

Performance of Graduates in Licensure Examination for Agriculturists in Bicol Region, Philippines

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Abstract: The study assessed the performance of graduates in Licensure Examination for Agriculturists (LEA) in the different state universities and colleges in Bicol Region, Philippines in 2008 and 2009. Central Bicol State University of Agriculture ranked 1st, Camarines Norte State College ranked 2nd, Catanduanes State College ranked 3rd, Bicol University College of Agriculture and Forestry ranked 4th, Dr. Emilio B. Espinosa, Sr. Memorial State College of Agriculture and Technology ranked 5th, and Sorsogon State College ranked 6th.

Academic variables such as fourth year high school average grade (FYHSG), college general weighted average (CGWA), and the type of preparation tool were found to have significant relationships with the LEA rating. The socio-demographic variables identified (age, gender, type of high school attended, location of high school attended, course and major field, level of accreditation of agriculture programs) had no significant relationship with the LEA rating.

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First time LEA test takers with FYHSG of 86 and above, CGWA of 1.97 and above, and good preparation such as enrolment in a formal LEA review class backed up with self-review, tended to pass the LEA.

An agriculture graduate should have a good academic performance during his/her high school and college education and must have good preparation tools to successfully hurdle the LEA.

Keywords: *licensure examination, fourth year high school grade, college general weighted average, LEA rating*

INTRODUCTION

In this age of globalization, graduates of colleges and universities must possess academic competence and professional qualities needed in the workplace. These essential attributes will give them a competitive edge over other graduates.

In the Philippines, most of the higher education institutions (HEIs) offer agriculture programs because the country's economy is primarily agriculture-based. The HEIs are trying to develop agriculturists with technical expertise and teaching skills who can empower the farming and fishing communities with new skills and technologies that would address the problems of food security, poverty, unemployment, and globalization.

In order to upgrade the agriculture and fisheries profession, Republic Act 8435 known as the Agriculture and Fisheries Modernization Act (AFMA) of 1997 was established. This mandate paved the way for the professionalization of graduates of the Bachelor of Science in Agriculture curriculum and other agriculture-related programs whose graduates must pass the Licensure Examination for Agriculturists (LEA).

Compared to other state universities and colleges (SUCs), the performance of agriculture graduates in the SUCs in Bicol during the past years had been poor based on the results of the LEA. In the 2008 LEA, an average of only seven percent of the graduates who took the examination for the first time passed the LEA. In 2009, the percentage of passers increased to 17 percent, but this figure was still way below the national passing rate. These results may be attributed to the poor preparation of agriculture graduates in the LEA. It is in this context that this study determined the factors that may have contributed to the success and failure of agriculture graduates during the licensure examination.

Specifically, the study aimed to:

1. describe the socio-demographic, academic, and experiential characteristics of graduates who took the LEA in 2008 and 2009;
2. compare the LEA scores of graduates per subject area of the six SUCs offering BS Agriculture and other agriculture-related programs;
3. determine significant differences in the LEA scores of graduates across the six subject areas in selected SUCs; and
4. analyze the factors that influenced the performance of graduates of BS Agriculture and other agriculture-related programs in the 2008 and 2009 LEA.

METHODOLOGY

The study used a combination of descriptive and ex post facto research designs. It used secondary data such as demographic, academic, and experiential characteristics of graduates of the BSA curriculum and of agriculture-related fields. These were obtained from the registrar's office, accreditation office, and guidance and testing office of selected SUCs. The LEA ratings were requested from the Professional Regulation Commission (PRC) with the consent of the dean and/or president of the different SUCs.

The respondents of the study were selected from 2008 and 2009 LEA examinees using purposive and convenient sampling. Only the first time examinees who took the 2008 and 2009 LEA and whose academic records were complete were considered.

The respondents were purposively selected from the six SUCs in the Bicol Region, namely: SUC1 - Central Bicol State University of Agriculture (CBSUA), SUC2 - Bicol University College of Agriculture and Forestry (BUCAF), SUC3 - Camarines Norte State College (CNSC), SUC4 - Catanduanes State College (CSC), SUC5 - Dr. Emilio B. Espinosa, Sr. Memorial State College of Agriculture and Technology (DEBESMSCAT), and SUC6 - Sorsogon State College (SSC). Out of the 246 first time examinees, only 152 had complete data and thus, were selected as respondents of the study. Out of the 152 examinees, 44 test takers passed the LEA.

