

Perceptions on Agriculture among Freshmen Students at the University of the Philippines Los Baños: Key Challenges and Solutions

Kamla Zyra G. Lavadia^{*1}, Lourdes B. Columbres¹, Maria Angeli G. Maghuyop², and Domingo E. Angeles¹

¹College of Agriculture and Food Science, University of the Philippines Los Baños, College, Laguna 4031 Philippines

²Office of the Vice Chancellor for Research and Extension, University of the Philippines Los Baños, College, Laguna 4031 Philippines

* Author for correspondence; E-mail: kglavadia@up.edu.ph

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This study involved 832 freshmen students enrolled in the course Introduction to Agriculture from 2009 to 2014 from the College of Agriculture and Food Science and the College of Human Ecology, University of the Philippines Los Baños, to determine the perception of youth towards the field of agriculture and its degree program. Using quantitative parameters and correlation analysis, the relationship between the demographic characteristics and the freshmen's perception towards agriculture was determined. Students' demographic characteristics (age and gender) are positively correlated with the student's perception of agriculture. Initially, the majority (58.3%) of the freshmen have a negative attitude towards the agriculture program. As a student's in-depth knowledge of the agriculture field increases, their perception and idea of the program is also positively influenced. Contrary to the popular belief that agriculture is a male-dominated field, the majority of the students enrolled in the course are female (63%). Recommendations to make Agriculture more attractive to youth through information dissemination (i.e. ICT-based modalities, infomercials) and interactive campaign will promote the discipline in an effort to increase the interest of the youth and subsequently, the popularity of the program.

Key Words: youth, perception on agriculture, agricultural education, UPLB

Abbreviations: AFA – Asian Farmers Association for sustainable rural development, CA – College of Agriculture, CAFS – College of Agriculture and Food Science, CALABARZON - Cavite, Laguna, Batangas, Rizal, and Quezon, CAR - Cordillera Administrative Region, CHE – College of Human Ecology, FAO – Food and Agriculture Organization of the United Nations, ICT - Information and Communication Technology, IEC - Information, Education, and Communication materials, MIMAROPA - Mindoro, Marinduque, Romblon, Palawan, NCR - National Capital Region, PSA - Philippine Statistics Authority, SOCCSKSARGEN - South Cotabato, Cotabato City, North Cotabato, Sultan Kudarat, Sarangani and General Santos City, UPLB – University of the Philippines Los Baños.

INTRODUCTION

The youth is the future foundation of the national workforce. Yet, only a few see themselves in the agricultural sector or working in rural communities. It is alarming to see the declining interest in agriculture among the youth. Ignoring this trend may jeopardize the nation's food security.

Students usually look at agriculture as a "poor man's job," where peasants and farm workers laboriously toil the field in exchange for low wages. They tend to

disregard agriculture as a potential professional discipline and consider it a poor career path. In Uganda, for instance, agriculture had been used in schools in the administration of punishments to errant and undisciplined children. These cases portray agricultural-related activities as punishment for misconduct; hence, limiting the youth's enthusiasm to pursue livelihoods in agriculture (Njeru 2017).

Young people are crucial in advancing the agriculture sector, particularly in developing countries, as they are the most productive group in the overall population

(Pelzom and Katel 2017). However, lack of opportunities and decent jobs in the rural areas compel the youth to migrate to cities. Sons and daughters of farmers are often reluctant to go into farming for various reasons. Many of those who continue to stay in the farms were often forced to remain or did not have better options (AFA 2015). Acknowledging and addressing the youth's perception of agriculture is vital for the local and national development of the sector and the agricultural education in the country.

In a study conducted among the youth of Ifugao, Mountain Province, Philippines, Dizon et al. (2012) found that students have favorable perceptions and attitudes toward the rice terraces, but they were not significantly related to the choice of future occupation. This is reflective of the current state of agriculture in the Philippine education sector as it is one of the undersubscribed programs in the country, with a much lower enrolment rate compared with other degree programs (e.g., IT-related, health-related, and business-related courses; teacher education; and engineering and technology) (Vitriolo 2013).

According to CHED (2019), among the programs taken in ten-year enrolment rate in the Philippines, Agriculture, Forestry, and Fisheries is slowly increasing. While Agriculture is included in the top ten, it ranked 9th among the disciplines enrolled in from 2010 to 2020.

Surprisingly, there is a relatively low subscription to Agriculture, Forestry, and Fisheries programs in the country compared to other disciplines such as Business Administration; and Education Science and Teacher Training (Appendix 1) which dominated the national enrolment landscape in the last 10 years. As a result, the agriculture field in the Philippines has experienced a downward trend in popularity, especially among the youth (CHED 2019).

