APPOINTMENT WITH DESTINY

FIRST

ANNUAL REPORT

SCHOOL YEAR, 1970-1971

MOUNTAIN STATE AGRICULTURAL COLLEGE
LA TRINIDAD, BENGUET
PHILIPPINES

BRENT M. RANTOS
PRESIDENT

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Republic of the Philippines
MOUNTAIN STATE AGRICULTURAL COLLEGE
La Trinidad, Benguet B-210
Philippines

June 10, 1971

His Excellency
President Ferdinand E. Marcos
Malacañang
M a n i l a

S i r :

Pursuant to Section 7 of Republic Act 5923, I have the honor to submit herewith the First Annual Report for the Mountain State Agricultural College covering the school year, 1970-1971, setting forth among others, the condition, progress and needs thereof.

Very truly yours,

BRUNO M. SANTOS
President

P R E F A C E

This report is the FIRST ANNUAL REPORT of the Mountain State Agricultural College under its new status as a state-chartered institution. This being its first year of operation, the College was beset by lack of funds and qualified personnel to fill key positions in the new organization structure. It could not, therefore, complete its reorganization scheme during the year under report.

Entitled an APPOINTMENT WITH DESTINY, the report presents a candid reflection of the condition, progress and needs of the College.

In the years to come, the contents of this report will basically serve as springboards from which the administration, the faculty, the studentry, and the public can get the College moving toward a position at par with already well-established state colleges and universities in its mission to contribute through new approaches in the agro-economic development and rural social progress of the people in the Philippines.

PART I of the report covers ADMINISTRATION AND GENERAL SERVICES with brief statements on the march of progress of the College, implementation of the charter, organization proposal for 1971-1972, problems and recommendations.

PART II presents the report on the SECONDARY DEPARTMENT's organizational set-up and condition, major accomplishments, problems encountered, and recommendations. It was prepared by Mr. Benjamin D. Dimas, Principal of the Secondary Department.

PART III dwells on the COLLEGE DEPARTMENT with brief accounts of its organizational set-up and condition, major accomplishments, problems encountered, recommendations, studies and researches. Immediately following are appendices on resolutions approved by the College Board of Trustees, studies undertaken, and field laboratory experiments done by technical agriculture and food technology students guided and directed by their instructors. PART III was prepared by Mr. Nicomedes A. Alipit, Head of the College Department.

Finally, PART IV of the report presents the full text of Republic Act No. 5923, Charter of the Mountain State Agricultural College.

The content of this report is expected to stimulate group thinking and action on the part of the faculty and employees of the College in the solution of problems which require the concerted efforts of not only the school administration but also the entire constituency of the College.

BRUNO M. SANTOS
President

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MOUNTAIN STATE AGRICULTURAL COLLEGE

PART I. ADMINISTRATION AND GENERAL SERVICES

March of Progress

The Mountain State Agricultural College attained adulthood as a degree-granting institution on April 20, 1970.

Established in 1916 as an elementary farm school known as Trinidad Farm School, it has gone through several stages of metamorphoses during its fifty-four years of history and grown in stature to become one of the country's leading institution for the training of farmers and teachers of agriculture and homemaking.

In keeping with its growth and progress in agricultural education its original name, Trinidad Farm School, was changed to Trinidad Agricultural School in 1945. In June, 1951, the school was nationalized and renamed Trinidad National Agricultural School. In October of the same year its name was again changed to Mountain National Agricultural School - a name which suggested the extent of its service area.

Comformably with its curricular growth which gradually shipted emphasis from the secondary vocational courses to the teacher training programs, the name was changed again to Mountain Agricultural College in 1961.

Finally, in 1969, R. A. 5923 converted the College into a state chartered institution and gave it a new name: MOUNTAIN STATE AGRICULTURAL COLLEGE. Under this law the College is authorized to offer graduate courses leading to the degrees of Master of Science in Agricultural Education, Master of Science in Home Technology, and Master of Science in Agriculture, in addition to its present baccalaureate degree programs in agricultural education, agricultural homemaking and technical agriculture.

Corporate Beginnings

The government and administration of this College and the exercise of its corporate powers are vested in the Board of Trustees in accordance with Section 13 of Act No. 1459, as amended, and Section 5 of R. A. 5923. The College Board of Trustees is composed of the Secretary of Education as ex-officio Chairman, the Chairman of the Senate Committee on Education, the Chairman of the House Committee on Education, the President of the College, the Director of Vocational Education, the Director of Public Schools, and the President of the Mountain State Agricultural College Alumni Association, as members.

For the purpose of establishing the corporate status of the College pursuant to Section 4 of R. A. 5923, the Board of Trustees was formally constituted on April 20, 1970 by Resolution No. 1, s. 1970 of the Board. At this same meeting,

The Board approved Resolution No. 6, s. 1970, designating Superintendent Pedro A. Ventura as Officer-in-Charge of the College peding the appointment of a permanent College President by the President of the Philippines.

On May 25, 1970, the Board of Trustees, pursuant to Section 4 of the College Charter, unanimously nominated Dr. Bruno M. Santos for the position of President of the College. On October 22, 1970, the latter took his oath and assumed office. On March 10, 1971, the Commission on Appointments confirmed the appointment of Dr. Santos as President of the Mountain State Agricultural College.

Mission to Accomplish

Significantly, the Mountain State Agricultural College became a corporate institution at the beginning of a turbulent decade. Whether by coincidence, fate or design, the College has finally matured and given wide latitude to meet head on the many socio-economic challenges of regional and national development. The College is committed to the task of bringing about economic prosperity and social progress in the rural areas of the region particularly for the agricultural sector of the population.

New Programs, New Approaches

The College recognizes that the educational programs of the country as a whole has been seriously off-key, irrelevant and unresponsive to the needs of the nation for economic and social growth. Because of its concern it has started innovating its programs and methods of instruction during year under report.

The innovations introduced are predicated on the belief that vocational agficulture instruction, and teacher education for that matter, is effective, in the occupational sense, unless it can be demonstrated in practice that scientific farming is indeed a profitable occupation. To be able to do this the College believes that all its agricultural projects must be in commercial or at least semi-commercial scale so that the profits from farming enterprises can be shown to students in actual cash and not in theoretical figures.

It is also the consensus of the faculty that agricultural instruction should not be limited to the production and marketing of directly consumable products. It must include training on the processing, preservation, and packaging of these products and the utilization of farm by-products. In short training and instruction in agriculture must be carried beyond the traditional limit prescribed by existing policy and practice in order to give due attention to the industrializing aspects of rural agriculture and provide actual industry-training and experience to students. The ultimate goal being the establishment by the graduates of agricultural industries of respectable magnitude in the rural areas.

Implementation and Organization Proposal for 1971-1972

Along this line the College is making preparations for the expansion of the animal and crop production projects to

commercial scale beginning with school year 1971-1972.

To carry out these plans effectively the College staff will be reorganized in accordance with the organization hcart on page vi of this report.

During the school year under report, the College operated under the pre-charter organization structure in view of budgetary limitations. For 1971-1972 school year, however, the new organization set-up will be implemented.

College Council

To help the College President in the prescription of curricula and rules of discipline, subject to the approval by the Board of Trustees, the College Council was constituted pursuant to Section 8 of the College Charter R. A. 5923. The College Council of the Mountain State Agricultural College began functioning on January 16, 1971 when Dr. Bruno M. Santos, College President, convoked the said Council.

From this date on, the Council has had five meetings called by the President of the College. Among the many important matters taken up by the College Council during its meetings were the following:

1. Setting of the perspective of the College for the next few years;

2. Reports of MSAC delegates to the ACAP Conference at Xavier University, Cagayan de Oro;

3. Approval of proposed organizational chart of the College;

4. Approval of certain proposals for the amendment of the College Charter;

5. Formulation of certain criteria for the proposed Merit Promotion Plan;

6. Apportioning of certain scholarships under the Faculty Development Program;

7. Discussion on the participation of MSAC in the Town Fiesta on March 18-19, 1971;

8. Screening and approval of candidates for graduation for the school year 1970-1971;

9. Section and approval of guest speakers for the Commencement Exercises;

10. Selection and designation of instructors and teachers for the 1971 summer classes.

Board Secretariat

During the first meeting of the Board of Trustees of the Mountain State Agricultural College on October 13, 1970, Mr. Hortencio E. Patacsil, College Registrar of MSAC, was designated as Acting Board Secretary pursuant to Board Resolution No. 2, s. 1970. With the help of Mr. Lawana T. Batcagan, Administrative Assistant I of this College, Mr. Patacsil Had been acting as secretary to the Board up to third meeting of the Board on October 13, 1970.

In the fourth meeting, however, Mr. Lawana T. Batcagan, Administrative Assistant I, acted as the Board Secretary due to the inability of Mr. Patacsil to perform the work of Board Secretary because of the pressure of his work as College Registrar, especially at the close of the school year.

Effective January 1, 1971, Mr. Romulo Q. Apolonio, a Secondary School Teacher in this College, was appointed as College Secretary I. Pursuant to Section 11 of the College Charter, R. A. 5923, he is also the Board Secretary.

Administrative Affairs of the College

This institution just ended its first year of operation as a chartered college by operation of Republic Act No. 5923 approved on June 21, 1969, and implemented on April 20, 1970.

As in the case of other State Colleges and Universities, the major problem that beset the administration of the College was the shortage of funds.

The administrative services are handled by a skeletal force distributed into ten sections, namely: the Accounting Section; the Administrative Section; the Auditing Section; the Cash and Disbursing Section; the Records Section; the Security Section; the Supply and Property Section; the Library Section; the Medical Services Section; and the Guidance Services Section.

Problems and Recommendations

The Administrative Section. - The bulk of the work is shouldered by the Administrative Officer. Aside from his

duties as prescribed by the qualification standard issued by the Civil Service Commission, the Administrative Officer took over the duties of the Personnel Officer, Legal Officer, Budget Officer, and Liaison Officer of the College. He is assisted by a clerk who acts as a "Jack of all trades."

The situation so demands that the positions of Personnel Officer, and Legal Officer be created and that the positions of Budget Officer, and Liaison Officer be filled up soon to relieve the Administrative Officer from the burden entailed by the above-mentioned positions.

The Accounting Section. - The sudden and untimely death of the Accountant last year brought about the brunt of the accounting work on the shoulders of the Accounting Clerk, who was recently promoted to the position of Bookkeeper I. This section is the most undermanned in the entire set-up of the administrative department of the college.

The duties of the Accountant, Budget Officer, Accounting Clerk, and Clerk-Typist are performed by the Bookkeeper. He also processes all vouchers and labor-payrolls before submission to the Auditing Section.

The rapidly increasing volume of work considering the College's crash program as envisioned by the President of the College leaves the Bookkeeper greatly handicapped. To relieve the Bookkeeper of much of the work not otherwise his duty to perform the Administration is looking for qualified applicants to fill up the positions of Accountant I and Budget Officer I.

The Cash & Disbursing Section. - This section is charged with the sole responsibility of collection and disbursement. It is a one-man Section headed by the Cashier. Like the Accounting Section, this office is also undermanned. The existing vacant position of Cashier-Clerk however, shall be filled at the beginning of school year 19712 to lighten the work load of the Cashier.

The Property & Supply Section. - With the recent filling up of the position of Buyer, the Supply Office can now cope with the increasing volume of work of this Section. The Supply Officer, together with the Buyer, is assisted by a Janitor-Clerk.

A separate building for this Section envisioned to be constructed next school year. For the present supplies and properties are stored in the Administration building.

The Records Section. - The responsibility of keeping all records and documents, is assigned to the Records Section which has functioned smoothly and efficiently despite the lack of sufficient facilities. Records are systematically filed and indexed and all important documents and records from loss and destruction.

The Security Section. - This section is composed of a Senior Security Guard, three Security Guards, one Watchman, and one Forest Guard. The need for arming these Security Guards with firearms and ammunition is a must in order that they can well execute their duties efficiently. For this pur-

peace money has been appropriated and that permission to purchase arms already secured from the PC. So far no [illegible] incidents happened on the College campus. It is noteworthy to mention that despite the handicap [illegible] Security Guards [illegible] taken care of.

The Auditing Section. - Although this Section falls directly under the supervision of the General Auditing Office, which is an independent office, suffice it to mention here that the need to fill the position of Auditing Examiner should be made so as to give assistance to the Auditor in coping with the increasing volume of work of said Section.

The Library Section. - This section is presently undermanned. It is managed by one School Librarian assisted by student assistants paid on the hour basis. There is need to strengthen the personnel with an addition of two librarians who will take charge of the high school library section and the other to take care of the collegiate library section. Books were purchased within the limits of resources allowed by the approved budget.