The research instrument used was the Individual Collection Sheet based from the Data Collection Sheet used by Hereford (2005). Slight modifications were made to suit the objectives of the study. Codes were used for easy computer processing of data.

The independent variables of the study were demographic, academic, and experiential characteristics. Demographic characteristics include 1) sex, 2) age at program admission, 3) type of high school graduated from, and 4) location of high school attended. Academic characteristics include 1) course and major field of specialization, 2) fourth year high school general average grade (FYHSG), and 3) college general weighted average (CGWA). The experiential characteristics include the preparation tool categorized into: 1) enrolment in a review class plus self-review, and 2) self-review only.

The single dependent variable was the LEA rating obtained by the agriculture graduates during their first attempt.

The Statistical Package for the Social Sciences (SPSS) version 16.0 was used in the processing and analysis of data. To describe relevant characteristics of the study, descriptive statistics using frequency counts, cross tabulations, and numerical measures were used. Point-Biserial Correlation was used to determine the relationship between gender and the LEA rating; type of high school attended and the LEA rating; location of high school and the LEA rating; SUCs' level of accreditation and the LEA rating; and the preparation tool and the LEA rating. ANOVA was used to compare the significant differences among the means of LEA ratings per SUC.

Multiple linear regression analysis was used to determine the contribution of the different demographic, academic, and experiential characteristics on LEA performance. Multiple regression focused on the correlations between the dependent and independent variables. Correlation analysis and other tests were done before regression analysis.

In examining the BSA curriculum and other agriculture-related courses, the findings of the members of the AACCUP team when they visited the different Bicol SUCs were used. AACCUP stands for Accrediting Agency of Chartered Colleges and Universities in the Philippines.

The team members used the AACCUP Master Survey Instrument under Area III: Curriculum and Instruction. Out of the ten areas in assessing academic programs, only Area III was considered because performances in academic and licensure examinations are included in the assessment of the curriculum. Other instruments used to examine the BSA curriculum and other agriculture-related courses were the CHED Memorandum Order (CMO) No. 14, Series of 2008 (Policies and Standards for Bachelor of Science in Agriculture Program) and the Minimum Requirements for Bachelor in Agricultural Technology (BAT DECS Order No. 121, Series of 1991). The contents of these issuances were compared

to the existing curriculum of the SUCs, particularly the six subject-areas covered by LEA with the corresponding course descriptions.

RESULTS AND DISCUSSION

Respondents' Socio-demographic, Academic, and Experiential Characteristics

As shown in Table 1, majority of the respondents were female (56%), 17 years old when they enrolled in an agriculture program (45%), and came from a public rural high school (72%). Most of them also reported to have attended high school located in a rural area (81%).

More than half of the respondents (62%) finished their agriculture course in a Level 2 accredited agriculture program. Only few respondents (7%) graduated from a program with candidate status (Table 1). The Level 2 accreditation was granted by CHED to programs that have been re-accredited, effective for a period of three years. On the other hand, candidate status is given to programs that have undergone preliminary survey visit and are certified as being capable of acquiring accredited status within two years.

Table 2 shows that majority of the respondents finished BS Agriculture (BSA) major in Animal Science (49%). Very few respondents graduated with BSA major in Agricultural Education (1%) and BSA major in agro-forestry and crop protection (1%).

The means of the respondents' FYHSG and CGWA were categorized into "passers" and "non-passers". Out of the 44 LEA passers, FYHSG mean was 86.45 while 82.22 for the LEA non-passers (Table 3). Based on these results, an agriculture graduate who had a higher grade (86 and above) in fourth year high school tended to pass the LEA compared to those who graduated with an average grade of 82 and below.

Table 1. Respondents' socio-demographic characteristics

CHARACTERISTICS	FREQUENCY (n=152)	PERCENT
Sex		
Male	67	44.08
Female	85	55.92
Age at program admission (years)		
15	2	1.32
16	21	13.82
17	69	45.39
18	29	19.07
19	19	12.50
20	5	3.29
21	4	2.63
22	2	1.32
23	1	0.66
Type of high school attended		
Public	109	71.71
Private	43	28.29
Location of high school attended		
Urban	29	19.08
Rural	123	80.92
Level of accreditation of the BSA and agriculture-related program		
1. Level 2 accredited	95	62.50
2. Level 1 accredited	46	30.20
3. Candidate status	11	7.20

As to CGWA, the mean grade for the LEA passers was 1.97 while 2.33 for the non-passers (Table 3). Based on these figures, an agriculture graduate with a CGWA of 2.0 or better tended to pass the LEA as compared to those with GWA of 2.33 and below.