In developing countries, youth knowledge and information in agriculture production and processing technologies are crucial. Most of the world's food is produced by ageing smallholder farmers. Older farmers are less likely to adopt the new technologies needed to sustainably increase agricultural productivity and ultimately feed the growing world population while protecting the environment (UN FAO 2014).

In the University of the Philippines Los Baños (UPLB), out of the 832 freshmen enrolled in an introductory course in Agriculture, Introduction to Agriculture (AGRI 11), from 2009-2014, 54% are from the College of Agriculture and Food Science (CAFS), and the remaining 41% are from the College of Human Ecology (CHE) which is a required basic course for these students.

This study was conducted to determine the perceptions of youth towards agriculture, specifically, to: 1) describe the demographic and personal characteristics of UPLB freshmen; 2) describe the perception of UPLB freshmen students towards BS Agriculture degree program and agriculture as a field of specialization; 3) draw the relationship between the demographic and personal characteristics of UPLB freshmen students and their perception towards agriculture program; 4) determine the challenges of agricultural education as perceived by selected UPLB freshmen; and 5) recommend initiatives to make Agriculture as a degree program attractive to the youth entering the university.

MATERIALS AND METHODS

The study utilized quantitative methodology using content and correlation analyses as research methods. It used secondary data to describe the students' demographic characteristics including age, sex, location, and originating college. Official students' records were accessed from the respective Offices of the College Secretary of the College of Agriculture and Food Science, and of the College of Human Ecology at the University of the Philippines Los Baños. Students' perception on agriculture were assessed using open-ended survey questionnaires as part of the course requirements. They were asked the following questions: what was your perception about agriculture before and after taking Introduction to Agriculture; and what can you suggest to make agriculture more attractive to the youth?

The students' reflective papers provided textual data, giving the respondents a channel through which they discuss their own attitude and emerging ideas on the different influencing factors affecting their decision to take the agricultural course/program, and track new direction and areas of research.

Using complete enumeration, a total of 832 UPLB freshmen enrolled in AGRI 11 at CAFS-UPLB over the span of 10 semesters from 2009 to 2014 were selected as respondents of the study. Both students' records and final papers were subjected to data processing, coding, content analysis, and interpretation. To describe relevant findings of the study, frequency counts and numerical measures were used.

Quantitative content analysis was used to code the perceptions of UPLB freshmen towards the agriculture program and field before and after taking AGRI 11. Quantitative content analysis is a research method in which features of textual, visual, or aural material are systematically categorized and recorded so that they can

be analyzed (Coe and Scacco 2017). Foremost to content analysis is the task of coding and classifying the texts into categories. On the other hand, frequency count and correlation were used to determine the influence of selected demographic and personal characteristics of respondents on their pre-perception and post-perception on agriculture.

RESULTS AND DISCUSSION

Demographic Profile of Students

Among the 832 respondents, more than 10% of the socio-demographic data were missing from the review of the official College Database. While literature suggests that if there are a large number of missing values, then it is better to drop those cases (rather than do the imputation) and replace them (Statistics Solutions 2018). Hence, only four variables (sex, age, location, and originating college) were considered in the demographic analysis. These were the variables with the most data available. Freshmen from CAFS comprised 54% and those from CHE comprised 41%. Both colleges offer AGRI 11 as a prerequisite course to their degree programs. The socio-demographic characteristics of the students are summarized in Table 1.

The result showed that there are more female (532 or 63.9%) students than male (256 or 30.8%) who are taking the course. The data reaffirms FAO (2011) report that women make up 43% of the labor force in developing countries, and can make essential contributions to agriculture and rural enterprises across the developing world. In fact, the role of women in agriculture was not merely complementary to that of men or merely a provision of a support system. The work of women farmers is the same as that of their male counterparts; activities range from pesticide application, clearing the land, fertilizer application, harvesting, and trading (Lu 2010). Women are also considered as important assets to Research, Development, and Extension (RDE) activities in

agriculture. Women are essential contributors to agriculture and rural economics, and their participation in agricultural extension service is inevitable for maintaining production and agriculture-led growth (Rashid et al. 2017).

Age of students ranged 14-52 years old, with an average age of 17.4 years. Among the age groups, early adults or those in the age group of 20 and up are the lowest age distribution while the early adolescent belonging to the 17-19 age group had the highest. It is not surprising because the surveyed population is generally composed of college freshmen who belong to this age group. Students who are above this age group were either transferees from other colleges, upperclassmen who took the course later in their academic program, or second-degree program takers.