The Medical Services Section. - Presently staffed by one Examining Physician and one Public Health Nurse, this section needs to be strengthened with the appointment of a college dentist. The purchase of more clinical equipment, instruments, and medical supplies is the main problem faced by this section.

The Guidance Services Section. - This section is headed by one Guidance Coordinator who is assisted by homeroom organization advisers of both the secondary and collegiate departments of the College. Presently, the Guidance and Counselling Clinic is not yet assigned to a permanent room on account of lack of rooms during the year.

In order to normalize the work load of college personnel and make operatiohs more effective and efficient, it is the plan of the College Administration to fill existing vacant positions and recommend to the Board of Trustees the creation of additional key and minor positions necessary in order for the College to complete its personnel organization components and be able to carry out its program effectively.

PART II. SECONDARY DEPARTMENT

A. INTRODUCTION

In his State-of-the Nation address, President Marcos said: "Philippine Education must increasingly become an effective instrument of national development. Our Educational system must be relevant and responsive to the changing times. Every Filipino must be given the opportunity to acquire basic skills, qualities and attitudes that would enable him to contribute to the improvement of our society."

The Secretary of Education, Honorable Juan Manuel, mentioned in his keynote address during the FIRST UNESCO Mobile Mission Team Intensive In-Service Refresher Training Course in Vocational Agriculture that in President Marcos' State-of-the-Nation message, he underscored two things: (1) education should be relevant and response to the people's needs, and (2) edrcation should encourage every Filipino to contribute to the national development.

With the conversion of this college into a state institution of learning, it is hoped that the two things underscored by the President of the Philippines about education will be taken in all seriousness so that the Secondary Department of the Mountain State Agricultural College will continue to turn out graduates who will be contributing to the development of the Nation.

This report covers the highlights of the accomplishments of the Secondary Department of the Mountain State Agricultural College for School Year 1970-1971.

B. ORGANIZATIONAL SET-UP AND CONDITION

Instruction

Curricula. - The College offers two secondary vocational programs: (1) Vocational Agriculture for boys and (2) Agricultural Homemaking for girls.

Registration. - Among the requirements that students should meet in the Secondary Department of the College are as follows:

(1) Age and Physical Requirement. - Intermediate graduates either from the Public or duly recognized Private schools who may seek enrolment to this college must be at least 12 years old and of good physical condition as certified by the college physician or any government physician in the locality.

(2) Scholastic Requirements. - The first year applicants must have at least 80%, or higher average rating in work education, and without any failure in any subject in Grade VI or Grade VII. Preference is, however, given to those having 80% or better general average rating in all their elementary school subjects. In no case will a student be allowed to enroll without presenting his/her B.P.S. form 138 or Student's Report Card.

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(3) Orientation or Field Try-Out Period. - Every applicant for enrollment is required to undergo orientation or try-out for a period of two weeks, to determine his/her background experiences in and attitude towards farming, and interest and aptitude in field activities before taking the intelligence test. The purpose of the try-out and intelligence tests is to avoid unnecessary drop-outs due to misfits or wrong choice of courses in the secondary curriculum.

Orientation period began on May 15, 1970. In reporting for the field try-out and orientation period, students were required to present their B.P.S. Form 138 or its equivalent and provide themselves with the necessary tools and materials needed during the two-week period, such as sickles, boloes, grub hoes, hats, working clothes, blankets, mosquito nets, food supplies, etc.

All faculty members were required to report for duty on July 6 to help register, organize and conduct orientation classes aside from preparation of course outlines, audio-visual aids, teaching aids, action program of work, and preparation of the classrooms. All members of the faculty and personnel with the students registering were required to undergo medical and physical check-up at the College Clinic on July 6-10.

Classes formally opened on July 13 with orientation programs for the High School and College Students.

With the adjustment made due to the formal opening of classes on July 13, instead of July 6, the 1970 College Calen-

dar was prepared 40 weeks for the whole school year, excluding the Christmas and the Long Summer Vacation.

Enrollment. - The enrollment period for all students boys and girls, was on July 6-10, 1970. Only those prospective first year students who successfully passed the field try-out or orientation test were enrolled.

The first honors were free from the tuition fee of ₱20.00 but not the other school fees. The second honors were charged half the tuition fee of ₱20.00 and that was only ₱10.00 but they paid all other school fees.

The school fees charged were:

(1) Tuition Fees	₱20.00
(2) Matriculation Fee	4.00
(3) School Paper (Mt. Breeze)	3.00
(4) FFP or FAHP	2.00
(5) MSSBG	2.00
(6) Deposit (Refundable)	10.00
(7) PMT (For 3rd & 4th Year boys)	0.50
(8) Library Fee (New Students)	0.50
(9) Medical-Dental Fee	1.50
TOTAL	₱43.50

Following the existing admisstion requirements of the College, only a limited number of selected freshmen were admitted after having passed a 10-Day Field Trial and Screening Test. Due to the lack of rooms and equipment, as well as staff to handle additional classes, about 100 qualified applicants for enrollment were refused admission.

During the School Year 1970-1971, there were 745 students distributed as follows:

	First Year	Second Year	Third Year	Fourth Year	Total
Boys	173	96	95	88	452
Girls	109	71	59	54	293
TOTAL	282	167	154	142	745

Of the 142 students enrolled in the fourth year, seven dropped out due to financial difficulti s and three failed to complete the requirements for graduation. A total of 132 fourth year students out of the 142 officially enrolled graduated on May 25, 1971.

From the first year to the third year, there were 54 drop-outs; and 36 failed to complete the requirements for promotion to the next curricular year.

Drop-outs and failures are broken down as:

	Drop-Outs	Failures	TOTAL
First	33	15	48
Second	10	6	16
Third	11	15	26
TOTAL	54	36	90

The total of 90 drop-outs and failures constitutes 14.93% of those officially enrolled from the first year to the third year.

This number represents those who could not cope with the requirements and who were either failed or dropped. This is in line with the administration's policy of producing quality graduates.

Teachers' Assignments

(1) Related Subject Teachers. - Of the 14 related subject teachers, 12 are section advisers with a maximum load of six periods of 40 minutes each, two are non-advisers with one having six periods of 40 minutes each, and one with six periods of 40 minutes each and adviser of the Secondary Department official school organ, THE MOUNTAIN BREEZE.

(2) Vocational Department Teachers. - Of the 16 Vocational department teachers, eight are agriculture teachers with maximum load of nine periods of 40 minutes each and minimum load of six periods of 40 minutes each and sub-chapter advisers of the Future Farmers of the Philippines, as well as athletic coaches; five are homemaking teachers with a maximum load of nine periods of 40 minutes each and a minumum load of three periods and in-Charge of the School Canteen. Four homemaker teachers are section advisers as well as sub-chapter advisers of the Future Agricultural Homemakers of the Philippines; Three are Farm Mechanics teachers with maximum load of six periods of 40 minutes each and a minimum load of two periods with some college load and supervises constructions undertaken by the administration.

Aside from their teaching assignments, most of them are advisers of student organizations on the school campus.

Classroom Instructions

(1) Related Subjects: (a) Language Department - (1) Pilipino. - Inasmuch as the students are non-Tagalogs, most of the lessons taught were on vocabulary building designed to give the students a general vocabulary that they could use in their everyday life -- at home, at school, and in the community. Grammar was taken up with phases that had immediate bearing on the daily speech of the students and only when the need arose.

Stories, poems, songs, and proverbs were also taught to provide opportunity for the development of appreciation of Philippine culture and civilization and for teaching health, work habits, good citinzeship, and character.

For the whole school year, the students were required to write six formal themes and twelve informal themes.

The Freshmen Class Organization went on an educational tour to Bauang Beach, Pepsi-Cola Bottling Plant, and Poro Point, San Fernando, La Union in connection with their lessons in General Science, Reading, and Pilipino.

(2) English. - In the lower years, the emphasis was on the sentence sense, sentence and paragraph use structure, verbs, modifiers, composition, public speaking pronunciation, oral communication, and vocabulary in Grammar and Composition. In Literature, home, outdoor, world adventure,

laughter, imaginative and fancy, stories, poems, songs and proverbs were taught to provide opportunity for the students to appreciate the local, national and international literature.

For the higher years, emphasis was on the simple and perfect tenses, outlining, debate, verbals, verb rules, British Literatures, Application Letters, English Essays, The Dramas, Parts of Speeches, Capitalization and Punctuations, Heritage of American Literatures, American Poetry, and World Literature. These were achieved through readings, story telling, character analysis, event analysis, paraphrasing, drills, lectures, exercises, observation, etc.

(b) Mathematics and Physics Department

(1) Algebra. - In Algebra the point of emphasis was on the mastery of the fundamental concepts and the relationship of algebraic quantities and a continous diligent practice and review of the fundamental algebraic process and operations, expressions and derivations of formulae from the table of related quantities and the like, the fundamental operations with signed numbers, fundamental operations of monomials, binomials and polynomials, special products and factoring, equations and problems, systems of linear equations and problems, powers and roots to mention a few.

(2) Modern Mathematics. - In Modern Mathematics the point of emphasis was on the following: the sets, numerations, operations and properties of whole numbers, introduction to integers, factors and primes, rationals, sets of points, measurements, and graphing.

(3) Applied Physics. - In Applied Physics the emphasis was on the first-hand knowledge of phenomena involving principles and laws of Physics, the development of scientific attitudes and realization the significance of the scientific methods of dealing with problems, acquisition of skills in manipulating instruments and conducting experiments correctly, the role of Physics as a science in the development of modern teachnology, comprehension of the principles and laws of Physics related to daily activities, development of interest in Physics and all phases of science and technology, and development of appreciation and sense of gratitude to the people who labored unselfishly in the pursuit of scientific truths.

As far as the subject matter is concerned, it was started right, but no outstanding accomplishments were done. With the desire to improve the contents of the subject new laboratory manuals were reproduced patterned after the new physics manuals donated by the Senior Class Organization last school year. The Administration purchased enough new books and references and numerous new equipment for laboratory use. As a result of these purchases, 30 class experiments were performed. As a part of the training, the Physics Classes went for an excursion to gain experience along with the subject to Santo Tomas Radar Station in Baguio and Manila.

(c) Natural Sciences. - In the Natural Sciences the points of emphasis were as follows: (1) General Science. - The development of the ability to understand some general information con-

cerning scientific facts and principles, to arouse the interest of the students about the world around them to understand the scientific principles involved in the construction and operation of many everyday devices, to develop the scientific method of solving problems as well as personal problems, to develop skills in handling and manipulating simple apparatuses, and to instill the wise use of leisure time and stimulate creative ability.

(2) Biology. - In Biology, the practical understanding of the various forms of life in their natural environment, the natural explanation of biological phenomena which one may see, development and understanding of the scientific concepts, and the symbiotic relationship between organism.

The students of General Science and Biology went on an educational tour to San Fernando, La Union and neighboring towns, and to Darigayos Beach, La Union, respectively. The purposes of the tours were: (a) to make a comparative study of the weather conditions prevailing in the highland and that of the lowland provinces, (b) to make a comparative study of the different vegetations in the Highlands, and those in the Lowlands, (c) to gain new insights and experiences regarding the nature of the sea - its behavior as well as of the living things that dwell therein for General Science, and (d) to collect specimens as well as to undertake a comparative study of the different animals existing both in the Highlands and in the Lowlands, for Biology.

(3) Chemistry. - Emphasized were the concept of science and its method of study, differentiation between matter and energy - their properties and characteristics, differentiation between substance, elements and compounds, chemical reactions, equations and calculations, symbols and valence of elements, the fundamental laws in Chemistry, solutions, physical and chemical properties of water, hydrogen, etc., electrolysis, the atmosphere - its nature, composition, and other characteristics, the occurence, preparation, properties and uses of metals used in industry.

(d) Social Sciences. - In the Social Sciences, the points of emphasis in the different courses were as follows:

(1) Philippine History. - This is a whole year subject taught three times a week during the first semester and two times a week during the second semester. Philippine Political, Social, Economic, and Cultural History were emphasized.

(2) Philippine Government. - A whole year subject, it was taught two times a week during the first semester and three times a week during the semester. Philippine social, political and economic development of the Government were emphasized.

(3) World History. - This is semestral subject taught during the first semester. The points of emphasis were on: The Civilizations Begin in Four Valleys and spread Through the Ancient World, Formation of Citizenship in Greece and Rome, Religions Take Leadership in Europe, Africa, and Asia, Classes Divide the Societies in Europe and the East, The West Takes the Lead as the Modern Age Begins, The West Divides into Independent

European and American Nations, The Growth of Democracy in Western Nations, Scientific Thinking and Machinery Revolutionize Everyday Living, Imperialism and Imitation Spread Western Ways Around the World, and World-Wide Tensions Challenge.

