in SKUAST (Srinagar). The rest of the students (14.4 percent) got admission after qualifying for ICAR-AIEEA (PG). The highest number of ICAR nominees were in HAU (104) followed by PAU (83), CSA (52), CSKHPKV (47), MPUAT (25), and YS Parmar (25), and SKUAST (Jammu) (19).

**Table 1. Overall enrolment and retention of students in the M.Sc agriculture programme**

Year of admission	Year of completion	No. of Students admitted	Students completed their degree f(%)	Students left/ dropped f(%)	Students admitted through ICAR-AIEEA (PG)
2010-11	2012-13	716	668 (93.29)	48 (6.70)	104(14.53)
2011-12	2013-14	670	610 (91.04)	60 (8.95)	99(14.78)
2012-13	2014-15	787	722 (91.74)	65 (8.25)	105(13.34)
2013-14	2015-16	740	683 (92.29)	57 (7.70)	127(17.16)
2014-15	2016-17	803	720 (89.66)	83 (10.33)	97(12.08)
Total		3,716	3,403 (91.57)	313 (8.42)	532(14.32)

**Table 2. Distribution of respondents according to their admission criteria in M.Sc agriculture programme**

Criteria for admission	PAU (n <sub>1</sub> =544)	HAU (n <sub>2</sub> =416)	CSA (n <sub>3</sub> =505)	CSKHPKV (n <sub>4</sub> =249)	MPUAT (n <sub>5</sub> =273)	SKUAST, Jammu (n <sub>6</sub> =142)	SKUAST, Srinagar (n <sub>7</sub> =12)	YS Parmar, Solan, Horticulture (n <sub>8</sub> =140)	YS Parmar, Solan, Forestry (n <sub>9</sub> =176)	Total (n=2457)
Entrance exam	461 (84.7)	312 (75)	453 (89.7)	202 (81.1)	248 (90.8)	123 (86.6)	12 (100)	132 (94.3)	159 (90.3)	2102 (85.6)
AIEEA nominee	83 (15.2)	104 (25)	52 (10.3)	47 (18.8)	25 (9.1)	19 (13.3)	-	8 (5.7)	17 (9.7)	355 (14.4)

**Table 3. Educational progression and employment status of agriculture postgraduates**

Educational progression/ Employment status	Number of respondents from SAUs f (%)									
	PAU (n <sub>1</sub> =544)	HAU (n <sub>2</sub> =416)	CSA (n <sub>3</sub> =505)	CSKHPKV (n <sub>4</sub> =249)	MPUAT (n <sub>5</sub> =273)	SKUAST, Jammu (n <sub>6</sub> =142)	SKUAST, Srinagar (n <sub>7</sub> =12)	YS Parmar, Solan, Horticulture (n <sub>8</sub> =140)	YS Parmar, Solan, Forestry (n <sub>9</sub> =176)	Total (n=2457)
Pursuing Ph.D.	186 (34.19)	175(42.06)	168 (33.26)	82 (32.93)	77 (28.20)	55 (38.73)	5 (41.66)	46 (32.85)	60 (34.09)	854 (34.75)
Unemployed	13(3.63)	22(9.13)	57(16.91)	42(25.15)	64(32.65)	22(25.29)	2(28.57)	31(32.98)	32(27.59)	285(11.60)
Employed (Public sector)	129 (23.71)	76 (18.27)	87 (17.23)	41 (16.47)	52 (19.05)	15 (10.56)	1 (8.33)	22 (15.71)	32 (18.18)	455 (18.52)
Employed (Private sector)	216(39.71)	143(34.38)	193(38.22)	84(33.73)	80(29.30)	50(35.21)	4 (33.33)	41(29.29)	52(29.55)	863(35.12)

Table 3 depicts the educational progression and employment status of Agriculture postgraduates from selected Northern SAUs. The data revealed that only 34.75 percent of the students were pursuing Ph.D. The reasons for the majority of the students not going for further studies after M.Sc. may be they got placed after M.Sc. or due to socio-economic constraints or maybe they were unable to secure a seat for themselves in Ph.D. The results are in line with the article published by Athal [9], which stated that considering the large size of India's population and higher education sector it has a lesser number of students enrolled in doctoral programs. The article further highlighted the "All-India Survey on Higher Education data" for 2017-18 which showed that out of 36.6 million Indian students enrolled in higher education programs, only 161,412 were enrolled in Ph.D. programs. A similar result was also found in the study conducted by Mittal et al. [10] where one-third of the Home science postgraduates opted for a Ph.D. after completing a Master's program. The data further indicates that 11.60 percent of the post-graduate students were unemployed and were also not involved in further studies. Among the employed, 35.12 percent were in the private sector and 18.52 percent were in the public sector which is less than the private sector. A study conducted by Chandrashekhar and Ghosh [11] indicated that India is remarkably low in providing public sector jobs. The employment and the number of public jobs are extremely low, which indicates that both coverage and quality of public services are disgustingly inadequate. It is also evident from the data that more than fifty percent of the students were employed in public and private sectors altogether, which indicates that more agriculture students opt for jobs after completing their M.Sc. degree than studying further. This could be due to many reasons like individual interest or one's financial conditions or may be due to other social and family influences. The result was in congruence with the findings of the study conducted by Gupta et al. [12] where nearly fifty-two percent of the agriculture graduates were employed in both the public and private sector after completing their bachelor's program. The percentage of Ph.D. students was higher overall may be because of the reason that the students who could not secure a Government job after M.Sc. and didn't want to work in the private sector went for higher studies in the hope of getting a Government job after Ph.D. as more weightage is given to the Ph.D. holders than M.Sc. student in interviews or maybe some of them were genuinely interested in doing higher

research. An article by Parishad [13] stated that most private universities and colleges offer a meager salary to their faculty members providing them no opportunity but to go for higher education.

#### 4. CONCLUSION

It can be concluded that the majority of the students got admission in M.Sc. degree through state entrance exam however consistent drop out of the students can be seen in all the five years. Most of the M.Sc. Students did not show any progression after their degree completion which could be due to their interests or other socio-economic factors. Thus, both the government and the corporate sector must take necessary strategic actions to attract students for higher education in the Agriculture field such as increasing the number of scholarships for agriculture students to enhance research and development, better job placements, etc. This will help them become better professionals and improve their earning capacities. Policymakers should seriously analyze and consider various factors influencing GER (Gross Enrollment Ratio). The universities should make it clear that there are promising multiple opportunities for jobs both within and outside the country before offering any course.

#### CONSENT

As per international standard or university standard, respondents' written consent has been collected and preserved by the author(s).

#### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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