Out of the 152 examinees, 97 (64%) who enrolled in a review class apart from taking a self-review, obtained a mean of 68.34 in the LEA. On the other hand, 55 examinees (36%) who undertook only a self- review, had a mean of 63.03 (Table 4).

Table 2. Respondents' academic characteristics according to course and major field of specialization

COURSE/MAJOR FIELD	FREQUENCY (n=152)	PERCENT
BSA Animal Science	74	48.70
BSA Crop Science	15	9.90
BS Agricultural Economics	12	7.90
Bachelor in Agricultural Technology	10	6.60
BSA Agronomy	9	5.90
BSA Horticulture	8	5.30
BSA Agricultural Extension	6	3.90
BSA Plant Pathology	5	3.30
BSA Soil Science	5	3.30
BSA Agricultural Education	4	2.60
BSA Agro-Forestry	2	1.30
BSA Crop Protection	2	1.30

Table 3. Respondents' academic characteristics based on the means of FYHSG and CGWA of LEA passers and non-passers

CHARACTERISTICS	LEA PASSERS (n=44) Mean	LEA NON-PASSERS (n=108) Mean
Fourth year high school grade (FYHSG)	86.45	82.22
College general weighted average grade (CGWA)	1.97	2.33

Table 4. Respondents' experiential characteristics

TYPE OF PREPARATION TOOL	n	LEA RATING PERCENT	MEAN
Enrolment in a review class plus self-review	97	63.81	68.34
Self-review only	55	36.18	63.03
Total	152	100	

The results show that LEA examinees with FYHSG between 82 to 86 and those with CGWA between 1.97 to 2.33 should enroll in a formal review class and conduct self-review to pass the LEA.

LEA Scores per Subject Area

The study also compared the mean scores of LEA examinees per subject area and SUC. In crop science, SUC1 got the highest mean (65.07), while SUC5 got the lowest (57.63). This implies that SUC5 should focus on improving its performance in crop science.

In soil science, SUC1 got the highest mean (65.96), while SUC2 got the lowest (59.91). This may be because Soil Science 2 is not being offered in the BS Agriculture program of SUC2 when the study was conducted.

In animal science, SUC1 got the highest mean (67.86), while SUC3 (59.48) got the lowest mean even if the subject carries the same course description with the CMO 14 Series of 2008. Perhaps this was because of other factors, such as “no formal LEA Review Class within the SUC” prior to the 2008 and 2009 examination period.

In crop protection, SUC2 got the lowest mean (60.09). This may be explained by the different course descriptions and content that SUC2 was implementing compared to the CMO 14 Series of 2008 requirement. On the other hand, SUC1 had the highest mean (68.83).

Along the area of agricultural economics and marketing, SUC4 got the lowest mean (61.14) even if it had the same course description with the CMO 14 Series of 2008. This may be attributed to the lack of review center inside the campus. Meanwhile, SUC1 had the highest mean (66.12).

Lastly, in agricultural extension and communication, SUC1 got the highest mean (69.59) and SUC6 got the lowest (59.00). Obviously, SUC6 is offering a Bachelor in Agricultural Technology course and agricultural extension and communication is not included in the curriculum.

Overall, SUC1 got the highest mean scores in all the subject areas (Table 5).

Table 5. Mean score of LEA examinees per subject area and SUC

SUBJECT	SUC1	SUC2	SUC3	SUC4	SUC5	SUC6
Crop Science	65.07	58.59	65.04	59.82	57.63	64.00
Soil Science	65.96	59.91	61.79	61.47	63.71	64.00
Animal Science	67.86	59.63	59.48	61.82	60.5	63.50
Crop Protection	68.83	60.09	64.64	66.18	63.42	63.25
Agricultural Economics and Marketing	66.12	62.25	62.25	61.14	63.63	61.75
Agricultural Extension and Communication	69.59	66.63	65.89	64.83	65.17	59.00

Significant Difference in the LEA Scores

To determine the significant difference in the LEA scores of the sample population, the analysis of variance (ANOVA) was used. Results showed that the ratings of first time examinees from the different SUCs in Bicol Region has no relationship with the type of SUC, with the location of the school, and with the type of curriculum each SUC was adopting.