(4) Vocational Education. - This is a semestral subject taught during the school semester. Emphasized were the Orientation, Scope and Content of Vocational Education in the Philippines, Its Objectives, Problems, Functions and Accomplishments.

(5) Physical Education. - In Physical Education, the points of emphasis were on Physical Fitness, Lead-up Games, Calisthenics and Specialized Athletics.

(2) Vocational Department. (a) Vocational Agriculture. - In Agriculture I, the point of emphasis was on Horticulture with basic information on Animal Husbandry, Field Crops, and Farm Management. In Agriculture II, the point of emphasis was on Animal Husbandry with related information on Horticulture, Field Crops, and Farm Management. In Agriculture III, the point of emphasis was on Field Crops with related information in Horticulture, Animal Husbandry, and Farm Management. In Agriculture IV, the point of emphasis was on Farm Management with related information on Horticulture, Animal Husbandry, and Field Crops.

(b) Agricultural Homemaking. - In Agricultural Homemaking I and II, the points of emphasis were on the home and family, related and applied arts, handicraft, textile and clothing, foods and nutrition. In Agricultural Homemaking III, the specializations were on clothing, child care and guidance, handicrafts and foods. In Agricultural Homemaking IV, the specializations were on home and family relations, home management in the lecture phase, and handicrafts, foods clothings, and gardening in the laboratory phase.

(c) Farm Mechanics. - In Farm Mechanics I, the emphasis was on shop orientation and safety, farm hardwares and supplies, tool conditioning, rope work, painting, fundamentals of woodworking and carpentry, fences and gates, farm forge work, and cold metal work. In Farm Mechanics II, the emphasis was on safety shop practice, estimation and use of farm hardwaros and supplies, tool conditioning practice, basic woodworking and carpentry, painting practice, basic sheet metal work and soldering, pipes and plumbing, glazing, and farm machineries. In Farm Mechanics III, the emphasis was on farm drawing, tool conditioning practice, advanced woodworking, and building construction, advanced sheet metal and soldering, concrete work glazing, electric arc welding, oxy-acetylene welding, and farm electricity.

(3) Preparatory Military Training. - The instruction was oriented to the national objectives which are as follows: (a) To develop the national spirit, (b) to make the youth phy-

sically strong, (c) to make the youth morally confident, (d) to prepare the youth for military service, (e) to prepare the youth for more advanced military training, and (f) to develop respect for superior authority and rights of others.

C. MAJOR ACCOMPLISHMENTS

Graduates

Preparatory Military Training. - Of the 114 PMT cadets and cadettes enrolled in PMT and WAS IV, 109 completed the requirements prescribed in the AFPF G 314-031 and received their Certificates of Graduation issued by the College. In PMT and WAS III, 122 completed the requirements and were promoted out of the 138 officially enrolled.

Candidates for Graduation. - There were 50 candidates for graduation from the Secondary Agricultural Homemaking Curriculum and 82 candidates for graduation from the Secondary Agriculture Curriculum for School Year 1970-1971. They were declared graduates and received their diplomas during the Commencement exercises on April 25, 1971.

Production Income

The following were the accomplishments of the Vocational Agriculture Teachers in their respective production projects:

Vocational Teachers	Assignment	Production Income
1. ALIPIT, PERCIVAL B.	Agriculture & Field Work III	₱4,313.76
2. BUASEN, CARLOS T.	Field Work IV	1,552.04

Vocational Teachers	Assignment	Production Income
3. CASIWAN, DOMINGO Q.	Agriculture IV	None
4. CRUZ, AMANCIO A.	Agriculture I	None
5. DAMPILAG, DARIO D.	Agriculture & Field Work III	₱1,720.27
6. DOPLITO, NICANOR A.	Agriculture & Swine	201.30
(SANCHEZ, PEDRO S)	Project (College)	9,262.25
7. GIBSON, ADRIANO T.	Agriculture II & Floriculture Project	1,008.14
8. MARTES, JUAN P.	Dairy Project	1,206.50
	Fieldwork IV	2,426.80
9. PARAN, ARTHUR L.	Farm Mechanics II & III .	229.75
10. SANO, ELMO	Agriculture I	4,109.50
11. CANUTO, FRANCISCO	Farm Management	
DAYAOEN, DADO B.	Supervised Farmers	18,043.51
LABI, ALFREDO B.	FM Administration Proj..	520.50
	SUB-TOTAL	₱44,593.32

The following were the accomplishments of the Technical Agriculture Teachers in their respective production projects:

12. MORESTO, SYDNEY E.	Poultry Project (Col.) .	₱15,880.75
13. MONROE, TEODORA Z.	Food Technology (Col.) .	679.60
14. SAUYEN, HANSEN G.	Rabbitry (College)	229.75
	SUB-TOTAL	₱16,790.10
GRAND TOTAL AS OF JUNE 10, 1971		₱61,383.42

The summarized report on farm production is found in the table hereunder for 1970-1971:

A. Crops Raised	Income Derived
1. Potatoes (Irish)	₱11,452.00
2. Beans (Baguio)	2,826.28
3. Garden Peas	2,378.72

	Income Derived	
4. Cabbage	₱1,733.16	
5. Green Bunching Onions	1,560.77	
6. Chinese Cabbage (Heading Type)	925.10	
7. Lettuce	879.95	
8. Tomato	541.85	
9. Cucumber	509.20	
10. Chinese Cabbage (None-heading type)	247.12	
11. Carrots	44.70	
Sub-Total		₱23,098.93
B. Others		
1. Strawberry	₱10,284.46	
2. Flowers	1,008.14	
3. Gabi	78.95	
4. Bananas	61.85	
5. Corn	38.25	
6. Sweet Potatoes	8.25	
Sub-Total		₱12,479.40
C. Animal Projects		
1. Dairy Project	₱ 1,206.50	
2. Poultry Project (College)	15,880.75	
3. Swine Project (College)	9,262.25	
4. Rabbitry (College)	229.75	
Sub-Total		₱26,580.25
D. Farm Mechanics	₱102.00	
E. Food Technology (College)	₱679.60	
Sub-Total		₱ 781.60
GRAND TOTAL AS OF JUNE 10, 1971		₱61,383.42

The grand total of production income in the amount of ₱61,383.42 as of June 10, 1971 represents the gross production income derived from the animal and poultry projects and administration vegetable projects and the net production income (25% of the college share from the student and supervised farm-

ing programs.) This year's production income exceeds that of last year in the amount of about ₱19,000.00.

To serve as springboards for better decisions toward increased production, an analysis on the production income derived this year on a per hectare basis will be made. The focal point of interest in this analysis will necessarily be to discover the expected margin from particular crops raised in a hectare of land based on this year's farm data on crops grown, areas utilized, expenses incurred, and time of planting. From the analysis may be drawn some conclusions on money crop prospectus and planting calendar to maximize farm production.

Prize for Most Productive Student Farmers

During the Achievement Day Program on April 23, 1971 in connection with the Commencement Exercises of the College, Mr. Jack Dulnuan, a successful agri-businessman and a civic-minded citizen, donated a cash award of ₱1,000.00 to the 12 most productive student farmers of the Secondary Department. The recipients of this award were the first three highest producers of each of the first to the fourth year classes of the Secondary Department. The awardees deposited their prizes with the Philippine National Bank.

D. PROBLEMS ENCOUNTERED

1. Inadequate textbooks, reference books, laboratory manuals, laboratory equipment, apparatuses, supplies and materials, cabinets, tables, armchairs, farm equipment, tools

and farm capital.

2. Overloading of students per section and overloading of teachers, especially the vocational teachers.

3. Disruption of class instructions due to student demonstration, boycott of classes, too many teacher's meetings, shortened periods, teachers' absences, teachers coming to school late, and inability of the school to provide enough supplies and materials.

4. Time allotment of 120 minutes only in Agriculture I and II in the new curriculum is too short.

5. Poor irrigation and drainage system in the farm as well as around the school plants.

6. No General College Tool Room and Storage Room for our farm tools and farm products.

7. No service credits given to vocational teachers, specially those In-Charge of Animal Projects and Vegetable Projects.

8. Rampant stealing of farm crops and other college properties in all the Vegetable Projects.

9. Poor water supply for domestic use (drinking, toilet use, and laboratories).

10. Inadequate housing facilities for teachers as well as students.

11. Squatters, trespassers, and astray animals.

E. RECOMMENDATIONS

1. The general complaint of the secondary teachers is on the inadequacy of classroom facilities such as new editions of textbooks, reference books, laboratory manuals, etc. It is therefore, recommended that more updated textbooks, reference books and laboratory manuals be purchased to have instruction abreast with the changing times. Laboratory apparatuses, supplies and materials, cabinets, laboratory tables, well-equipped laboratory room should be provided for a better teaching-learning process.

2. The classrooms were designed for a 35-40 students capacity to insure teaching-learning situation to a certain level. Due to lack of classroom facilities, some students used benches and wrote on their laps during class recitation. It is recommended that enrollment be limited to 40 students per section so that all the students in the classroom will be seated properly to make the situation conducive to learning.

3. Facilities and equipment are always lacking in our college because of inadequate funds. It is, therefore, recommended that the college farms be exploited to the maximum to provide supplementary sources of income for the purchase and acquisition of the nedessary facilities and equipment, both for the farm and classrooms. It is further recommended that a general toolroom be operated to store all the college farm tools and a storage house be provided for storing farm productions to centralize marketing of the college produce.

4. It is recommended that the Secondary Program be structured on the basis of the 12-month school calendar since work on the farm is continous throughout the year. The time allotment in Agriculture and Homemaking I and II should be increased to five periods and time allotment in Farm Mechanics should be increased to two periods each as time is very vital in production. Productive project teachers should be on the vacation-sick-leave basis.

5. It is recommended that selective admission be continued to attain qualitative improvement in the Secondary Department within the limited financial resources, buildings, equipment and facilities. A recommended set of criteria for selective admission are scholastic standing, farm origin, farm work experiences, age, physical fitness, aptitudes, and honest desire of students to prepare themselves for farm life and higher learning in agro-industrial colleges.

In other words, all applicants will be admitted, but there should be selective admission to the Vocational Agriculture and Agricultural Homemaking curricula. Other students not admitted to the Vocational Agriculture and Agricultural Homemaking Curricula should be offered other short curricular alternatives such as handicrafts, tractor mechanics, carpentry, typing, stenography, and other short courses that are in demand.

6. It is recommended that teachers continually do their level best to enrich their course contents with teaching units

that have relevance to the problems and needs of the individual and the community.

7. It is recommended that all production projects should be operated to produce profits, not just demonstration projects to reflect the principles of increased and gainful production. The management skills to run the project on a business-like manner must be part of the teaching content. At the end of fiscal year, a farm business analysis should be made.

8. Interagency cooperation should be encouraged in order that the resources - personnel, materials and equipment - of one agency may be used more effectively in the teaching of vocational agriculture.

9. Squatting and land grabbing are problems in the school site. It is recommended that strong representations be made with the authorities concerned, possibly with the Office of the President of the Republic of the Philippines, for possible measures to be adopted to resolve the squatting and land grabbing problems in the school. Likewise, Congress should initiate certain legislations that would discourage squatting and land grabbing of school sites. Efforts should be exerted to acquire the land titles for the school reservations and the court action be used as the legal means.

10. It is recommended that the PASUC Pay Plan be adopted as soon as the financial status of the college so warrants.

PART III. COLLEGE DEPARTMENT

A. ORGANIZATIONAL SET-UP AND CONDITION

Organizational Set-Up

Under the direction and supervision of a Head of the College Department, the collegiate department is divided into three sub-departments, namely, (1) Agricultural Education, (2) Agricultural Homemaking, and (3) One-Year Post-Secondary Farm Mechanics.

With a Supervisor of Student Teaching and a Secondary Principal heading the High School Department, the College Head coordinates the on-campus and off-campus teaching experiences of student teachers pursuing their degree in Bachelor of Science in Agricultural Education (BSAE) and Bachelor of Science in Agricultural Homemaking (BSAH).

The teacher education students were trained to become proficient high school teachers in the fields of specialization, namely, Agronomy, Animal Husbandry, or Agricultural Engineering and Food Technology. These students took optional courses in elementary education to qualify them to teach in the elementary schools as Industrial Arts or Home Economics teachers.

With the College Head were 20 faculty members who managed to give the best there was to more than 400 college students enrolled during the year.

Of the 20 faculty members, nine are masters degree holders, one is working on his doctoral dissertation, two have

doctoral units, two are working on their master theses, and seven, two of whom are detailed, have masterial units.

College Entrance Examination

In May and June 1970, a total of 289 applicants took the College Entrance Test. of this total, 145 were boys and 135 girls. Admitted for the first year classes were 101. A total of 168 were refused admission owing to lack of rooms and items for instructors' positions.