In terms of location, the majority or 747 (89.8%) of the students came from Luzon, while only 20 (2.4%) and 5 0.6% students originated from Mindanao and Visayas, respectively. A possible explanation for this is the location of the UPLB campus and its close proximity to nearby provinces in Luzon Island. A total of 44 students from the total surveyed population did not indicate their originating colleges. Hence, their demographic data were not reflected in the analysis.

The greater part (60.5%) of the students were Tagalog from Region IV-A CALABARZON, whereas students from the National Capital Region (NCR) (12.3%) and Region III Central Luzon (6.7%) came second and third in rank in terms of population, respectively (Table 2). The rest of the enrolment rate by population was scarcely distributed in the rest of the regions in the country. Students from Region V Bicol (4.6%); IVB MIMAROPA (2.4%); I Ilocos (1.7%); and II Cagayan Valley (1.6%) comprised the next highest populations enrolled in AGRI 11 in terms of origin. Scantly 0.8% were from Region X Northern Mindanao, while students from Regions XI

Table 1. Summary of table of students' socio-demographic characteristics.

Socio-demographic Characteristics	Frequency (f)			Percentage (%)		Total (f)	Percentage (%)	Rank
	CAFS (n = 450)	CHE (n = 338)	No Recorded College (n = 44)	CAFS	CHE			
Gender								
Female	251	281	24	30.2	33.8	532	63.9	1
Male	199	57	20	23.9	6.9	256	30.8	2
Age								
14-16	115	3		13.8	0.4	118	14.2	2
17-19	302	321		36.3	38.6	623	74.9	1
20 and above	27	9		3.2	1.1	36	4.3	3
No response	6	5	44			55	6.6	
Location								
Luzon	422	325		50.7	39.1	747	89.8	1
Mindanao	14	6		1.7	0.7	20	2.4	2
Visayas	2	3		0.2	0.4	5	0.6	3
No recorded address	12	4	44			60	7.2	

Davao and XII SOCCSARGEN accounted for only 0.6% of the surveyed population, individually. The rest of the surveyed students were scarcely distributed among Regions VI Western Visayas (0.4%); VII Central Visayas (0.2%); IX Zamboanga Peninsula (0.2%); XIII Caraga (0.1%); and CAR (0.1%). Possible explanation of this trend is the presence of state colleges and universities (SUCs) offering agricultural programs in these regions which already absorb prospective students in Agriculture; hence, the low enrolment from the Visayas and Mindanao. Another limiting factor could be attributed to the cost of living and transportation expenses to study at UPLB.

Even with a significant decrease in farmland area among most regions in the Philippines, Regions III Central Luzon and V Bicol remained the source of budding agriculturists in the country. According to PSA (2004), the total area of farms in Regions III and V decreased by 12.7 and 4.7%, respectively, from 1991 to 2002. This could be attributed to the increasing population in the country as agricultural land is converted into residential or commercial land to cope with population growth.

The Philippine Statistics Authority (2019) reported the top 10 regions in the country with Total Employment (TE) of agriculture graduates of 20 and over in Agriculture, Forestry, and Fishing establishments in 2016. The report excluded data on employment of agriculture graduates to agricultural universities, RDE institutions, and unlisted small-hold farms.

Interestingly, Negros Island Region (NIR, comprising Negros Occidental and Oriental) presents the highest

number of industries in agriculture, forestry, and fishing establishments in the Philippines in 2016 with 272 establishments of at least 20 TE, but with relatively low enrolment in the agricultural program and course at the UPLB. This was followed by Region XI Davao and Region III Central Luzon with 156 and 148 registered agricultural establishments, respectively. The highest number of enrolled students in AGRI 11 came from Region IV-A CALABARZON with a measly 110 agricultural establishments in the region. This could mean that graduates from this region seek employment in nearby provinces.

It may be noted that PSA (2019) did not account for other agriculture-related employments such as SUCs, research and technical institutions for agriculture, and non-formal agricultural establishments (i.e. backyard farms employing less than 20 persons). Hence, the number of prospective employers in agriculture and the demand for agriculture-related professionals per region is limited only on the data presented henceforth.

Students' Perception of Agriculture Before Taking AGRI 11

Students were asked to share their impression on agriculture prior to taking the course AGRI 11. Perception involves the way we frame the world. Students of different backgrounds and demographic characteristics may have different impressions on agriculture, and may reframe their perceptions after exposure to a wide variety of concepts and practices in the field. Multiple responses were enumerated (Table 3). From these, 17 codes emerged, which were further categorized into positive (7), negative (9), and neutral (1) perceptions.

Table 2. Regional origin and college AGRI 11 students.