According to the rule (Topper, 1998), if the computed p-value is greater than $\alpha=0.05$, the null hypothesis is accepted. This means that there is no significant difference among the means of the 2008-2009 LEA ratings among the students of six SUCs in Bicol. This implies that majority of the factors that influenced the performance of first time examinees in the LEA came from the individual based from the Human Capital Theory (Schultz, 1971; Sakamota & Powers, 1995; and Psacharopoulos & Woodhall, 1997 as cited by Olaniyan & Okemakinde, 2008). Engaging in formal education increased stock knowledge and developed varied skills in students, which was measured by their performance during high school and college years. Higher grade implied an increased self-efficacy levels (Bandura, 1977) of the agriculture graduate, which led to the passing of LEA.

Factors that Influenced the Performance of LEA Examinees

To determine the strength of relationship between FYHSG and LEA rating and CGWA and LEA rating, the Pearson Product Moment Correlation was used.

Table 6 shows that the correlation coefficient between FYHSG and LEA rating was 0.481 and the computed p-value was 0.000 (less than the $\alpha=0.05$), which imply a significant positive and moderate relationship. This means that an examinee with a higher FYHSG tended to obtain a higher LEA rating.

The results further imply that a good high school preparation of a first time examinee is an important factor in passing the LEA. In the same manner, having a good grade during high school tends to increase the examinees' self-efficacy levels and will lead to their increased level of performance in future examinations such as LEA. Hence, SUC administrators are encouraged to screen applicants to the agriculture program properly. Based on interviews with the deans of agriculture of the

different SUCs, a student should have a grade of at least 80 in his/her fourth year high school card before s/he can be admitted to the agriculture program.

Table 6. Correlation coefficient between FYHSG and CGWA, and LEA Scores

PARAMETER	CORRELATION COEFFICIENT	COMPUTED p-value	STRENGTH OF RELATIONSHIP TO LEA SCORES
Fourth year high school grade (FYHSG)	0.481	0.000	Significant positive moderate relationship
College general weighted average grade (CGWA)	-0.554	0.000	Significant negative substantial relationship

Meanwhile, the correlation coefficient between CGWA and LEA rating was -0.554 and the computed p-value was 0.000 (which is less than $\alpha=0.05$). This means that there was a negative and significant relationship between these two variables. The negative correlation coefficient is explained by the SUCs’ grading system, which is 1.0 as the highest and 5.0 as the lowest grade in college. The higher the general weighted average grade of a first time examinee in college, the more likely s/he would get a high score in LEA.

The study also computed the mean and standard deviation of LEA ratings based on the accreditation level of the agriculture programs the respondents belonged to. Examinees who graduated from Level 2 accredited programs had the highest mean, followed by examinees from SUCs with a candidate status

program. Examinees from Level 1 accredited programs, however, had the lowest mean. The lowest standard deviation (8.47) was found in SUC with a Level 2 accredited program. This means that the spread of data from the mean was closer compared to the SUC with a candidate status level, which had the highest standard deviation (11.89) (Table 7).

Table 7. Level of accredited agriculture programs, mean of LEA scores, and standard deviation

LEVEL OF ACCREDITED AGRICULTURE PROGRAMS	MEAN OF LEA SCORES	STANDARD DEVIATION
Level 2 accredited	67.26	8.47
Level 1 accredited	64.65	9.42
Candidate status	66.53	11.89

Furthermore, Table 8 shows the influence of level of accreditation on LEA passing rate. SUC1 had the highest LEA passing rate with a Level 2 accredited agriculture program. On the other hand, SUC4, which had a candidate status, surpassed SUC2 and SUC5, which were accredited under Level 1. During the 2008 and 2009 LEA results, the level of accreditation had no bearing with the LEA rating.

To determine the significant predictors in the performance of the first time examinees to LEA, only the independent variables with significant relationship were considered. These variables were the FYHSG, CGWA, and preparation tool. The preparation tool refers to the enrolment to a formal review class plus self-review before taking the LEA (Table 9).

Results showed that FYHSG, CGWA, and preparation tool were significant predictors in licensure examination for agriculturists.