College Enrollment

During the first semester of 1970-1971, a grand total of 437 college students were enrolled. Of this total, 212 were BSAE students, 203 BSAH students, and 22 One-Year Post-Secondary Farm Mechanics students.

The cross-sectional distribution of the first semester enrollment follows: (1) BSAE - 212 (1st year, 60; 2nd year, 46 of whom 35 were boys and 11 girls; and 5th year, 24 of whom 22 were boys and two girls.)

(2) BSAH - 203 (1st year, 61; 2nd year, 35; 3rd year, 44; 4th year, 42; and 5th year, 21.)

(3) One-Year Post-Secondary Farm Mechanics Course - 22 boys.

During the second semester of 1970-1971, a grand total of 403 college students were enrolled. Of this total, 192 were BSAE students, 190 BSAH students, and 21 One-Year Post-Secondary Farm Mechanics students.

The cross-sectional distribution of the second semester enrollment follows: (1) BSAE - 192 (1st year, 54; 2nd year, 32; 3rd year, 48 of whom 41 were boys and seven girls; 4th year, 51 of whom 41 were boys and 10 girls; and 5th year, seven of whom six were boys and one girl.

(2) BSAH - 190 (1st year, 57; 2nd year, 33; 3rd year, 44; 4th year, 43; and 5th year, 13.)

(3) One-Year Post-Secondary Farm Mechanics Course - 21 boys.

College Dropouts

During the year, a total of 34 students dropped out. Of this total, 20 BSAE students of whom 15 were boys and five girls and 13 were BSAH students and one One-Year Post-Secondary Farm Mechanics student were dropped from the rolls of the College. They were not re-enrolled on account of poor scholarship and financial handicaps.

College Graduates

A total of 30 college seniors successfully completed the requirements for their baccalaureate degrees during the first semester. Of this total, 18 were BSAE seniors of whom 17 were boys and one girl and 12 BSAH seniors.

During the second semester, a total of 82 sucoessfully completed the requirements for their degrees. Of this total, 37 were BSAE seniors of whom 26 were boys and 11 girls; 24 were BSAH seniors and 21 One-Year Post-Secondary Farm Mechanics students.

Conferred their degrees and issued their diplomas on April 25, 1971 were 112 college graduates of whom 55 were BSAE, 36 BSAH, and 21 One-Year Post-Secondary Farm Mechanics graduates.

Placement

Of all these 112 college graduates, only five of the first semester graduates were employed in various agencies of the government. Of the five, three BSAH graduates were employed as elementary school teachers in the Division of Schools for Benguet; one BSAE graduate was employed in the Agricultural Productivity Commission, La Trinidad, Benguet; and one graduate was employed in the Agricultural Productivity Commission, Calapan, Mindoro.

Five of the second semester graduates of whom four were BSAE and one BSAH graduate were recommended as high school teachers in the newly-opened Apayao Agro-Industrial High School, Calanasan, Kalinga-Apayao.

A greater bulk of the graduates of 1971 are now seeking employment in the Land Reform Commission, Philippine Rural Reconstruction Movement, Rural Bank in the Philippines constituting the Rural Banking System, Agricultural Productivity Commission, Presidential Arm on Community Development, and private commercial agri-business firms.

Faculty Research-Extension Committee

Despite lack of definite funds for research and extension services of the College, a faculty research-extension committee

was formed to plan and strengthen the research-extension function of the College.

Members of this committee were drawn from the various disciplines with the end in view of making more dynamic the interaction of the different sectors of the College and the public to undertake together researches calculated to advance the scientific and soci-economic development and progress of the life of the rural people.

Office of the Registrar

This Office has been discharged by a College Registrar with the assistance of one casual employee and one Clerk I who also helps the Head of the College Department in the clerking phase of the functions of the College Department.

Accomplishments of the College Department

Following were some of the salient accomplishments in the College Department:

1. The development of a Rabbitry Project started out of more than 50 rabbit stocks donated by the Rev. Juan B. Sicwaten, Worker Priest of the Philippine Episcopal Church.

2. Cultivation of every inch of the College Laboratory Farm during the growing season by the students in their field exercises and college independent student farmers. The college shares from these farm enterprises had been collected by the Farm Management of the institution.

3. Preparation and submission of research proposals for fundting, such as the following:

a. "Corn Production" with a total project cost of ₱70,000 submitted to the National Science Development Board and National Food and Agriculture Council.

b. "Vegetable Seed Production" which includes various vegetable seed production and storage, plant protection studies on different vegetable crops, and studies on cultural practices with a total project cost of ₱303,000 submitted to the National Science Development Board.

c. "Establishment of a Food Processing Laboratory for the MSAC and Community Canning Plant for the Province of Benguet" with a total project cost of ₱360,000 submitted to the Asian Foundation.

d. "Operation of a Food Service Center and Nutritional Laboratory" with a total project cost of ₱450,000 submitted to the United Nations Development Program.

4. Partitioning of the College Social Hall to accommodate the technical agriculture and home technology classes ejected by the Benguet Provincial Board in September 1970. One of the rooms was temporarily designated for Instructor's Office and Workroom.

5. Completion of the Physics and Chemistry Stock Rooms adjoining the Mathematics & Physics and Chemistry Laboratory Room.

6. Initial establishment of a Botanical Garden planted to more than 200 different kinds of fruit and ornamental trees for acclimatization east of the College Related Subjects Building.

7. Transfer of banana suckers and some landscape planting materials from a sector of the former area of the College Department, taken over by the Municipal and Provincial Governments, to the campus of the College Department.

8. Transfer of the barbed wire fences from the rotten posts to the agoho tree borders of the College Laboratory Farm.

9. Holding of summer vacation classes for teachers in the field and college students.

10. Successful cooperation with the UPCA Animal Husbandry Department on a "Study on the Performance of the Inbred Lines of White Leghorn Developed in UPCA."

11. Successful cooperation with IRRI on a research at the College Lab Farm on Cowpea-Sweet Corn Intercropping.

12. Successful growth on one paddy of standing sweet corn plants for seed production at the College Lab Farm.

B. MAJOR ACCOMPLISHMENTS

Constructions

The following were constructions and reapairs done during the year: (1) Repair of the 15' x 100' Greenhouse of the Farm Management; (2) Construction of two 13' x 80' Greenhouse for the Floriculture Project; (3) Flooring of the second floor of

the Administration Building; (4) Manufacture and installation of iron grills of the Farm Shop Building; (5) Partitioning and changing of the decayed back wall of the Girls' Dormitory;

(6) Construction of a shed for the electrical equipment of the pump of the artesian well; (7) Installation of two partitions of the second floor of the College Related Subjects Building; (8) Making of three book shelves (1' x 6' x 6') for the College Library; () Transfer of the porch and door of Mr. Rodolfo Abastilla's cottage; (10) Transfer of the porch and doors of Mrs. Letty June Pasco's quarters;

(11) Construction of a toilet and septic tank for Mrs. Pasco; (12) Construction of a septic tank for Miss Erlinda B. Tolentino; (13) Construction of one toilet and one bathroom for the Girls' Dormitory; (14) Construction of a small kitchen for Mrs. Felicidad Fernandez; (15) Plastering the back of the Home Economics Building and the College Clinic Building;

(16) Minor repairs in the different school buildings and teachers' cottages such as changing of broken window glasses, destroyed door and window sashes, decayed floors, plastering leaking roofs, etc.; (1&) Making different projects for the development of skills in the Farm Mechanics and Agricultural Engineering courses; (18) Concreting of the frontage of the Administration Building and making of concrete flower boxes around the Administration Building;

(21) Construction of outdoor twin toilets for the College and High School Related Subjects Buildings; (2) Construction of two (six bowls each) toilets for the College Related Subjects Building; (23) Construction of one (four bowls) toilet for the College Clinic; (24) Conditioning of the surplus School Bus acquired by the College and of the damaged F-350 Pick-Up which figured in a collision when it was returning from Olongapo; spare parts were not available.

(26) Diagnosis of the major defect of the School Jeep; major overhaul was needed for its economic operation; (27) Re-babbiting of the worn-out con-rod of the diesel engine driven irrigation pump and subsequent replacement of the [illegible]ring-out water seals; (28) Installation of the deep well submersible pump; (29) Installation of the special electrical transmission line for the pump; (30) Installation of the aerial pipelines across the river; (31) Construction of facilities for the Children's Playground in cooperation with Barrio Betag Council; and (32) Land preparation of administration truck garden areas and projects.

On progress is the construction of the College Library Building which is expected to be finished in August 1971.

Faculty Development

At least once a month throughout the year, the College Council met with the President and discussed problems aimed at improving administrative and supervisory functions as well as

academic and field instructions. Emphasis was given on inter-disciplinary approaches in a manner that the core curriculum, being technical agriculture, should be the focal point of instruction, research, and extension.

Instructors, except for a few, attended night and Saturday graduate classes in the private colleges and universities in Baguio. Aside from these opportunities, instructors according to their fields of specialization were designated to participate in various professional conventions and seminar-workshops in almost all fields in Baguio and Benguet, U.P. College of Agriculture, and other colleges and universities in the country.

Toward the end of the year, the Administration recommended for graduate study grants two faculty members for SEARCA scholarships, two for the ACAP MTA program, two for the U.P. Farm Management scholarships, and two for the U.P. graduate scholarships. One was named for financial assistance by the ACAP in his doctoral dissertation

Conferring of Degrees & Awarding of Diplomas

Conferred their degrees on April 25, 1971 were 91 college graduates. Of this total, 55 were BSAE and 36 BSAH graduates.

Awarded diplomas were 21 One-Year Post-Secondary Farm Mechanics graduates.

Awarded diplomas by the Department of Army Science and Tactics were 70 graduates of whom eight were Advanced ROTC, 51 Basic ROTC, and 11 WATC.

C. PROBLEMS ENCOUNTERED

The following were some of the needs and major problems encountered in the College Department.

1. Limited working spaces for the students during their shop and laboratory work due to lack of rooms and congestion of classrooms owing to lack of space for storage of instructional materials. This problem was aggravated in 1969 when the Municipal Government demolished the College Farm Shop Building and last September 1970 when the Provincial Government ejected the college technical agriculture and home technology classes from the old Main College Building which was renovated by the Province for a Provincial General Hospital.

2. Teaching overloads of several technical agriculture and agricultural engineering instructors due to lack of instructors.

3. The College Department Office has been undermanned. The Head of the College Department does not have a clerk who will devote his full time for correspondence and report as well as for typing and mimeographing syllabi, instructional materials, and laboratory manuals.

4. Lack of a suitable Guidance and Counselling Clinic with a staff and at least a clerk to assist on the work on guidance forms and records.

5. Inadequate laboratory facilities including books in the teaching of biological sciences, chemistry, mathematics and physics, English, Pilipino, Spanish, Animal Husbandry, Agronomy, Agricultural Engineering, and Home Technology courses.

6. Inadequate water for the livestock and poultry projects, laboratory rooms, home technology exercises, and irrigation water for the feed grains production of the animal and poultry projects.

7. Inadequate funds for the immediate purchase of antibiotics and veterinary drugs for the treatment of sick animals and birds and other emergency needs.

8. Need for a clear-cut division of the College Department into sub-departments to be offficially chairmanned or headed by various heads.

9. Big classes due to lack of instructors and lack of rooms.

10. Lack of a speech clinic due to lack of funds for a tape recorder and other audio-visual aids.

11. Need for faucets and pipes for water connection and installation of electric outlets in the Physics, Chemistry, and Biological Sciences Rooms.

12. Need for Biological Sciences standard laboratory tables and microscopes.

13. Need for setting up a Foods and Processing Laboratory.

14. Need for the complotion of Chemistry Laboratory tables, gas and water lines.

15. Need for a separate Home Technology Building complete with laboratory facilities and with a little canteen on the first floor and need for a separate Home Management Building with complete equipment and facilities.

16. Need for at least four qualified technical agriculture instructors and one qualified agricultural engineering instructor.

17. Need for the immediate repair of the Incubating and Brooding House damaged by a typhoon two years ago.

18. Need for expanding the livestock breeds and employment of regular animal caretakers.

19. Need for a general faculty meeting at least once a month during which reports of faculty members designated to participate in seminar-workshops will be presented and discussed for implementation.

20. Need for strengthening the farm mechanization program of the College with the procurement of at least one hand-tractor.

21. Need for one spacious Faculty Office or Workroom equipped with tables, chairs, cabinets, one typewriter, and one calculator; and employment of a clerk-typist to take care of the room and take charge of the paper work needed by instructors.