Regional Origin	Frequency (f)		Percentage		Total (f)	Percentage (%)	Rank
	CAFS (n=450)	CHE (n=338)	CAFS	CHE			
I - Ilocos	7	7	0.8	0.8	14	1.7	5
II - Cagayan Valley	7	6	0.8	0.7	13	1.6	7
III - Central Luzon	23	33	2.8	4	56	6.7	3
IVA - CALABARZON	300	203	36.1	24.4	503	60.5	1
IVB - MIMAROPA	15	5	1.8	0.6	20	2.4	5
V - Bicol	23	15	2.8	1.8	38	4.6	4
VI - Western Visayas	2	1	0.2	0.1	3	0.4	10
VII - Central Visayas	0	2	-	0.2	2	0.2	11
VIII - Eastern Visayas	0	-	-	-	0	-	-
IX - Zamboanga Peninsula	-	2	-	0.2	2	0.2	11
X - Northern Mindanao	5	2	0.6	0.2	7	0.8	8
XI - Davao	4	1	0.5	0.1	5	0.6	9
XII - SOCCSKSARGEN	4	1	0.5	0.1	5	0.6	9
XIII - CARAGA	1	-	0.1	-	1	0.1	12
ARMM - Autonomous Region in Muslim Mindanao	0	-	-	-	0	-	-
CAR - Cordillera Administrative Region	1	-	0.1	-	1	0.1	12
NCR - National Capital Region	46	56	5.5	6.7	102	12.3	2
No response	12	4	-	-	60	7.2	-

Table 3. Students' pre-perception of agriculture before taking AGRI 11.

Impression of Agriculture Before Taking AGRI 11 (Multiple Responses)	Frequency (%)	Rank
Negative		
Associated with farming, plowing, and cultivating land	485 (58.30%)	1
Inferior program/field		
Graduates will eventually become a farmer		
Boring, uncool, dirty, and tedious work		
Depicts an image of poverty and unyielding future		
Did not like/disapprove of the program	232 (27.90%)	2
Associated with rice fields, carabaos, and grassland		
Poor career path		
Easy program		
Positive		
Valued and a highly regarded profession	66 (7.90%)	3
Viable source of income		
Important for survival and food production and food security		
Various career opportunities are available here		
Enjoyable hobby		
Covers a wide range of specializations	49 (5.90%)	
Helps build the economy		
Neutral		
Not familiar / Did not know much about the program/field		
No response		

An overwhelming 485 (58.3%) students are not impressed by agriculture. Negative responses were: agriculture is associated with farming, plowing, and cultivating the land; an inferior program or field; graduates of agriculture will eventually become farmers; agriculture is boring, uncool, dirty, and tedious work; and reflects an image of poverty and unyielding future. These are the top five negative responses of students.

"Agriculture as a college degree is not very well recognized by the youth these days. They think of it as work for people who did not finish school or do not have any educational background." - Student A, 2013

"Heavily influenced by television shows and movies, I have always thought that agriculture was the occupation of the less fortunate. Filipino teleseryes have always depicted that a person is poor if he is working in a farm, planting crops all day." - Student B, 2015

Among the surveyed students, 232 (27.9%) have positive perceptions of agriculture. These came from various impressions of agriculture such as: a valued and a highly-regarded profession; a viable source of income; important for survival and food production; there are

various opportunities available in agriculture; and an enjoyable hobby. These comprised the top five positive responses of the students. Some mentioned that agriculture covers a wide range of specialization, and is helpful in building the economy.

The remaining 66 (7.9%) students are not familiar with agricultural courses or did not know much about the program or the field, while the rest of the 49 (5.9%) students did not respond.

Students' Perceptions of Agriculture After Taking AGRI 11

Students' perceptions of agriculture after taking AGRI 11 were generally more positive, reflecting a good impression of agriculture among students (Table 4). Interestingly, 46% of the students acknowledged that agriculture plays an important part in the socio-economic development of the country, particularly in contributing to the country's economy and to achieving food security. Students also noted that, aside from food, much of our needs in practical life (clothes, medicine, office supplies, and raw materials for various industries) come from agriculture.

"Agriculture is not only about tilling the land and watering the fields, it is the cornerstone of the economy." - Student C, 2008

Surveyed students associated agriculture to farming, causing people to view it as an unproductive and backward sector. However, the surveyed students realized that agriculture does not only refer to farming, but also about other fields of study such as: animal science, crop science, soil science, and crop protection. While agriculture makes use of indigenous practices,

Table 4. Students' impression about agriculture after taking AGRI 11.

