

Factors Affecting the Academic Success of Agricultural Students at University of Tehran, Iran

Y. Hedjazi^{1*} and M. Omid¹

ABSTRACT

Discovering the effective factors in agricultural students' academic success was the aim of this study. The statistical population consisted of all 194 junior agriculture students at the University of Tehran. The study is of a correlation type with the information being gathered through questionnaires as well as through a study of students' academic files. There was a positive significant correlation observed ($P = 0.01$) between academic success, on the one hand, and high school grade point average (GPA), study hours, planning for study, motivation, and emotional atmosphere of educational environment, on the other hand. The level of confidence between academic success, on one hand, and the family's attitude towards studies and years of experience in teaching, on the other, being also significant ($p = 0.05$). Female students were found to be more successful than males. There was no significant difference observed between the academic success of students in residences and those who lived with their parents. Students with agronomy majors were shown to have a higher academic success as compared to students majoring in other eleven majors within the agricultural faculty. The results of regression analysis also demonstrated that 63.5 percent of the variations in the dependent variable academic success were expressed through high school grade point average (GPA), motivation, method of learning, father's level of education, and the emotional atmosphere of the educational environment.

Keywords: Academic success, Agricultural students, Educational environment, Grade Point Average Gpa, Motivation.

INTRODUCTION

Many studies (e.g. Spatz, 2002; Dickenson and O'Connell, 1990; Dlamini, 1995; Arrington and Cheek, 1995; Noxel and Cheek, 1988; Hedjazi, 2002) have used pre-college performance, social origins, and student characteristics (e.g., high school grades, entrance exams, achievement motivation, amount and quality of study time, family background, student interest in agriculture, social and parental support, gender, age and number of years of agricultural courses) to predict performance in college work, (expressed as, college grade and grade point averages).

UNESCO (1992) has offered a conceptual framework of the relationships and causal effects of various factors on students' achievement in Mathematics and Languages, and the utilization of research findings for policy formulation, strategies, and programs to improve a student's achievement. Figure 1 represents the conceptual framework of this study.

Variables related to academic performance can be classified as:

(1) School-related variables (time spent studying, sharing of room, time spent in the library, interest in the program being pursued, involvement in student organizational activities, distance of home from campus, number of times a student visits home in a

¹ Department of Agricultural Extension and Education, University of Tehran, karaj, Islamic Republic of Iran.