22. Need for the replacements by the Municipal Government and Provincial Government of the old College Farm Shop Building and old Main College Building, respectively, and also

the costs of student donations and landscape improvements such as the Iron Gate (₱500), Concrete Iron Gate Pillars (₱200), Concrete Gate Sidings (₱200), Main Concrete Pavement leading to the old College Building (₱400), Concrete Pavement cutting through the College Lab Farm (₱1,500), Two College Concrete Toilets (₱600), One Gatehouse (₱50), Two Open Concrete Urinals (₱400), Two Concrete Incinerators (₱200), One Rainbow Garden (₱200), One Star Garden (₱100), and one Clock-Garden (₱100).

Aside from these, the Municipal Government and Provincial Government of Benguet have not yet reimbursed the costs of plants and improvements destroyed at the former College Grove in the amount of ₱2,000 and at the College Lab Farm where the Municipal Hall now stands in the amount of about ₱1,500.

D. RECOMMENDATIONS

Organization and Staffing Needs

1. Appointment of Sub-Department Heads. - It is now time that the organization of the College Department be streamlined for the moment as an initial move with a provision for more funds to effect the division of the department into sub-departments, namely, (a) Agriculture, (b) Agricultural Education, (c) Agronomy (d) Animal Husbandry, (e) Agricultural Engineering, and (f) Home Technological Education. Recommended is the appointment of sub-department chairmen or heads with the commensurate up-graded salaries. A list of definite functions of each with those under them should be drawn up.

2. Needs for New Instructors. - The College now has one Seed Technologist, several Agricultural Education Specialists, one Agridultural Economist, and other instructors who fit into the needs of the College. For next school year, there is urgent need for the employment of the following:

a. One Plant Breeder or Plant Pathologist or Entomologist.

b. One Agricultural Statistician to help in the research extension program of the College.

c. One Agricultural Engineer

d. One Biochemist or Soil Chemist or Soil Physicist

e. One Agricultural Extension Expert

3. Research-Extension Committee. - It is recommended that a standing committee be formed to plan and execute a long-range research and extension program of the College.

Researches to be funded by the College or by outside funding agencies should be on project proposals calculated to maximize production and bring about positive influence to the rural farmers. Project proposals that are not relevant to the realistic needs of the College and the Community should be discouraged, otherwise such proposals would be just like "chasing academic butterflies."

4. Faculty: Load, In-Service Education, Development, and Meritocracy. - The following are recommended:

a. The normal teaching load of an instructor should be 15 unit-hours a week. Two or three hours of research, laboratory or field instructions will be equivalent to one lecture

hour. For production project instructors, a teaching load of two subjects and one unit-hour seminar course a week will constitute a normal teaching load. An advisership of the College Organ r the College Student Supreme Council will be equivalent to one subject load, provided a regular m[illegible]g at least once a week will be scheduled for such [illegible]lar programs.

b. At least once a month during the school year, the faculty should meet with the President for in-service growth on Saturdays during which the substance of reports from instructors participating in seminar-workshops will be presented for further discussion and implementation. As usual all instructors should be encouraged to attend night and Saturday classes in graduate courses in Baguio and during summer at the U.P. College of Agriculture.

c. Faculty members selected for study grants on the basis of priority needs, performance, and loyalty to the service should be allowed with salary to go on study leave with moral obligations to return to serve the College. A provision for salaries of substitute instructors should be provided in the budget. Instructors on study leave, on their own, shall not be entitled to their salaries which should be paid to their substitute instructors.

d. It is recommended that the faculty merit plan be perfected and finally approved to have meritocracy prevail and gradually iron out the seemingly perennial problem of salary disparities.

Buildings

1. Pre-Fab Buildings. - Recommended is a follow-up of the replacements by the Municipal Government and Provincial Government of Benguet of the old College Farm Shop Building demolished by the Municipal Government and of the old Main College Building renovated by the Province for a Benguet Provincial General Hospital, respectively.

As promised, the Municipal Government shall erect on the College Campus a two-story pre-fab building with an appropriation by the Provincial Board for the building to replace the old College Farm Shop Building. To replace the old Main College Building, the Provincial Government likewise shall give the College three pre-fabs with an appropriation of ₱50,000 to make possible the construction of a classroom building on the College Campus.

The replacements will help ease off the serious lack of classroom and laboratory room spaces for the expanding needs of the growing College. If the pre-fab buildings shall have been erected, one will serve as a Home Management Building and the other a Home Technology Building to house all the lecture and laboratory home technology classes, a Canteen, a Foods and Processing Laboratory, and several guest rooms.

2. Buildings Urgently Needed. - At present, the only one College Related Subjects Building is so congested and cluttered up with biological sciences, technical agriculture, and home technology classes that rooms are not properly structure. Aside

from this existing condition in the College Related Subjects Building and other building needs of the College: the following are recommended to be erected, repaired, or provided:

a. One Technical Agriculture Building to house all the lecture and/or research-extension classes, and probably a Seed Storage Room, and a Faculty Office or Workroom equipped with tables, chairs, cabinets, a typewriter, and a calculator.

b. One Biological Science Building

c. One Farm Mechanics Shed or Storage House for instructional equipment and materials.

d. Immediate repair of the Incubating and Brooding House damaged by a typhoon two years ago.

e. Designation of a permanent room in the new College Library Building to house the Guidance and Counselling Clinic or construction of an annex to the College Clinic for the purpose.

Laboratory and/or Field Instruction Facilities

Every year since 1954 when the College Department was opened, the College has suffered from inadequate funding by the National Government and comparatively low income of the College due to low tuition fees charged considering the fact that most, if not all, the College students enrolled, come from the low-income bracket of society. While this is recognized, it is recommended that priorities be established in

the immediate attention and purchase of urgently needed equipment, basic books, and supplies for instructional purposes such as on the following needs;

1. Urgent need for the completion of Chemistry Laboratory tables, gas and water lines; need for faucets and water connection and installation of electric outlets in the Physics, Chemistry, and Biological Science Rooms.

2. Purchase of at least two or more microscopes every year for the Biological Sciences.

3. Purchase of at least 20 or more basic references every year for each of the disciplines in technical agriculture, agricultural engineering, agricultural education, biological sciences, home technology, languages and humanities.

4. Purchase of at least five equipment every year for each of the disciplines.

5. For the languages and humanities, there is urgent need for the purchase of a tape recorder and other audio-visual aids.

6. Immediate purchase of laboratory and field project supplies and materials for instructional purposes, especially for antibiotics and veterinary drugs for the treatment of sick birds and animals.

7. Provision in the budget for an increase in the capitalization of the animal and poultry projects, including the installation of a deep-well pump for the birds and animals and installation of one irrigation pump for the feedgrains

(corn, sorghum, and soybean) production for the livestock projects and employment of regular caretakers each for the swine and poultry projects.

8. Provision in the budget for the purchase of one hand-tractor for the College Lab Farm to be operated by a regular operator.

9. Provision in the budget for the wages of at least two regular College Farm Workers to maintain the Research and/or Lab Farm.

10. Operation of a Greenhouse Agriculture during the rainy season.

Admission Requirements

1. The Annual College Entrance Test, open only to the upper 50% of secondary graduates and the retentive admission requirements in which students should have at least passed more than 50% of their study loads in order for them to be enrolled, should be retained.

2. However, flunk-out students, on account of poor scholarship, should be shifted to short agro-industrial courses to be offered when funds are available for the purpose by the College.

3. The policy of requiring 150 hours of Summer Farm Practice Program for college students who are graduates of general academic secondary schools as prerequisites to their college graduation should be continued.

Placement Services

1. The Guidance and Counselling Program should be well established and strengthened with an adequate staff including a clerk-typist and a permanent room for its office to take care of the placement services. One of the functions to be discharged by this Office should be to established contacts with as many government and private sectors and sell the services of the graduates of the College.

2. Working hand in hand with the various departments of the College and the MSAC Alumni Association, this program can do well to provide all the needed informational data for job opportunities open to the graduates of the College.

Information Media

1. Needed is a provision of an amount in the budget for the publication of an MSAC JOURNAL which contains for circulation to the public relevant agro-industrial materials for public consumption.

2. There is need for a designation of a committee to handle the mechanics of the college journal.

3. This recommendation includes preparation of scripts for broadcast over the radio or publication of farm and home technology tips designed to improve the socio-economic life of the rural people.

Maintenance of the Cleanliness of Buildings and Rooms

While the rooms as usual are being cleaned by students

under the direction of instructors in charge of the rooms, the following are recommended:

1. One janitor should be assigned on schedule to each classroom building to maintain constantly the cleanliness of the halls or corridors, stairs, toilets, and the immediate surrounding of the building. A systematic scheduling of the janitorial job should be made.

2. The janitor should see to it that the rooms are properly locked and the windows closed when the rooms are not in use.

3. The janitor should bring to the attention of the administration any repairs to be done in the building.

4. Purchase of cleaning materials for the purpose is recommended.

Legitimate Replacements of College Plants and Student Donations of Landscape Improvements

Recommended is an appeal to the Municipal Government and Provincial Government of Benguet for the replacement of the following features or improvements destroyed or altered on rendered useless for College purposes in view of the needs of the municipality and province for land spaces for their buildings and offices:

Features	Amount
1. College Grove Plants & Improvements ..	₱2,000.00
2. Iron Gate	500.00
3. Concrete Iron Gate Pillars	200.00
4. Concrete Gate Sidings	200.00
5. Main Concrete Pavement leading to the old Main College Building	400.00

Features	Amount
6. Concrete Pavement Cutting through the College Lab Farm	₱1,500.00
7. Two College Toilets	600.00
8. One Gatehouse (Middle of Two Toilets).	50.00
9. Two Open Concrete Urinals	400.00
10. Two Concrete Incinerators	200.00
11. One Rainbow Garden	100.00
12. One Star Garden	100.00
13. One Clock Garden	100.00
14. College Vegetables, Ornamental Trees, Flowers, and Banana Trees destroyed when the Municipal Hall was erected.	1,500.00
GRAND TOTAL	₱7,850.00

Size of Classes

The sizes of classes, due to lack of instructors and rooms, have been too big, 50-65 in a class. To remedy the situation, it is recommended that the size of each class should be cut down to 25-30. The employment of at least five technical agriculture instructors next school year as recommended in this report may help solve the problem of big classes.

Two Clerks for the College Department Office

Presently, the Office of the Registrar has only one clerk and one casual employee. The Head of the College Department does not have a clerk; he does the clerking himself with the assistance of the Registrar's clerk when he is not busy.

Recommended for the College Department Office is the employment of the following:

1. One clerk, who is proficient in English and is studiously devoted to his clerical task, is needed to assist the Head

of the College Department in correspondence, reports, filing, and other clerical functions.

2. One trustworthy clerk-typist, who is proficient in correspondence, record keeping and other features of clerical functions in the Registrar's Office, is needed.

Cross-Teaching

To make use of the best that there is for the training of the students, it is recommended that cross-teaching of instructors in the College and Secondary level of instruction be permitted in order that a college instructor needed in the Secondary Department in view of his field of specialization and that a secondary instructor needed in the College Department also in view of his field of specialization can be made available to the students.

An understanding in the preparation of the schedule of classes in cross-teaching should be arranged by the College Registrar and the Secondary Principal to effect this recommendation.

Supervision of Student Teaching

A system should be devised in order for the Supervisor of Student Teaching who is assigned teaching loads in education to be able to visit off-campus student teachers in co-operating schools in other provinces.

Baccalaureate Degree Programs

It is recommended that pursuant to Section 2, R. A. 5923, the College will begin to offer a four-year technical curriculum leading to the degree of Bachelor of Science in Agriculture (BSA) next school year. A curriculum design for this course should now be tailed and approved for implementation.

In this connection, it is recommended that the BSAE and BSHT curricula be revised and made more responsive to the needs of the changing society. To make the BHST degree more acceptable, especially in the field of teaching it is recommended that the degree be called "Bachelor of Science in Home Technological Education (BSHTE)."

Masteral Programs

It is recommended that the preliminary groundwork for the curricular offerings in the masteral programs leading to the degree of M. S. in Agricultural Education and M.S. in Agriculture be worked out. To be offered later as soon as sufficient funds with qualified staff and personnel will be a masteral program leading to the degree of M. S. in Home Technological Education.

Also recommended to be drawn up are rules to define policies and rules to govern and classify non-degree and degree students in the graduate programs.

Faculty and Student Handbooks

It is recommended that the MSAC Faculty and Student Handbooks be published for the information, guidance and compliance of all the constituents of the College, namely, the administration, the faculty, the studentry, and the public.

The publication of a general catalogue is also in order.

E. STUDIES AND RESEARCHES

Need for Research

One of the directions toward which instruction can be made more effective is the operation of simple and relevant studies conducted jointly by instructors and their students in connection with classroom activities. These studies are closely related to classroom instructions.