Impression about agriculture after taking AGRI 11	Frequency (%)	Rank
Socio-economic contributions		
Generates employment	522 (46%)	1
Key to a successful economy		
Vital for survival and daily living		
Important for building nation's food security		
Important field of study		
Considered as an art, science, and business of cultivating plants and raising animals	371 (33%)	2
Fun and interesting		
Covers a wide range of specialization		
Career opportunities in agriculture		
Business enterprise	153 (13%)	3
Various career opportunities are available		
Cultural importance		
Farmers and agriculturists are important in society	94 (8%)	4
A way of life		

observed by local people for centuries and passed on as a local knowledge from one generation to the next, agriculture is considered as a science, which depends on scientific knowledge with the characteristic elements of quantification, experimentation, and calculation.

Upon taking AGRI 11 and being exposed to agricultural practices, 33% of the students realized the importance of agriculture as a scientific field of study. Exposure to laboratory work and lectures made students realize that agricultural programs are not simply farm work and intensive labor, whereas it involves experimentations, research, and extension activities. Students also mentioned that the agriculture program offers a range of fun and interesting subject matter which covers a wide range of specific fields of study, such as: plant breeding, weed science, crop production and management, and animal breeding, among others. One of the surveyed students said that:

“Ang agrikultura ay isang sining, agham at pinagkakakitaang pagpapaunlad sa lupa, pagtatanim, pangangalaga sa kagubatan, pag-aalaga, pagpapalaki at panghuhuli ng mga hayop bilang pagkain at iba pang uri ng kabuhayan.” (Agriculture is an art, science and a profitable venture for cultivating land, planting, forest conservation, care, raising, and hunting of animals for food and other forms of livelihood)
- Student D, 2015

Entrepreneurial and communication skills are also important in agriculture as it can be a viable conduit for business and other career ventures. The present study revealed that students realized that there certainly is progress in the often misinterpreted and denigrated sector. While students showed significant interest in agriculture after taking AGRI 11, many of them (58.3%), do not want to be directly exposed to farming activities before taking AGRI 11. Instead, they want to become indirectly involved in its practical and physical components. In fact, 13% of students realized the potential of agriculture in other non-farm occupations. Engagement in agriculture provides a large chunk of the country's population with indirect and direct farm employment (CIDA-LGSP 2003). Moreover, engagement in agriculture calls for diversified jobs in the value chain--from teaching and RDE phase such as development of improved variety of crops; to the production and post-production phase as in commercial activities of establishing farms, orchards, and carrying on exports of produce; and to marketing distribution to target users or clients.

Lastly, 8% of the students realized that farmers and agriculturists are important in society. Agriculturists are

the unsung heroes of the country and students recognized the role of agricultural professionals such as the agricultural extension workers in training and teaching farmers e.g., how to use indigenous practices for successful organic farming. Other unpopular post-perceptions centered on agriculture paving the way for civilization and as a noble profession, as shown below:

“Agriculture is an extension of mankind because without the works and products of agriculture, mankind would be nothing. I could not fathom a world where agriculture was not discovered. Probably, mankind would still be roaming around and still does not know how to settle in one place.” - Student E, 2013

For a number of reasons, the results showed that agriculture had lost its attractiveness to students and the youth in general. This survey among the freshmen revealed that after taking AGRI 11, the majority of them changed their perceptions about the program and the field. The findings imply that introductory courses in agriculture and exposure to agricultural activities can impact the students' perceptions from a generally negative to a more positive one. While a positive perception of agriculture is important to recruit students, there are also other factors that can influence a student's overall perception of agriculture (Buchanan 2006). In such, we now look at factors such as demographics that can have an impact on the student's overall perception of agriculture.

Relationship Between Demographic Characteristics and Perception on Agriculture

Correlation analysis was conducted to estimate the relationship between the socio-demographic data of the students and their pre-responses towards agriculture. In this study, the responses of the students served as the dependent variables and the socio-demographic as the independent variables. Thus, Y = responses and X = socio-demographic data. The relationship of students' gender, age, and locations per region with their perception towards agriculture is shown in Table 5.

In computing for the correlation coefficients, the variance of the responses were computed individually, and also the socio-demographic variables. The variances X and Y measure the variability in their respective means. The mean socio-demographic data mean responses and generated correlation coefficients are summarized in Table 6.

The socio-demographic mean was computed to know the effect of socio-demographic variables to the students' perception. High mean value indicates that it has a great effect on the students' perception towards agriculture, the

Table 5. Students' socio-demographic characteristics in relation with responses.