* Corresponding author, e-mail: yhejazi@ut.ac.ir

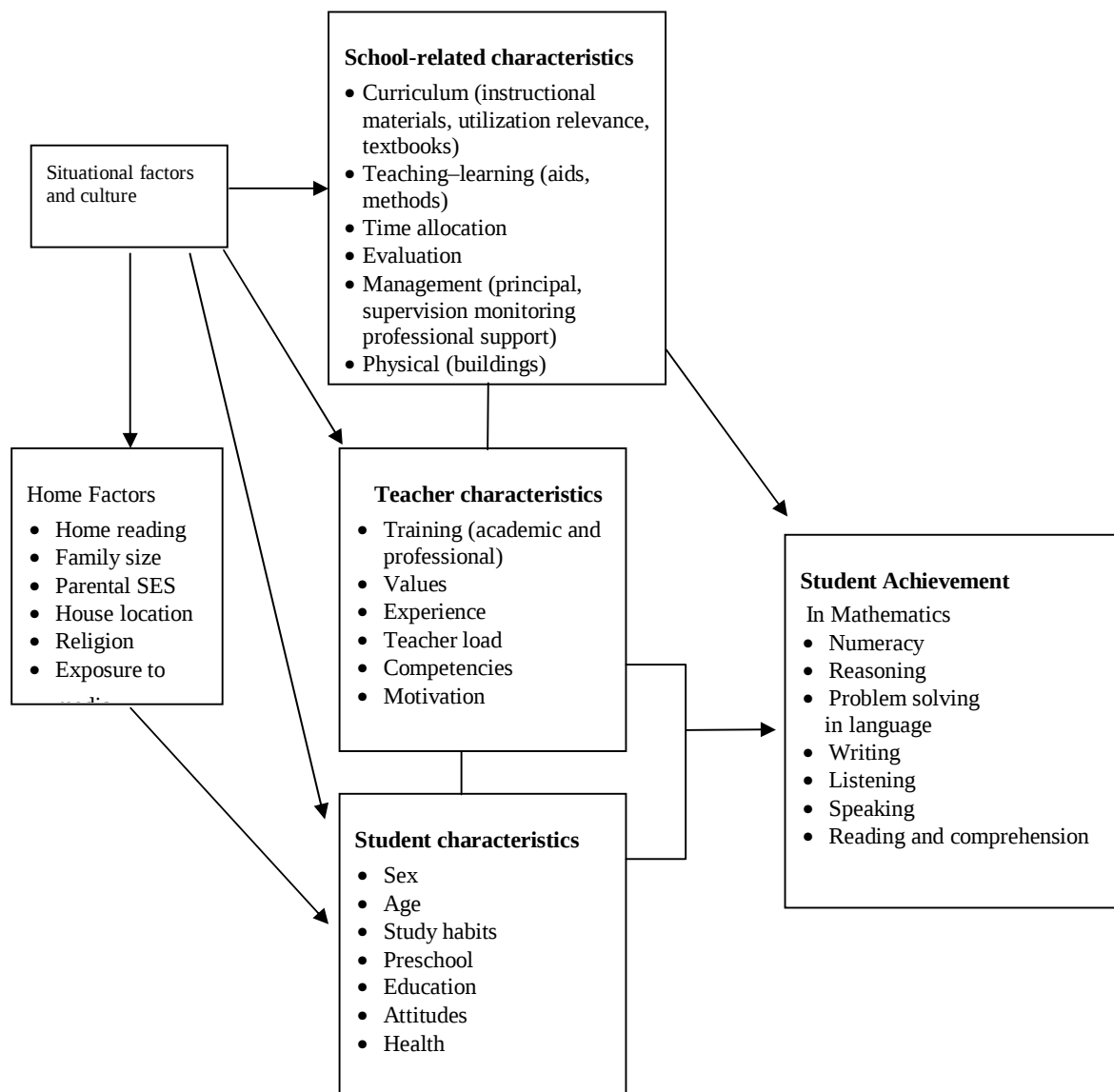


Figure 1. Factors affecting students, success, UNESCO (1992).

month); (2) Home background-related variables (educational level of father, mother family income, access to land by family); and (3) Individual student-related variables (age, work experience, drinking habits, number of years living away from parents). (Dlamini, 1995).

Previous researches (Brozowski, 1988; Chapman, 1988; Johnson, 1991) have indicated that several student characteristics are associated with achievement in agricultural mechanics. These characteristics included:

gender, number of mathematics courses, average grade in agriculture courses, and farmwork experience. Some of these studies indicated that boys scored higher than girls in mathematics, and girls did better in reading comprehension.

Dlamini (1995) revealed that out of the eleven predictor variables from home and school variables only two (students' overall grade and science grade) were significant on agriculture students' achievement. The rest of the home variables indicated negligible to low

association with performance of secondary school students in agriculture.

Jeynes (2002) has identified the effects of various influences on children's emotional and educational wellbeing, including divorce and remarriage, single parent families, nontraditional family structures, race, socioeconomic status, and mobility.

Several studies of students have revealed that performance in reading and mathematics is largely influenced by the socio-economic background of their parents, where they live, and whether or not they aspire to go to university. Spatz (2004) examined psychological predictors of academic achievement for students enrolled in self-placed mathematics courses. This study indicated that those students with high levels of achievement motivation, low mathematics anxiety and procrastination scores were most likely to complete the class with a passing grade.