Table 8. Influence of level of accreditation on LEA passing rate

LEVEL OF ACCREDITED AGRICULTURE PROGRAMS	LEA PASSING RATE (DURING 2008 AND 2009)
Level 2 accredited	
SUC1	30.61%
Level 1 accredited	
SUC2	12.5%
SUC3	21.4%
SUC5	8.33%
Candidate status	
SUC4	14.28%
SUC6	0%

**Table 9. Correlation coefficients of independent variables
and LEA performance**

VARIABLES	CORRELATION COEFFICIENTS	LEVEL OF SIGNIFICANCE
Age	0.090	Not significant
Sex	0.09	Not significant
Type of high school	0.15	Not significant
Location of high school	0.093	Not significant
Fourth year high school average grade (FYHSG)	0.481	Significant
College general weighted average grade (CGWA)	-0.554	Significant
Preparation tool	0.28	Significant

Using the regression analysis, the beta coefficient values reveal that CGWA was the strongest predictor (with 0.430), followed by FYHSG (0.203), and preparation tool (0.178) in getting a passing score in LEA (Table 10). The adjusted R square was 0.358, which means that 36 percent of the variations in LEA scores could be explained by the above three variables. The 64 percent of the variations may be caused by other factors.

Table 10. Beta coefficient between Fourth Year High School Grade (FYHSG), College General Weighted Average Grade CGWA), and Preparation Tool (PT)

PARAMETER	BETA COEFFICIENT	
FYHSG	0.203	
CGWA	-0.430	Strongest predictor
PT	0.178	

The multiple regression analysis resulted to the following regression equation:

$$\text{LEA Performance} = 55.612 + 0.435 \text{ FYHSG} - 12.371 \text{ CGWA} + 3.340 \text{ Preparation Tool}$$

The regression equation means that for every one unit increase in the fourth year high school average grade of an agriculture graduate, there is an expected increase of 0.435 in the LEA rating of the first time examinee. In addition, for every one unit increase in the college general weighted average grade of an agriculture graduate, there is an expected increase of 12.371 in the LEA rating. Lastly, for every one unit increase in the preparation tool, there is an expected increase of 3.340 of the LEA rating. The beta coefficient values also reveal that CGWA was the strongest predictor (with 0.430), followed by FYHSG (0.203), and preparation tool (0.178) in getting a passing score in LEA.

CONCLUSIONS

LEA passers were those who performed well during their fourth year high school with at least an average grade of 86 and above; a college general weighted average grade of 1.97; and enrolled in a formal LEA review class backed up by self-review. In contrast, those who failed obtained a fourth year high school average grade of 82.22 and below, with a college general weighted average grade of 2.33 and below, and had self-review only. This implies that an agriculture graduate who wishes to pass the LEA should perform well academically during high school and college and should enroll in a formal LEA review class backed up by self-review.

As for performance in the LEA, the best performing SUC during the 2008 and 2009 examination periods was CBSUA. Different SUCs offering agriculture programs should keep on improving their graduates' LEA performance. According to CHED, if the SUCs LEA passing rate is consistently 3 percent and below, the CHED may recommend closure of the agriculture program.

RECOMMENDATIONS

Each SUC must intensify its review center and invite more qualified and successful resource persons so that graduates will be motivated to review intensively.

A motivation fund (cash reward) may be considered for the passers who belong to the Top Ten at the national and regional levels. This will motivate graduates to really strive hard to be one of the topnotchers. Students who wish to pass the LEA should perform well both in high school and college; they should also read books, magazines, and journals relevant to agriculture, as well as increase their stock of knowledge. Good study habits must be maintained during high school and college days. Examinees

should enroll in a review class, aside from their self-review, if they wish to be successful in hurdling the LEA.

Graduates who finished agriculture courses under the old curriculum must enroll first in the refresher course so that they will have a good grasp of the latest trend in agriculture skills. Faculty handling agriculture subjects should also attend capability trainings in teaching agriculture subjects, specially those covered by LEA.

The data indicate that majority of the SUCs had low passing rate in LEA. Part of this may be due to the admission policies of the SUCs in terms of low cut-off fourth year high school grade. Another factor was the discrepancy between the CHED requirements and the existing SUCs' course offerings. CHED must strictly monitor the implementation of CMO 14 Series of 2008. A matrix of compliance can be issued to all SUCs to monitor whether the competencies required by CHED were being met.

Further research should be conducted similar to this study covering a wider scope (2003-2011) and perhaps the 10 areas of the AACCUP instrument to arrive at a more conclusive result.

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