Socio-demographic Characteristics		Total (X)	Responses (Y)		
			Positive	Negative	Neutral
Gender					
	Male	256	128	400	35
	Female	532	219	630	46
Age					
14-16	Mid-adolescents	118	41	149	12
17-19	Late adolescents	623	267	738	45
20+	Early adult and above	36	11	38	5
Location per region					
I	Ilocos	14	8	24	0
II	Cagayan Valley	13	1	17	4
III	Central Luzon	56	23	73	2
IVA	CALABARZON	503	215	623	40
IVB	MIMAROPA	20	7	30	0
V	Bicol	38	18	48	7
VI	Western Visayas	3	1	3	0
VII	Central Visayas	2	3	3	0
VIII	Eastern Visayas	0	0	0	0
IX	Zamboanga Peninsula	2	0	3	0
X	Northern Mindanao	7	3	6	3
XI	Davao	5	2	8	0
XII	SOCCSKSARGEN	5	3	5	2
XIII	CARAGA	1	2	1	0
	ARMM	0	0	0	0
	CAR	1	0	0	0
	NCR	102	46	121	13

low mean value indicates that the socio-demographic variable has a small effect on the students' perception. Table 6 shows that gender is the variable with the highest value (0.95) as compared to the two variables, age and

Table 6. Socio-demographic data mean and generated correlation coefficients.

Socio-demographic (X)		Mean	Responses (Y)					
			Positive		Negative		Neutral	
Parameters			Mean	r	Mean	r	Mean	r
Gender		0.95	0.42	1.00	1.24	0.99	0.10	0.95
Age		0.93	0.38	1.00	1.11	1.00	0.07	1.00
Location		0.93	0.40	0.73	1.16	0.73	0.09	0.72

r - correlation coefficient.

location. This shows that students' gender has the greatest effect on the students' perception towards agriculture.

The socio-demographic mean value against the students' responses was also computed to know which response mean shows the students' perception most, and what socio-demographic variable contributes most to their response towards agriculture. The analysis of each response mean score interprets the students' perception towards agriculture. The high mean score indicates the strong effect to the level of perception, the moderate mean value score shows the medium effect on the students' level of perception, and the low mean value indicates the small effect on the students' level of perception. Table 6 shows that the negative responses have the high mean value scores, the positive responses have the moderate mean scores, and the neutral have the lowest mean scores. This implies that the majority of the students have negative perceptions towards agriculture for all the socio-demographic variables.

The correlation coefficient (r) shows the strength of the relationship between the variables gender, age, and location and the students' responses (positive, negative, and neutral). A high degree of the coefficient value which is between ±0.50 and ±1.00 indicates a strong correlation or relationship between the variables and the responses. A moderate degree coefficient value between ± 0.30 and ± 0.49, indicates a medium correlation or relationship between the variables and the responses, and a low degree coefficient value which is below + 0.29, implies a weak correlation or relationship between the variables and the responses. Since all the correlation coefficient value of all the responses lies between ± 0.50 and ± 1.00 as shown in Table 6, it implies that there is a strong positive correlation or relationship between the students' socio-demographic variables and their responses.

Factors Affecting the Agricultural Sector as Perceived by UPLB Freshmen Students

Agriculture has great potential in the world, but it faces many challenges that, when left unmet, may jeopardize the status of the sector itself. The Food and Agriculture Organization (FAO 2014) identified these key challenges faced by the youth seeking greater participation in the agricultural sector. They lack the following: access to knowledge; information and education; access to land; access to financial services; access to green jobs; access to markets; and engagement in policy dialogue.

The immediate challenges in agriculture that the surveyed students identified are categorized in Table 7. As 40% of the students admitted the diminishing

Table 7. Challenges in agriculture perceived by the students.

Challenges	Frequency (%)	Rank
Limited agricultural workforce		
Youth are more attracted to technology-related / white collar jobs	285	1
Aging farmers and limited number of agricultural extensionists	(40%)	
Adults discourage youth from taking agricultural courses		
Diminishing resources		
Land conversion and degradation	155	2
Booming population	(22%)	
Government support on technology, infrastructure, and funding		
Agriculture sector is flogged with the image of corruption		3
Lack of innovation and adaptation to modern farming	146	
Lack of government support and funding to agriculture	(20%)	
Limited market access		
Poorly developed infrastructure		
Low investment in research and development		
Climate-related risks		
Environmental challenges	131	4
High incidence of pests and diseases	(18%)	

workforce in the country’s sector they also recognized that youth attraction to technology-related and industrial occupations contribute to this significant decline in interest towards agriculture. Manalo and Fliert (2011) reported a similar trend in agricultural outmigration in the Philippines, resulting in unfavorable labor scenarios for the agricultural landscape. Currently, the country has aging farmers (Palis 2020) and decreasing enrollment in agricultural courses. Some of the narratives provided by the surveyed students are:

“Teenagers often put agriculture at the bottom of the list when choosing a college program. Nowadays, people my age foresee themselves as engineers, architects, doctors and lawyers; but I have never met anyone who dreamt of becoming an agriculturist.” - Student F, 2014

“People from the provinces see the city as a symbol of prosperity and success. This results in the migration of the youth from the provinces to the city.” - Student G, 2011

With the rampant conversion of agricultural land into residential, commercial and industrial spaces as a response to a booming population, 22% of the students identified diminishing resources as another challenge that calls for action. Similarly, 20% of the respondents are dissatisfied with the support extended by the government to the agricultural sector. Students doubted the transparency of the sector as it was not able to free

itself from corruption. Also mentioned is the lack of government investment in modern farming and infrastructure keeps the Philippines lagging behind its ASEAN neighbors in terms of agricultural innovation.

About 18% of the students stressed that climate change and plant diseases, among others, are the biggest environmental challenges facing the agricultural sector. The frequency of climate variability further puts the sector in a more despondent situation. One student stated that:

“Typhoons and natural disasters swept and destroyed numerous fields of crops. These long-term constraints prevent the nation’s progress toward self-sufficiency and food security.” - Student H, 2014

Recommendations to Raise the Attractiveness of Agriculture among Youth

Considering that agriculture is one of the country’s biggest economic sector, making up 9.4% share of the Philippine economy and 29% share in the country’s total employment (PSA 2015), students realized the need to respond to challenges that threaten the future of farming and to meet the demands of a rapidly growing urban population. With these key challenges, solutions for making agriculture more attractive to the younger generations are necessary and are summarized in Table 8.

About 35% of the students recommended that public discussions and advertisements “selling” agriculture should be held to engage the youth and to better attract them to help the discipline grow. This could be done by holding educational campaigns through seminars, symposiums, farmer’s day, quiz bee, workshops, etc. Other media channels can help popularize the field with the aid of technology, e.g. IEC materials such as posters, online blogs, online games, social networking sites, etc. However, a discussion of students in farming goes beyond formal settings. As suggested by the students, the youth should be more exposed and introduced to agricultural activities from home. Early exposure to agriculture should start from the household and parents as the key authorities in this movement. Two students’ suggestions are:

“Television and the world wide web are the leading media in our generation. They [government] should launch advertisements about agriculture. Famous actors and actresses should be the ones promoting agriculture because they have a big influence and impact on the youth.” - Student I, 2013

Table 8. Students' suggestions to make agriculture attractive to the youth.

Recommendation	Frequency (%)	Rank
Public discussions and advertisements on agriculture		
Early exposure to agriculture at home		
Hold educational campaign through seminars, symposiums, farmers' day, quiz bee, workshops, etc.		
Advertise the course through IEC materials (e.g., posters, online blogs, online games, social networking sites (SNS), etc.)	275 (35%)	1
Discuss the importance of agriculture		
Integrate the use of information-communication technologies (ICT) and media in teaching agriculture		
Building social awareness on agriculture		
Raise awareness about common misconceptions in agriculture	187 (23%)	2
Conduct career orientation		
Policy advocacy and governance		
Revise basic education curricula to include agriculture subjects	176 (22%)	3
Develop policies and provide subsidy to the agriculture sector		
Capacity and leadership building among the youth		
Serve as a good example to inspire the youth		
Support government programs on agriculture	161 (20%)	4
Use modern technology in agricultural activities		
Build youth's capacity through direct engagement in agriculture		

"Let the youth be informed through workshops, fora, talks, and all kinds of discussion where everyone gets the right facts on how important agriculture really is."
- Student J, 2014

Since agriculture is easily associated with direct farm activities, the students recognized the gap between public understanding of agriculture and agriculture as a profession based on their pre-perception and post-perception of the discipline. To bridge this gap, 23% of the students suggested that career orientations and social awareness should be conducted by licensed agriculturists and technicians to correct common misconceptions about the field. Agriculture, as a degree program, should be treated both as an art and as a science. For instance, two students gave the following suggestions/recommendations:

"For the improvement of agriculture, they should explain that it is not only in the crop industry but also in the animal industry. Majors that students can choose from should be presented to them. These include Agronomy, Horticulture, Soil Science, Entomology, Plant Pathology, Weed Science, Extension, and others." - Student K, 2013

"Pwede kaming pumunta at humingi ng pabor sa mga propesyonal o mga agriculturist na magsagawa ng mga career orientation program sa mga high school students (lalo na sa mga magsisipagtapos)." ("We can ask for the

favor of professionals or licensed agriculturists to conduct career orientation programs for high school - especially for graduating students.")
- Student L, 2011