Johnson (1991) indicated that average grade in agriculture courses, years of mathematics completion, and farmwork experience were all positively related to achievement in the agricultural mechanics contest. Randl, Arrington, and Cheek (1993) concluded that, among the variables, student interest in agriculture, grade point average, FFA (Future Farmers of America) involvement, and socioeconomic status, only grade point average was positively related to student achievement in practical skills in agricultural sciences.

Theoretical Framework

In Iranian universities, one is confronted with students of different educational and family backgrounds as well as different personal characteristics. As a result, educational factors such as the instructor, as the fundamental basis of university education, educational environment, and curriculum content can have different effects on students. Agriculture students have their required laboratory courses on farms, in greenhouses, on dairy farms, and in villages.

Each of these could, in a way, have its effect on a student's academic success. In the present research, the effects of five main factors have been investigated: (1) Students' individual characteristics; (2) Students' family characteristics; (3) Staff members' characteristics; (4) Nature and content of courses; and (5) Educational environment peculiarities on agriculture student's academic success.

Purpose and Objectives

The principal aim of the research was to study the factors and conditions affecting the academic success of agriculture students at the University of Tehran. The objectives of the study were:

- To determine the individual and family characteristics of students being studied.
- To determine the relationship between a student's academic success and his or her individual and family characteristics, academic staff profiles, nature and content of courses, and the educational environment's peculiarities.
- To compare student demographics including gender, academic major, and residence in relation to achievement in their studies.
- To compare successful and unsuccessful students as related to selected independent variables.

METHODOLOGY

The study used a survey design for data collection in the University of Tehran during 2005. This university was deliberately chosen because it was the first university in Iran in which an Agricultural Faculty has been established.

Statistical population

The statistical population included a total of 200 undergraduate junior students. The required information concerning 194 of



them was collected through completion of questionnaires. Incomplete questionnaires were omitted.

Variables

Student's academic success denotes the dependent variable. The average grade point of students involved in the study (15.3) was denoted as an indicator for academic success. Students with an average grade point above 15.3 (out of 20) were taken as successful and those with averages below 15.3 as unsuccessful. The independent variables were:

1- Student individual characteristics, including gender, high school grade point average (GPA), study hours, method of learning, study planning, motivation, and interest.

2- Student family characteristics, namely parents' educational level, parents' job, number of family members, family members' attitude towards study and learning.

3- Staff members' characteristics, including scientific standing, years of experience in teaching, skill in teaching.

4- Nature and content of courses, including theoretical courses, practical ones, field work, and training.

5- Educational environments' peculiarities, including emotional atmosphere of the educational environment, educational facilities, welfare provisions, whether resident student or living with the family.

Measurement

To collect information, a questionnaire with 71 questions was designed. To investigate some indicators, Ordinal scale and Likert scale data were used, and for studying some other indicators, an interval scale was used. Cronbach's Alpha for individual characteristics, family characteristics, staff members' characteristics, course content, and environmental characteristics were measured as 0.84, 0.87, 0.83 and 0.85, respectively. In this

research, the students' method of learning was measured through a standardized questionnaire designed by Shimota (2004). This questionnaire consisted of five questions about reading class notes, memorizing definitions, copying the section over, memorizing key words, and repeating the material over and over.

Information on parents' job, parents' education, grade point average (GPA), and students' Bachelor of Science mean score was obtained through university records. Other information was obtained through seeking opinions from 194 students. To collect information, questionnaires were given to students to be filled out.

Data Analysis

After gathering and encoding information from the questionnaires, data was obtained for analysis. Demographic information of the students was obtained through mean score and percentage. To find out if a likely relationship existed between students' achievement and selected variables, the correlation coefficient and regression analysis statistics were used. To compare students in terms of their gender and home place, the T-test was used, and to compare students of different majors, the F-test and Duncan test were employed. The T-test and Mann-Whitney test were applied according to variables' measurement scale to compare successful and unsuccessful students.