If funds are made available for research and extension, several researches designed toward the socio-economic uplift of rural communities on the self-help principle can be instituted. Such researches to maximize and utilize farm production can be directed toward more relevant needs of the service areas of the College on the following: (1) Vegetable seed production, storage, and distribution to the rural farmers at cost; (2) Feedgrains (corn, sorghum, and soybean) production; and (3) Food processing and canning farm crops and animal products.

Research Proposals for Assistance

Along research proposals for financial assistance by funding agencies, the College hopes in the years to come that its project proposals during the year on "Corn Production" submitted to NSDB and NFAC, "Vegetable Seed Production" submitted to NSDB, "Establishment of a Food Processing Laboratory for MSAC and Community Canning Plant for the Province of Benguet" submitted to Asia Foundation, and "Operation of a Food Service Center and Nutritional Laboratory" submitted to the United Nations Development Program will materialize to bring into fruition the three dimensional functions of the College on instruction, research, and extension.

Research Write-Ups

Reproduced as appendices to this report are several selected field laboratory write-ups undertaken during the year.

Appendix B covers a study on the "Placement of the Graduates of the Vocational Teacher Education Program of the Mountain State Agricultural College, 1958-1970" by the Head of the College Department. Appendix C covers a study on the "Control of Diamond Back Moth of Wongbok in La Trinidad, Benguet" by an Agronomy Instructor.

The other materials for Appendix D, E, and F are samples of field experiments undertaken by students. They were prepared by agronomy students under the direction of Agronomy Instructor Demetrio S. Somera who guided them in conducting the field ex-

periments. The write-ups were corrected by English Instructor, Mrs. Isabel B. Rabina, who in her English 301 (Technical and Scientific Reporting) which these students were taking guided them to prepare their research report.

In other words, the preparation of these write-ups was made possible through the use of a cooperative aspect of interdisciplinary approach where, in this particular instance, simple researches in Agronomy were happily woven into the fabric of instruction relevantly integrated with English 301.

Appendix D covers a study on the "Effect of Different Kinds of Fertilizers on the Growth of Onions" by Edward Inchan, Agronomy Student. Appendix E covers a study on the "Control of Pechay Pests" by Nicomedes B. Alipit, Jr., Agronomy Student. Appendix E covers a field experiment on "A Comparative Study on Two Insecticides for the Control of Pechay Worm" by William Ambona and Luis Maswengi, Agronomy Students.

Of interest are studies required of all Food Technology 107 students under Miss Erlinda B. Tolentino, instructor, who ably guided her students in their experiments and studiously edited their write-ups as to format, English, style and content.

Among many studies conducted by the Food Technology 107 students, only a few samples are incorporated in appendices of this report as follows: (1) Appendix G - A study on the Utilization of Dilis Flour (Laura A. Agayam); (2) Appendix H - Uti-

lization of Pigeon Pea Flour (Erlinda S. Sonido); (3) Appendix I - Control of Discoloration in Dried Persimmon (Josephine W. Tibong); (4) Appendix J - Substitution of Agar-Agar for Gelatin in Gelatin Recipes (Felicidad C. Sapaen); and (5) Appendix K - The Performance of Different Brands of Hard Wheat Flours in Pan De Sal (Hilaria Depot).

APPENDIX A

RESOLUTIONS PASSED AND APPROVED BY THE BOARD OF TRUSTEES OF THE MOUNTAIN STATE AGRICULTURAL COLLEGE FROM APRIL 20, 1970 TO FEBRUARY 11,1970

Res. No.	Subject	Date
1	Constituting the Board of Trustees of the Mountain State Agricultural College in accordance with the provisions of Section 5, Republic Act No. 5923.	April 20, 1970
2	Authorizing the designation or Mr. Hortencio E. Patacsil, Registrar, to act temporarily as Secretary of the Board of Trustees, without additional compensation, pending the appointment of a College Secretary who shall also act as Board Secretary, pursuant to Section 6, Republic Act No. 5923.	April 20, 1970
3	Pertaining to the absorption by and incorporation into the Mountain State Agricultural College of the administrative and supervisory officials, faculty, and all other personnel of the defunct Mountain Agricultural College.	April 20, 1970
4	Concerning the absorption of the current 1969-1970 budge .d plantilla of personnel of the old Mountain Agricultural College for the operation of the Mountain State Agricultural College up to the end of the fiscal year 1969-1970.	April 20, 1970
5	Authorizing the continuance of all curricular offerings existing at the time the College came under the Board of Trustees.	April 20, 1970
6	Authorizing Superintenden Pedro A. Ventura, as Officer-In-Charge of the Mountain State Agricultura College, to attend conventions, conferences, or seminars for Public Schools superintendents called by either the	April 20, 1970

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Res. No.	Subject	Date
	the Director of Public Schools, Director of Vocational Education, and other conventions, conferences, etc., that may be called for the benefit of the College, until a permanent College President will have been appointed.	
7	Concerning the proposal to create the position of the President of the Mountain State Agricultural College, at P18,000.00 per annum, from the unappropriated balance of the College.	April 20, 1970
8	Approving the list of candidates for graduation for the school year 1969-1970, as presented, in accordance with the old BVE set-up.	April 20, 1970
9	Approving in principle the recommendation to prepare a supplemental budget for the fiscal year 1969-1970 that would provide for the creation of the positions of Administrative Officer I, Budget Officer I, Accountatnt III, Supply Officer II, and Cashier II, and also for tho increase in salary of the Auditor; but any and all proposals in said supplemental budget, however, will be subject to the concurrence of the incoming College President before the end of the academic year.	May 25, 1970
10	Approving the Supplemental Budget that would provide the position of President of the Mountain State Agricultural College, at P18,000.00 per annum, from the unappropriated balance of the College, effective April 20, 1970; creation of said position having already been authorized in Resolution No. 7, s. 1970.	May 25, 1970

Res. No.	Subject	Date
11	Authorizing the College to grant service credits with which to offset future absences on account of illness to Mr. Benjamin B. Dimas, who is on the teacher's leave basis, for services as Acting Principal for the period April 26, 1970 to July 4, 1970.	May 25, 1970
12	Nominating Dr. Bruno M. Santos for the position of President of the Mountain State Agricultural College, pursuant to Section 4, R. A. 5923.	May 25, 1970
13	Authorizing Mr. Pedro A. Ventura, Superintendent, on account of his absorption into the Mountain State Agricultural College, by virtue of Section 16 of R. A. No. 5923, to continue as Officer In-Charge of said College until the appointment of a College President.	
14	Adopting a unanimous resolution of appreciation to Superintendent Pedro A. Ventura for laying out the groundwork for the conversion of the Mountain State Agricultural College, and also in recognition of his splendid accomplishments in spite of difficulties for the progress and welfare of the defunct Mountain Agricultural College.	May 25, 1970
15	Confirming the leaves of absences of the hereunder-named personnel of the Mountain State Agricultural College: 1. Mr. Amando B. Runes 2. Mr. Domingo Q. Casiwan 3. Mr. Alejandro D. Castro 4. Mrs. Emma B. Keith	Oct. 13, 1970
16	Confirming the appointments of the four hereunder-named personnel of MSAC on the same conditions as proposed except Nos. 2, 3 and 4 whose salaries were increased from ₱2808.00 to ₱2880.00 per annum, each to conform with the Minimum Wage Law:	Oct. 13, 1970

Res. No.	Subject	Date
	1. Mr. Amando D. Runes 2. Mr. Dario D. Dampilag 3. Mr. Percival B. Alipit 4. Miss Nancy O. Botengan	
17	Approving the Principal Special Budget of the College, as presented, in the amount of ₱661,400.00, and the accompanying Plantilla of Personnel, fiscal year 1970-1971, subject to the conditions set forth by the Board of Trustees.	Oct. 13, 1970
18	Approving the Principal Special Budget of the Department of Military Science and Tactics of the College, as presented, covering a total amount of ₱4,068.00.	Oct. 13, 1970
19	Validating the appointments of Messrs. Sydney E. Moresto and Johnwel C. Tayan, as Instructor I and Forest Guard, respectively, previously approved by the Bureau of Vocational Education and the Civil Service Commission, subject to the condition that they be adjusted in salary through salary adjustment notices effective September 1, 1970 in order to conform with the new WAPCO rates for their respective positions.	Oct. 13, 1970
20	Approving the appointment of Mrs. Edna A. Chua as Secondary School Teacher under temporary (substitute) status, at ₱2880.00 per annum, effective July 13, 1970.	Oct. 13, 1970
21	Approving the reappointments, under temporary status (substitute), at ₱2880.00 per annum, of Mr. Percival B. Alipit, effective July 16, 1970, and Miss Nancy O. Botengan effective July 17, 1970.	Oct. 13, 1970

Res. No.	Subject	Date
22	Approving the promotional appointments, effective July 6, 1970, of the four hereunder-named members of the Mountain State Agricultural College: 1. Mr. Jose B. Lubrica as Assistant Instructor 2. Mrs. Methodia B. Mercado, as Instructor I 3. Mrs. Letty June Pasco, as Assistant Instructor, and 4. Mrs. Nelia C. Pax as Guidance Coordinator	Oct. 13, 1970
23	Upgrading the range and salary of the following administrative personnel, effective July 1, 1969, in accordance with the Supplemental Budget No. 1, fiscal year 1969-1970: 1. Mr. Lawana T. Batcagan 2. Mr. Empiso Caiso	Oct. 13, 1970
24	Approving the appointment of Mr. Teodoro E. Arciso as Clerk I, under permanent status, Range 30, at ₱2880.00 per annum, effective upon assumption of duty.	Oct. 13, 1970
25	Approving the leaves of absence of the hereunder-named personnel of the Mountain State agricultural College as presented: 1. Mr. Hic[illegible]os A. Alipit 2. Mr. Faustino G. Hermano 3. Mrs. Emma B. Keith 4. Mrs. Nelia O. Pax 5. Mrs. Caroline B. Dimas	Oct. 13, 1970
26	Approving the following personnel matter: 1. Application for retirement under R. A. 660, as amended, of Mrs. Marcella C. Diaz. 2. Granting of service credits to offset future absences on account of illness to Mr. Benjamin B. Dimas, Secondary	Oct. 13, 1970

Res. No.	Subject	Date
	School Teacher, for his vacation service as Acting Principal covering the period April 27, 1970 to July 4, 1970; 3. Resignation of Mr. Bartolome A. Licudine from his position as Clerk I, effective August 4, 1970; and 4. Request of Miss Rosa C. Catalan for a change of civil status and name as Mrs. Rosa C. Abastilla on account of her marriage to Mr. Rodolfo T. Abastilla on May 28, 1970.	
27	Authorizing the Officer In-Charge and/or College President: 1. To approve applications for vacation and/or sick leaves of absence with or without pay of college personnel not exceeding 30 calendar days; and official travels of MSAC staff and personnel outside their station except places within and beyond Manila. 2. To approve the designation of the following MSAC personnel, as presented: a. Mr. Benjamin B. Dimas, Secondary School Teacher, as In-Charge of the Secondary Department, b. Mr. Francisco J. Canuto, School Farming Coordinator, as Acting Farm Manager, c. Mr. Carlos T. Buasen, Secondary School Teacher, as Acting School Farming Coordinator, d. Mr. Oscar B. Limpin, Clerk I, as Acting Accountant I, and e. Mr. Lawana T. Batcagan, Administrative Assistant I, as Acting Budget Officer.	Oct. 13, 1970

Res. No.	Subject	Date
	3. To enter into an agreement with the Honorable Provincial Governor for the use of the old College building to house the Benguet General Hospital, with the condition that the said old building be replaced with one (1) Marcos type pre-fabricated building to be erected by the Province elsewhere on the college reservation, and with two (2) more pre-fabricated buildings including ₱20,000.00 for their erection as soon as the first pre-fabricated building will have been erected.	
28	Confirming Supplemental Budget No. 2, in the amount of ₱35,128.00, of the Mountain State Agricultural College for the purchase of one (1) submersible water pump and one (1) sala set for the office of the College President.	Feb. 11, 1971
29	Approving Supplemental Budget No. 1, in the amount of ₱5,028.00 instead of the proposed ₱6,551.00, covering the salary increases and/or adjustments and payment of arrears of government shares for the GSIS life and retirement premiums of the following personnel: 1. For salary adjustments as presented: a. Mr. Faustino G. Hermano b. Mr. Marco Sison c. Miss Salud H. Martinez 2. For payment of arrears in government shares of GSIS life and retirement premiums as presented: a. Lucrecio A. Marcos b. Mr. Miguel C. Bulatao c. Mrs. Felicidad J. Fernandez	Feb. 11, 1971