Transformational approaches are deemed necessary to manage natural resources in the future. As suggested by 22% of the surveyed students, policies, practices, and tools promoting climate-smart agriculture are important for better use of scientific information on climate to assess risks and vulnerability of agriculture. Planners and policymakers must create suitable policies that encourage funding for such agricultural transformation. As a student said:

"The government should be strict in implementing agriculture subjects in high schools and there must be proper orientation to students. With this, we can eliminate false beliefs or should I say "myths" in agriculture." "...The government must provide more budget to agriculture rather than to industrial plants, tourist destinations, and others." - Student M, 2009

The students suggested that the government can do several interventions to improve agriculture: 1) reassess the concept and measurement of agricultural productivity, and ecological farming; 2) study sustainable agriculture systems, their problems and solutions to these problems; 3) conduct sustainable agricultural experiments on farming methods; 4) give training to farmers; and 5) support farmers' programs and government programs for the implementation of sustainable agriculture.

Finally, 20% of the students mentioned that capacity building and leadership training are equally important to equip young agriculture enthusiasts with the necessary skills and training to contribute to the development of the field. As agriculture students, some mentioned that they will strive to become successful in that field and change the impression that no one gets rich in agriculture. To do this, students recognized the need to use modern technology in agricultural activities. One student stated that:

"I am planning on joining an organization next semester and if ever I become an official member, I will suggest having activities related to agriculture like tree-planting activities or working in the field with farmers."
- Student N, 2014

Some unpopular responses were also obtained, such as: "venture into organic farming; raise awareness that agriculture is gender-free; take a holistic look at the problems associated with the agriculture sector; change the perception of the youth about agriculture; share

knowledge and support programs of the government that promote livelihood and agricultural production; encourage others to take BS Agriculture; explain the difference between an agriculturist and a farmer; and be a good example of an agriculture student.”

CONCLUSION AND RECOMMENDATIONS

Despite the popular belief that agriculture is a male-dominated occupation, women are more likely to be involved in agriculture as 62.7% of the surveyed population taking agricultural courses are women. More than half (60.5%) of the students came from CALABARZON, which implies that proximity is one factor in choosing a university. Therefore, accurate, current, and regionally specific information should be made available for gender-sensitive agricultural education.

Students perceive a growing pressure on diminishing farmland, which would greatly affect the country's agricultural productivity. Hence, policy evaluation on regional agricultural land use and farm fragmentation becomes an increasingly important task.

Generally, students have an unfavorable pre-perception toward agriculture as a field and as a degree program. The students' perception that agriculture is only about farming and tilling the land, and that graduates of the program will eventually become farmers is very striking. To rectify this, it is suggested that the Department of Education revise the basic education curriculum by including agricultural courses. Aside from direct exposure to crop planting, harvesting, and land cultivation, students must also learn the economic and cultural importance of agriculture. Conducting career orientation among high school students will provide an opportunity for them to know the limitless possibilities and careers in agriculture.

To increase the awareness and the interest of students in agriculture and give them in-depth understanding and conception of the agriculture program, the students recommended the following measures to attract students' interest in the agriculture sector, such as: building social awareness on agriculture, public discussion and advertisement on agriculture (i.e. educational campaign like quiz contests, online blogs and social networking sites), capacity and leadership building among the youth (Darren Espanto in AgriSikat (Sa Agricultura, May Future Ka!) campaign; Kyle Echarri, singer, actor and UPLB Edible Landscaping Ambassador; and, James Reid as Food Security Ambassador); and, policy advocacy and governance.

For the DepEd, the K12 curriculum can be taken advantage of by introducing agriculture to the youth during their junior and senior high school years (Pasiona 2016). Such exposure to various opportunities in the agriculture and related sector can make them realize that they can be productive scientists and extensionists or agricultural development workers in the future. Similarly, the Commission on Higher Education should prescribe agricultural universities and SUCs to assign introductory courses in agriculture, such as AGRI 11, among senior faculty members who are more experienced and have higher credibility to attract and retain students in the agricultural program.

Lastly, the government should tap digital media such as social networks in disseminating information to give a positive image of the program. Interactive mobile software could be developed to engage students with introductory lessons on agricultural activities. Moreover, providing students with incentives such as scholarships, grants, and employment may ignite their interest in agriculture-related courses. Hopefully, agricultural universities in the Philippines will be able to use the findings of this study to gain better understanding of their potential students and to adjust their educational campaign to improve the agricultural education landscape in the country.

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Appendix 1. Top 10 course discipline taken in ten-year enrolment trend in the Philippines (CHED 2019).