Findings

Findings pertaining to each of the four objectives are presented below:

First Objective: Study Population Demography

Statistical results indicate that 72.2 percent of the population were female students and the remaining 27.8% were males. Their high school grade point average stood at 18.18%.

Daily average hours of study was 2.05. Data indicated 60 percent of the students to be highly motivated for studying in the field of agriculture. It was found that 65.8% lived with their families and 34.2 percent were living in student residences. Concerning the father's education, 12.9% had a level below high school diploma, 24.2% held a high school diploma, 41.8% were university graduates, and 21.1% held degrees above Bsc. Mothers education is stated to be below high school diploma for 21.2%, 37.6% held diplomas, 34% were Bachelor of Science graduates, and 7.2% held degrees above a bachelor's degree. The attitude of 54.2% of family members was to a very large extent in agreement with being educated. The average number of family members was five.

Second Objective: The Relationship between Academic Achievement and Selected Variables

The Pearson correlation was used to test the selected variables such as grade point average, study hours, number of family

members, and years of experience in teaching. For other variables as summarized in Table 1, the Spearman correlation was used. The results revealed that only seven of the 18 factors tested were significant in determining whether the respondents were academically successful or not. These were: high school grade point average; number of study hours; study planning; motivation; years of experience in teaching; family members' attitude towards studies; and educational environment's emotional atmosphere.

To determine the variables that were effective in agriculture students' academic success, a step-by-step regression analysis was employed. As observed in Table 2, from among 18 selected variables, the five variables of grade point average, motivation, method of learning, father's education, and emotional atmosphere of educational environment as indicated by the Beta, T-test, and significance have positively and

Table 1. The relationship between academic success and selected independent variables for agricultural students in Tehran University, Iran, 2005, n=194.

Variables	Correlation coefficient
Grade point average (GPA)	0.500**
Method of learning	0.060
Study planning	0.239**
Motivation	0.369**
Study hours	0.258**
Father's job	-0.072
Mother's job	0.017
Father's education	-0.139
Mother's education	-0.084
Family members' attitude towards learning	0.146*
Number of family members	0.025
Scientific Standing	0.121
Teaching skills	0.135
Years of experience in teaching	0.163*
Educational facilities	-0.134
Welfare provisions	0.014
Emotional atmosphere of education environment	0.270**
Theoretical and practical courses training	0.140

* P< 0.05 and ** and P< 0.01.

**Table 2.** Regression coefficient of selected variables on agricultural students' academic success in Tehran University.

Variable	V. No.	R	R ²	B	Beta	T	Sig
Grade point average (GPA)	X ₁	0.617	0.380	0.570	0.583	7.645	0.000
Motivation	X ₂	0.708	0.502	0.206	0.357	4.726	0.000
Method of learning	X ₃	0.767	0.588	0.141	0.321	4.346	0.000
Father's education	X ₄	0.784	0.615	0.278	0.184	2.572	0.012
Emotional atmosphere of educational environment	X ₅	0.797	0.635	0.121	0.159	2.025	0.041

The number of steps: 5, Dependent variable: Academic success.

$$y = 4.136 + 0.570x_1 + 0.206x_2 + 0.141x_3 - 0.278x_4 + 0.121x_5$$

significantly affected success in studies. These have entered the regression in five successive steps. The R indicates the dependability among dependent and independent variables to the extend of 79.7 percent. The R² indicates that 63.5 percent of a variation's independent variables are expressed by the five variables introduce into the model. Results indicated percentages of 38 for high school grade point average, 12.2 for motivation, 8.6 for method of learning, 2.7 for father's education level, and 2 for emotional atmosphere of educational environment. Altogether, these variables accounted for 63.5 percent of all academic success variables.