Res. No.	Subject	Date
	3. For salary adjustments on account of reclassification in positions: a. Mr. Lawana T. Batcagan, and b. Mr. Domingo E. Garin, but the date of effectivity shall be January 1, 1971, instead of July 1, 1970. 4. For salary adjustments of Mr. Empiso Caiso, increased from P3918.19 to P4404.00 per annum, effective January 1, 1971.	
30	Granting authority to the College President to issue appointments to and pay the salaries of the following personnel: 1. Those upgraded in salary, a. Mr. Nicomedes A. Alipit b. Mrs. Noemi B. Sobrino c. Mrs. Remedios T. Garcia 2. Those reclassified in positions, effective July 1, 1970: a. Miss Arsenia F. Delizo b. Mrs. Celerina C. Villa c. Mrs. Isabel B. Rabina d. Mrs. Teodora Z. Monroe	Feb. 11, 1971
32	Approving the promotional appointment of the following twenty-four (24) members of the faculty and employees of the Mountain State Agricultural College: 1. Mr. Benjamin B. Dimas as Secondary Agricultural Principal II; 2. Mr. Jose R. Florendo as Supervisor of Student Teaching; 3. Miss Arsenia F. Delizo as Secondary School Head Teacher III (Head, Related Subjects Department) 4. Mr. Francisco J. Canuto as Agricultural Projects Coordinator II; 5. Mr. Moises B. Mandapat as Instructor II;	Feb. 11, 1971

Res. No.	Subject	Date
	6. Mr. Alejandro D. Castro as Instructor II; 7. Mrs. Letty June L. Pasco as Instructor I; 8. Mr. Jose B. Lubrica as Instructor I; 9. Mrs. Ursula C. Perez as Junior College Instructor; 10. Mrs. Carlota V. Lubrica as Junior College Instructor; 11. Mr. Hansen G. Sauyen as Assistant Instructor; 12. Mr. Rodolfo T. Abastilla as Assistant Instructor; 13. Mr. Adriano T. Gibson as Assistant Instructor; 14. Mr. Carlos T. Buasen as School Farming Coordinator; 15. Mr. Lucrecio A. Marcos as Heavy Equipment Operator; 16. Mr. Dado B. Dayaoen as Nursery Farm Foreman; 17. Mr. Oscar B. Limpin as Bookkeeper I; 18. Mr. Romulo Q. Apolonio as College Secretary I; 19. Miss Salud H. Martinez as Record Officer I; 20. Mr. Andres C. Mamaril as Buyer; 21. Mr. Modesto U. Gonzales as Senior Shop Electrician; 22. Mr. Felipe R. Balagot as Storekeeper I; 23. Mr. Tomas M. Benit as Senior Security Guard; and 24. Mr. Francisco A. Versoza as Driver.	
33	Approving the change in budget items of Mr. Remegio E. Monroe, Mr. Demetrio S. Somera, and Mr. Amancio A. Cruz, all Secondary School Teachers of the Mountain State Agricultural College.	Feb. 11, 1971

Res. No.	Subject	Date
34	Approving the original appointments of six (6) faculty members and one (1) employee of the Mountain State Agricultural College: 1. Secondary School Teachers: a. Miss Nancy O. Botengan b. Mrs. Marcelina R. Carlos c. Mrs. Esther T. Gonzales d. Mrs. Edna A. Chua e. Mr. Dario D. Dampilag f. Mr. Percival B. Alipit 2. Security Guard: a. Mr. Aduki Labutan	Feb. 11, 1971
35	Approving the change in the appointment status, from provisional to permanent, of Mrs. Teodora E. Bulatao as Secondary School Teacher, Range 32, at ₱3066.34 per annum, effective June 18, 1966, pursuant to Section 5, R.A. 4670, and Section 2, Rule X of the same Act.	Feb. 11, 1971
36	Approving the leave of absence applications of Mr. Amando D. Runes, Accountant I of the College, and Mrs. Teodora E. Bulatao, Secondary School Teacher, of the Mountain State Agricultural College.	Feb. 11, 1971
37	Granting authority to the President of the College: 1. To approve vacation and sick leaves of absence with or without pay for not more than six months, maternity leave of absence with half or full pay, study leave of absence without pay for not more than one (1) year; 2. To appoint and pay the salaries of certain teaching personnel whose appointments are favorably acted upon by the Board of Trustees;	Feb. 11, 1971

Res. No.	Subject	Date
	4. To fill non-teaching positions pending confirmation by the Board of Trustees and attestation by the Civil Service Commission; 5. To employ during the summer session professors from other chartered colleges and universities, supervisors from the Bureau of Vocational Education and/or Bureau of Public Schools and other technical men from government agencies or private industries who possess special technical and professional qualifications.	
38	Disapproving, as a matter of policy the request of Mrs. Ligaya R. Sison to put up a refreshment store beside their cottage on the College Campus, for to grant the request would set up a precedent that will be inimical to the interest of the College, and directing the President of the College to inform in writing Mrs. Sison of the action by the Board on the request.	Feb. 11, 1971
39	Approving the request of Mr. Domingo Q. Casiwan, Secondary School Teacher, to return to duty before the expiration of his approved leave of absence without pay on April 24, 1971, but he shall be required to submit a written explanation satisfactory to the College President.	Feb. 11, 1971
40	Granting authority to the College to pay honoraria to teachers engaged in production projects, but subject to the conditions granted to the Palawan National Agricultural College.	Feb. 11, 1971
41	Requesting Atty. Andres R. Assistin, Director of Vocational Education, and member of the Board of Trustees, to study the possibility of giving a position to Superintendent Pedro A.	Feb. 11, 1971

Res. No.	Subject	Date
	Ventura in the Bureau, by having the latter exchange places with an agricultural school superintendent who is acceptable to the students and teachers of the Mountain State Agricultural College.	
42	Granting authority to the College President to appoint Miss Marcelina Carunungan as emergency laborer, at ₱8.00 per working day, effective December 1, 1970, in the Mountain State Agricultural College.	Feb. 11, 1971
43	Confirming referenda dated November 19, 1970, December 18, 1970, and December 21, 1970, regarding the leaves of absences of Mrs. Teodora E. Bulatao and Mrs. Emma B. Keith, and the appointment of Mrs. Marcelina R. Carlos as Secondary School Teacher, respectively.	Feb. 11, 1971

APPENDIX B

PLACEMENT OF THE GRADUATES OF THE VOCATIONAL TEACHER EDUCATION PROGRAM OF THE MOUNTAIN STATE AGRICULTURAL COLLEGE, 1958-1970

NICOMEDES A. ALIPIT
Head, College Department

Introduction

Location. --The Mountain State Agricultural College is situated in the picturesque La Trinidad Valley, a scant six kilometers north of Baguio City. It is one of the scenic and beauty spots in the suburbs of Baguio.

Establishment and Curricula. - First established in June, 1916 then known as Trinidad Farm School, it has grown in its curricular offerings when in 1949 the One-Year Post-Secondary Farm Mechanics and on June 14, 1954 the Two-Year Agricultural Education College, which replaced the Special Secondary Normal Course, were opened. On June 13, 1955 the Four-Year Agricultural Education Curriculum replaced the Two-Year Agricultural Education with its first batch of BSAE graduates turned out in 1958. Then on July 1, 1959, a Four-Year Agricultural Homemaking Curricular was offered with its first batch of BSAH graduates turned out in 1963. All these courses on the collegiate level were under the direction and control of the Bureau of Public Schools, later taken over by the Bureau of Vocational Education.

The College became a state educational institution by virtue of R. A. 5923 enacted without Executive Approval on

June 21, 1969; but the College remained under the Bureau of Vocational Education until April 20, 1970 when the then incumbent Superintendent Pedro A. Ventura was designated by the Board of Trustees as Officer-In-Charge of the College. Dr. Bruno M. Santos took over the administration when he assumed his duty as Acting President of the College on November 17, 1970.

Students, about 95% of whom are mountaineers, come from all sections of the Philippines. With the exception of a few students who reside in the locality, all live in the student-farmers' cottages and dormitories of the school and in partment houses located just across the street from the campus.

Climatic Conditions. - The MSAC which is about 4,230 feet above sea level has an average range of temperature from 16.1 to 20.8 degrees centigrade. With a subtropical climate, it has a very heavy rainfall which is unequally distributed during the months of May, June, July, August, September and October. The rainy season is from July to October. It has a very long dry season during the months of November, December, January, February, and March. The dry season is from December to March. Light rains fall intermittently during the summer months of April and May.

Area of Reservation. - While orginally, the MSAC reservation contained some 1,900 hectares, the school land was re-

duced to 1,710.33 hectares which were further diminished by Presidential Proclamation 209 to about 600 hectares on the valley floor of the reservation. Barely one-third of 600 hectares or 37% of the school reservation is arable and irrigable.

The texture of the soil ranges from clay through sandy to gravelly soil. Of the school land, about 30% is clay-loam, 20% sandy-loam along the riverside, and 50% gravelly soil in the hilly and rocky portions of the school reservation.

Crops Raised. - The major crops are legumes, potatoes, cabbages, cauliflower, celery, tomato, and other vegetables commonly grown in the United States.

In between the major and minor crops are native flowers and orchids as well as American flowers which are grown quite extensively in the Mountain State Agricultural College.

Animals Raised. - Raised in the College are cattle, carabaoes, horses, swine, rabbits, and poultry.

Fruit Trees. - Under experimental basis, the school discovered that certain varieties of fruit trees can thrive well in MSAC. Among these are varieties of the Arabica, Liberica, San Ramon and Native or Benguet types of coffee, Japanese persimmons, avocado, Java and Spanish guavas, bananas, peaches and pears, and apples of the Rome Beauty.

Purpose of the Paper

The aim of this paper was to determine the location of the graduates of the BSAE and BSAH degree curricula of the Mountain State Agricultural College.

Actually, the graduates covered in this rough estimate are those who finished the two prescribed courses of the Bureau of Vocational Education which presently are still being continued by the Mountain State Agricultural College until the College shall have expanded its curricular offerings to include collegiate and graduate courses leading to BSA, MSAE, MSHT, and MSA within the purview of R. A. 5923 to carry out the aim of the College as stipulated in Section 3 of the Law "to provide professional, technical, and special training and promote research, extension services, and progressive leadership in the fields of agriculture and technology."

The primary objective of the BSAE curriculum is to train agriculture teachers for agricultural high schools and general academic high schools with secondary aims for them to be able to teach agriculture in the lower grades and for them to embark on their own as farmers in their own respective localities. Likewise, the primary objective of the BSAH curriculum is to train home economics teachers for agricultural high schools and general academic high schools with secondary aims for them to be able to teach home economics in the lower grades and for them to embark on their own lucrative business in their own respective communities.

Scope and Limitation of the Discussion

The discussion is limited to the location or placement of the BSAE and BSAH graduates who graduated from the prescribed curricula of the Bureau of Vocational Education.

It does not cover the placement of graduates from the secondary agriculture and agricultural homemaking program as well as the graduates of the One-Year Post-Secondary Farm Mechanics Course now being offered in the College.

Data Used in the Survey

The data were gathered from a compilation of the College on the number of students enrolled and on the number of graduates turned out every year from 1958 to 1970.

The information on the list of agencies or employers that employed the graduates was prepared on the basis of letters coming from the graduates and interviews conducted by the Office with those, who from time to time, pay their courtesy calls or get their credentials for purposes of employment.

From them, the Office also obtained information about the whereabouts of their fellow graduates. In most cases, the information about the graduates has been obtained from alumni who attend the MSAC Alumni Reunion every year during commencement exercises.

Results and Discussion

Based on the data available at the College, an analysis of the distribution of BSAE and BSAH graduates is the focal point of interest in this paper.

The College turned out the first batch of BSAH graduates in 1958; it turned out the first batch of BSAH graduates in 1963. The discussion on their placement is limited to the total number of 355 BSAE graduates turned out from 1958 to 1970 and to the total number of 166 BSAH graduates turned out from 1963 to 1970.

TABLE I

DISTRIBUTION OF MSAC BSAE GRADUATES ACCORDING TO MAJOR FIELDS, 1958-1970

Major Fields	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	TOTAL
1. General Agriculture	16	24	30	20	24	0	0	0	0	0	0	0	0	114
2. Agronomy	0	0	0	0	0	10	3	10	24	12	20	35	22	136
3. Animal Husbandry	0	0	0	0	0	9	3	7	9	10	10	20	10	78
4. Agricultural Engineering	0	0	0	0	0	4	0	2	4	4	5	4	4	27
	16	24	30	20	24	23	6	19	37	26	35	59	36	355

Table I shows the total number of 355 BSAE graduates with their majors from 1958 to 1970 broken down as tabulated: General Agriculture, 114; Agronomy, 136; Animal Husbandry, 78; and Agricultural Engineering, 27.