Third Objective: Students' Achievements Comparison, Interm of Gender , Place of

Dwelling, and Majors of Study

A T-test was carried out with respect to gender and place of dwelling. It revealed that female students were more successful than male students ($P = 0.002^{**}$). So far, as the place of dwelling (living with family or being a hostel student) was concerned, there was no significant difference exhibited.

A comparison was made employing the F-test among students of different majors of study regarding their academic success. There was a significant difference observed in the academic success of students of different majors of study ($P = 0.000^{**}$). The Duncan test was employed to determine the difference among study majors as related to academic success, the results of which appear in Table 3.

As indicated in Table 3, students majoring in irrigation had the lowest average of 13.92.

Table 3. Duncan test on comparison of grade point average among students of different majors of study, agricultural students in Tehran University, 2005, n= 194.

Majors of study	Homogenous groups			
	Group1	Group2	Group 3	Group 4
Irrigation	13.92			
Soil sciences		14.86		
Agriculturel machinery		14.89	14.89	
Animal sciences		14.92	14.92	
Agricultural economics		15.17	15.17	
Plant protection		15.50	15.50	15.15
Food sciences		15.61	15.61	15.61
Agricultural extension and education		15.66	15.66	15.66
Landscape design		15.84	15.84	15.84
Horticulture			15.87	15.87

Students majoring in plant protection, food sciences and technology, agricultural education and extension, landscape design, horticulture, and agronomy and plant breeding with respective averages of 15.5, 15.61, 15.66, 15.84, 15.87, 16.16 have the highest record on average.

Objective 4: Comparison of Variables Between Successful and Unsuccessful Students

Results of a comparison between successful and unsuccessful students as it related to four groups of variables- (1) Individual characteristics, (2) Family characteristics, (3) Staff members' profiles, and (4) Course nature and content-appear in Table 4. According to the variables' measurement scale, statistical analysis was used. For the interval scale the T-test and, for the Ordinal scale, the Mann-Whitney test were employed. As can be observed from the table, there existed a significant difference between grade point average (GPA), method of learning, parents' job,

study planning, motivation, number of family members, educational facilities, and father's level of education of successful students when compared to those of less successful students.

RESULTS AND DISCUSSION

The research findings indicated a positive significant relationship between a student's academic success and his/her family members' attitude towards education and learning. This is in agreement with results obtained by Jeynes (2002) and Gonzales and Blanco (1991). This indicates parents' awareness of the importance of agriculture as well as possibly indicating the fact that the parents have realistically guided their sons and/or daughters towards choosing their study major.

There was a significant difference observed between a male and a female student's success as indicated by T-test. Female students were more successful, and this is consistent with results obtained by

Table 4. Mann-Whitney test and T-test used to compare successful and unsuccessful agricultural students in University of Tehran.

Variables	Value	Sig.
Grade point average (GPA)	5.643	0.000**
Study hours	1.304	0.099 ^{ns}
Study planning	3721	0.012**
Method of learning	4369.5	0.693**
Parents' job	-2.607	0.049*
Motivation	3179.5	0.000**
Number of family members	1.210	0.027*
Father's education	3765	0.022**
Mother's education	4236	0.318 ^{ns}
Family members' attitude towards learning	4508.5	0.701 ^{ns}
Scientific standing	3705.5	0.20 ^{ns}
Teaching skills	3943.5	0.105 ^{ns}
Emotional atmosphere of educational environment	4635.5	0.964 ^{ns}
Educational facilities	3795	0.035*
Welfare provisions	2581	0.326 ^{ns}
Theoretical and practical courses training	3916	0.143 ^{ns}

* $P < 0.05$ and ** and $P < 0.01$.

ns: non-significant.



Johnson (1991). The reason for this could possibly be less incentive for study in males as compared with female students. Therefore, it is advised that provision be made in educational environments to arouse more interest towards studies in male students. Through the presentation of prompt services during studies as well as after graduation, particularly provision of future job opportunities, the incentive for male students to study in this major could be promoted.

Regression analysis indicated that a correlation existed between educational achievement and the five variables of high school grade point average, motivation, method of learning, father's education, and emotional atmosphere of the education environment. This is in agreement with results obtained by Wong (2002) and Jeynes (2002).

Wong (2002) observed that a student's success to be owed to and dependent upon the three variables of cognitive entry behavior, motivation, and quality of education.

Jeynes (2002) emphasized using a combination of alterable variables effectively in the teaching-learning process.

With due attention and regard to the importance of practical teaching skills in an agriculture student's learning and because agriculture is an applied science in which acquisition of skills is of paramount importance, it is essential that lecturers be quite familiar with practical skills, and follow especially a pragmatic policy of presentation of theory mixed with actual field practice.

The results in this study also indicate that an inverse relationship existed between the father's level of studies and the student's academic success. This contradicts the results obtained by Ardila (2001), Keeves (1992), and Hedjazi (2002). The possible reason is that students whose fathers benefited from a lower level of studies more strongly felt the need to compensate for this

deficiency of education through their families.

The emotional aspect of the study environment was one other important factor influencing a student's academic success that was taken up in this research. Anderson (1998) described a class's emotional atmosphere potentially as a social group that affects what students learn. Anderson estimated the effect of a class's emotional atmosphere on students' learning to be as much as of 30%. It is therefore suggested that instructors and lecturers make a class's atmosphere more "intimate" and, by providing the students with more opportunities to meet with them during their office hours, establish a more humorous, and a stronger emotional relationship with them.

The positive effect of high school grade-point average on a student's academic achievement was quite emphatic. This is in agreement with the results obtained by Johnson (1991), Randle *et al.* (1993), Dlamini (1995), and Hedjazi (2002). This means that high school studies constitute the "backbone" of a students' intellectual foundation; that is important and indispensable to a student's later academic learning. That is why it is emphatically recommended to use high school grade-point average as a determining indicator in student selection for entry into higher education.

CONCLUSIONS

In brief, we can draw the following conclusions:

- Being a hostel student or living with the family was not observed to affect an agriculture student's academic success at the University of Tehran.
- The emotional atmosphere of the educational environment, high school grade-point average, motivation, method of learning, and father's education were effective in student's academic success.
- Female student's academic success was more pronounced than males'.

- Scientific standing, nature and content of courses, parents' job, welfare provision, and educational facilities were not among the factors affecting an agriculture student's academic success at the University of Tehran.

REFERENCES

1. Anderson, L. W. 1987. The Classroom Environment Study: Teaching for Learning, *Comp. Educ. Re.*, **31**: 69-87.
2. Ardila, A. 2001. Predictors of University Academic Performance in Colombia, *Int. J. Educ. Res.*, **35**: 411-417.
3. Arrington, L. R. and Cheek, J. G. 1990. SAE Scope and Student Achievement in Agribusiness and Natural Resources Education. *J. Agr. Educ.*, **31(2)**: 55-61.
4. Brozowski, R. J. 1988. The Relationship of Selected Student and Teacher. Characteristics with Competency in Agricultural Mechanics. Unpublished Doctoral Dissertation, University of Missouri, Columbia.
5. Chapman, R. B. 1988. Agricultural Mechanics Knowledge and Aptitude of Students in Area Vocational-technical Schools. Unpublished doctoral dissertation, University of Missouri, Columbia.
6. Dlamini, B. 1995. The Relationship between Home and School-related Variables and Performance. *J. Agr. Educ. Extension.*, **2**: 59-64.
7. Dickenson, D. J. and Connell, D. Q. 1990. Effect of Quality and Quantity of Study on Student. *J. Educ. Res.*, **63(3)**: 121-125.
8. Gonzales, R. and Blanco, N. 1991. Parents and Children Academic Values and School Achievement. *Int. J. Educ. Res.*, **15(2)**: 163-169.
9. Hedjazi, Y. 2002. The Role of Personality Traits, Selection Criterion and Social Origin in Achievement of Agricultural Students in Tehran University. Ph.D. Thesis, College of Department Agriculture of Agricultural Extension and Education, University of Tehran,
10. Jeynes, W. 2002. *Divorce, Family Structure and Academic Success of Children*. Libra Publishers, Gale Group.
11. Johnson, D. M. 1991. Student Achievement and Factors Related to Achievement in a State FFA Agricultural Mechanics Contest. *J. Agr. Educ.*, **32(3)**: 23-28.
12. Keeves, J., 1992. The Performance Cycle. *Int. J. Educ. Res.*, **10(2)**: 143-157.
13. Noxel, S. and Cheek, J. G. 1988. Relationship of Supervised Occupational Experience Scope to Student Achievement in Ornamental Horticulture. *J. Am Assoc. Teacher Educ. Agric.*, **29(4)**: 24-30.
14. Randl, S. R., Arrington, L. R. and Cheek, J. G. 1993. The Relationship of Supervised Agricultural Experience Program Participation and Student Achievement in Practical Skills in Agricultural Science. *J. Agr. Educ.*, **(34)**: 26-33.
15. Shimota, M. 2004. Rehearsing to Learn. CSB/DJU Academic Advising. Online: <http://www.csbsju.edu/news/community/apr05.pdf>
16. Spatz, D. 2004. Psychological Variables in Relation to Academic Success in Developmental Math. *Psi Chi Nat. Hon. Soc. Psychol.* It is available at: www.Psichiorg/Pubs/Articles/195
17. UNESCO. 1992. *Research in Basic Education and Literacy*, UNESCO. Bangkok, PP. 99-104.
18. Wong, K. 2002. A Basic Introduction to Mastery Learning. *LTS news*. It is available at: www.swin.edu.au/its/newsletter/index.html



نقش عوامل مؤثر در موفقیت تحصیلی دانشجویان کشاورزی دانشگاه تهران

ی. حجازی و م. امیدی

چکیده

هدف از انجام این مطالعه، شناسایی عوامل مؤثر در موفقیت تحصیلی دانشجویان کشاورزی است. جامعه آماری کلیه دانشجویان سال آخر رشته کشاورزی دانشگاه تهران شامل 194 نفر می‌باشد. این تحقیق از نوع همبستگی بوده و اطلاعات مورد نیاز از طریق پرسشنامه و بررسی پرونده‌های تحصیلی دانشجویان جمع‌آوری شده است. نتایج حاصل از همبستگی متغیرها، ارتباط مثبت و معناداری بین موفقیت تحصیلی با متغیرهایی چون معدل دیپلم، ساعتهای مطالعه، برنامه‌ریزی تحصیلی، انگیزه و محیط عاطفی آموزش در سطح 1 درصد و در رابطه با هدف، نگرش اعضای خانواده به تحصیل در سطح 5 درصد نشان داد. مقایسه موفقیت تحصیلی بین دانشجویان دختر و پسر نشان داد که دانشجویان دختر در مقایسه با دانشجویان پسر از موفقیت تحصیلی بالاتری برخوردارند. ولی بین موفقیت تحصیلی کسانی که در خوابگاه سکونت دارند و کسانی که با خانواده زندگی می‌کنند، تفاوت معناداری وجود ندارد. مقایسه موفقیت تحصیلی دانشجویان در رابطه با رشته‌های یازده گانه کشاورزی نیز نشان داد که دانشجویان رشته زراعت از لحاظ موفقیت تحصیلی در سطح بالاتری در مقایسه با سایر رشته‌های کشاورزی قرار دارند. نتایج حاصل از رگرسیون هم نشان داد که 63/5 درصد از تغییرات متغیر وابسته موفقیت تحصیلی را پنج متغیر معدل دیپلم، انگیزه، مهارت‌های آموزشی، تحصیلات پدر و محیط عاطفی آموزش تبیین می‌کند.