TABLE II

DISTRIBUTION OF MSAC BSAH GRADUATES ACCORDING TO MAJOR FIELD, 1963-1970

Major Field	1963	1964	1965	1966	1967	1968	1969	1970	TOTAL
Food Technology	14	21	2	16	17	20	46	30	166

Table II shows the total number of 166 BSAH graduates with Food Technology as their major from 1963 to 1970 broken down as tabulated above.

TABLE III

SUMMARY OF TOTAL MSAC COLLEGE GRADUATES ACCORDING TO DEGREE COURSES

Degree Courses	Inclusive Year	No. of Yrs.	TOTAL
1. Bachelor of Science in Agric'l. Education	1958-1970	12	355
2. Bachelor of Science in Agricultural Homemaking	1963-1970	7	166
	GRAND TOTAL		521

Table III summarizes the total of 521 college graduates according to degree courses of which 355 are BSAE and 166 are BSAH graduates.

TABLE IV

PLACEMENT OF 355 BSAE GRADUATES ACCORDING TO MAJOR FIELDS, 1958-1970

(Figures under each major field indicate the number of graduates employed in agencies.)

Where graduates are employed	Gen. Agric.	Agro-nomy	Ani. Husb.	Agric'l. Engr.	TOTAL	%tage of Employment
1. General Office, DPS	1	0	0	0	1	0.3%
2. Division Office, DPS	1	1	0	0	2	0.6%
3. College Teaching	1	1	2	0	4	1.2%
4. Sec. Agric. Schools	10	14	8	10	42	11.5%
5. Gen. Academic - H. S.	2	4	2	1	9	1.6%
6. Elem. Schools	98	54	22	2	176	50.7%
7. APC-PACD	0	42	30	6	78	21.4%
8. GMTFM	0	2	0	0	0	0.6%
9. Bur. of Plant Industry	0	1	1	1	3	0.9%
10. Bur. of Animal Industry	0	0	1	0	1	0.3%
11. Pursuing Grad. Courses	0	1	1	1	3	0.9%
12. Mt. Province Dev. Authority	0	3	3	3	9	2.7%
13. Private Firms	0	9	7	1	17	5.1%
14. Underemployed (Army Officers, odd jobs other than teaching, etc.)	1	2	2	3	8	2.3%
TOTAL	114	136	78	27	355	100.0%

It can be gleaned from the foregoing table that of the 355 BSAE graduates, 176 or 50.7% are teachers in the elementary schools; 78 or 21.4% are employed by the APC-PACD as Farm Management Technicians, 4-H Club Officers, or Rural Youth Officers;

only 42 or 11.5% are happily employed as agriculture teachers in secondary agricultural schools; and only 9 or 1.6% are employed as agriculture teachers in general academic high schools.

One, who finished BSAE degree in 1958 with general agriculture as his major and later finished his MS at the UPCA, is a General Office Supervisor of the Bureau of Public Schools. Another BSAE graduate of 1958 with masteral units is a Division Vocational Agriculture Supervisor in the Division of Schools for Benguet and another BSAE graduate of 1960 with a major in Agronomy and with MS degree from the University of Pakistan is a Division Vocational Agriculture Supervisor in the Division of Schools for Ifugao. The data disclose that 4 or 1.2% are employed in college teaching.

Of interest to the observer is that 17 or 5.1% are engaged in private firms as promoters or salesmen in agro-industrial chemicals, equipment, and supplies; 3 or .9% are in the Bureau of Plant Industry; 1 or.3% is in the Bureau of Animal Industry; 3 or .9% are pursuing graduate courses at UPCA, University of Canada, and University of Pakistan; 2 or .6% are employed in the Greater Manila Food Terminal Market; 9 or 2.7% are employed as technicians and workers in the Mountain Province Development Authority which presently has successful agri-business enterprises on the College Campus devoted to sericulture, mushroom growing, and rabbitry.

Underemployed as army officers, clerks, or self-employed in odd jobs other than agriculture or teaching or extension work are 8 or 2.3%.

TABLE V

PLACEMENT OF BSAH GRADUATES ACCORDIN TO MAJOR FIELD, 1963-1970

(Figures under Food Technology as a major indicate the number of graduates employed in each agency.)

Where graduates are employed	Food Technology	TOTAL	Percentage of Employment
1. Secondary Agriculture Schools	10	10	6.0%
2. General Academic H.S.	6	6	4.0%
3. Elementary Schools	75	75	45.0%
4. APC-PACD	50	50	30.0%
5. Mountain Prov. Dev. Authority	1	1	0.6%
6. Underemployed (Self-employed at home, odd jobs other than teaching, etc.)	24	24	14.4%
TOTAL	166	166	100.0%

The preceding table indicates that of the 166 BSAH graduates 75 or 45% are elementary school teachers; 50 or 30% are employed as Home Management Technicians or Home Demonstrators, 4-H Club Officers, or Rural Youth Officers; 10 or 6% are employed as home economics teachers in secondary agricultural schools; 6 or 4% are home economics teachers in general academic high schools; only one or .6% is employed in the Mushroom Growing Section of the Mountain Province Development Authority.

Of the 166 graduates, 24 or 14.4% are underemployed as homemakers at home and workers in odd jobs other than teaching home economics.

TABLE VI

PERCENTAGE OF EMPLOYMENT OF MSAC COLLEGE GRADUATES

Degree Courses	Number Graduated	Percentage Employed
1. Bachelor of Science in Agricultural Education (BSAE)		
a. Employed	347	97.7%
b. Underemployed	8	2.3%
TOTAL	355	100.0%
2. Bachelor of Science in Agricultural Homemaking (BSAH)		
a. Employed	142	85.6%
b. Underemployed	24	14.4%
TOTAL	166	100.0%

Table VI shows that of the total 355 BSAE graduates, 347 or 97.7% are employed, and 8 or 2.3% are underemployed as army officers, clerks, and workers in odd jobs other than teaching agriculture. It also shows that of the total 166 BSAH graduates, 142 or 85.6% are employed while 24 or 14.4% are underemployed as homemakers at home and workers in odd jobs other than teaching home economics.

Summary and Recommendations

Summary. - From the foregoing discussion, it can be deduced that the primary objectives of the BVE Vocational

Teacher Education Program leading to the degrees of Bachelor of Science in Agricultural Education and Bachelor of Science in Agricultural Homemaking appears not to have been successfully met. The reason for this is lack of openings for the position of secondary agriculture teachers in the few agricultural schools in the country.

In the case of BSAE graduates, only 11.5% are employed as agriculture teachers in secondary agriculture schools and 1.6% are employed as agriculture teachers in general academic high schools. The survey indicates that 50.5% of the BSAE graduates are underemployed as elementary school teachers because most of them are hired to handle all the elementary school subjects. Only a few are employed as Garden Teachers in the lower grades. Recently, the APC-PACD agencies employed 23.4% of the BSAE graduates as Farm Management Technicians, 4-H Club Officers, and Rural Youth Officers.

A similar situation is reflected in the case of BSAE graduates. Only 6% are employed as high school home economics teachers in secondary agricultural schools and 4% are employed as home economics teachers in general academic high schools. As in the trend in the BSAE, 45% are underemployed as elementary school teachers and 30% are employed as home extension workers in the APC-PACD agencies of the government.

Recommendations. - Since it appears in this survey that the BSAE and BSAH graduates, for lack of job openings in the few agricultural schools in the country, do not find teaching jobs in the secondary schools but in elementary schools where they are not professionally trained to teach, the following are recommended:

1. Only a class of 25-30 quality students will be selected every year to form a class each in the BSAE and BSAH program for high school teaching. This is to limit the number of graduates for a limited opportunity for high school agriculture and agricultural homemaking teaching jobs.

2. A quality tridimensional curriculum with agriculture as the core will have to be designed to develop agro-industrial academic teachers for elementary schools with the approval of the Board of Trustees and with the proper accreditation for civil service eligibilities and tenure and WAPCO salary classification at par with those of the BSEEd graduates. A congressional legislation to create positions for Garden Teachers in the lower grades is necessary to insure employment of the graduates.

3. To play actively its role as envisioned in Section 3 of R. A. 5923, Charter of the College, the Mountain State Agricultural College shall "provide professional, technical, and special training and promote research, extension ser-

vices, and progressive leadership in the fields of agriculture and home technology."

It is, therefore, recommended that with adequate funding, steps should be taken now to have the following undergraduate and graduate courses as stipulated in Section 2 of the Law be offered as soon as possible: (a) Four-year technical curriculum leading to the degree of Bachelor of Science in Agriculture; (b) Graduate course leading to the degree of Master of Science in Agricultural Education; (c) Graduate course leading to the degree of Master of Science in Home Technology; (d) Graduate course leading to the degree of Master of Science in Agriculture.

APPENDIX C

CONTROL OF DIAMOND BACK MOTH, PLUTELLA MACULIPENNIS, ON WONGBOK (CHINESE CABBAGE) IN LA TRINIDAD, BENGUET PROVINCE[1/]

By Alejandro D. Castro
Agronomy Instructor

INTRODUCTION

Chinese Cabbage or Wongbok is commonly grown as a leafy vegetable in the Philippines. In Benguet it ranks close in importance to cabbage.

During recent years in Benguet Province the diamond back moth, Plutella Maculipennis, has been very abundant on all cruciferous crops and particularly on Wongbok. It has been most troublesome during the dry season. In fact the attacks of this pest have become a limiting factor in the growing of this crop. Uncontrolled infestations completely destroy Wongbok plantings.

Much of the recent difficulty appears to be the result of the development of resistance to previously standard control agents such as DDT and Endrin. They are no longer effective and are not now used. Such materials as malathion, Solidol and DDVP are reported to be used to some extent, but Phosdrin applied weekly or even twice weekly is said to be most effective.

An experiment was designed and conducted at Mountain State Agricultural College in La Trinidad to establish the relative value of several established insecticides as well as some new ones against this pest.

1/ Supported in part by Research Grant from Cyanamid (Far East).

This research was jointly undertaken by A. D. Castro of MSAC, La Trinidad and E. H. Glass, F. D. Calora and M. L. Pescador of UPCA, College Laguna.

MATERIALS AND METHODS

A plot of land, 80 x 11 meters, was fitted into 80 beds, each 1 meter wide and 11 meters long. Suitable quantities of compost were worked into the soil. On February 4, 1968 seeds were planted at the rate of 6 per hill space at 1 foot intervals in the row. There were two rows 1.5 feet apart per bed. Thus, there were 70 hills per bed. Emerging seedling plants were observed on February 10.

The experiment was started during the dry season so irrigation was required until the rains started in April. Watering was done from sprinkling cans over each rows as needed.

The quantity of granular insecticides required to treat one bed was mixed with a 4 ounce can of dry sand. The mixtures were applied in equal amounts to each hill and then worked into the top 2 inches of soil before the seeds were planted. A second application of granular insecticides was made on certain plots on March 18 or six weeks after seeding. The granular sand mixes were sprinkled about each plot, lightly worked into the soil and then watered.

The spray treatments were made with a 3 gallon compressed air sprayer using enough materials to wet the plants thoroughly. The first spray treatments were made on February 25 or 15 days after germinations. Weekly or semi-weekly applications were made from then until one week before harvest on April 21.

Each treatment, number of applications, and other pertinent information are given in Table 1.

TABLE I. TREATMENT SCHEDULE FOR DIAMOND BACK MOTH CONTROL EXPERIMENT ON WONGBOK

Plot No.	Materials and Formulation Used	Rate for Gallon or Hectare	Application Schedule	Total Treatment
1	Phosdrin 1.5 E.C.	10 ml./gal.	Weekly	8
2	Phosdrin 1.5 E.C.	10 ml./gal.	Semi-Weekly	15
3	DDT 25% E.C.	30 ml./gal.	Weekly	8
4	Malathion 57% E.C.	6 ml./gal.	Semi-Weekly	15
5	Malanyl 50-10 E.C.	6 ml./gal.	Weekly	8
6	Thuricide 90 TS	10 ml./gal.	Weekly	8
7	Thuricide 90 TS	20 ml./gal.	Weekly	8
8	N-4543 1.7 lb/gal.	6 ml./gal.	Weekly	8
9	Thiodan 35% E.C.	6 ml./gal.	Weekly	8
10	Folidol 46.7% E.C.	6 ml./gal.	Weekly	8
11	Ins.1642 90% W.P.	2 gm./gal.	Weekly	8
12	Endrin 19.5% E.C.	6 ml./gal.	Weekly	6
13	Malathion 57% E.C. and Thimet 10. G.	10 kgm./ha.	At planting	1
14	Thimet 10 G.	20 kgm./ha.	At planting	1 2
15	Thimet 10 G.	10 kgm./ha.	At planting 2 Wks. later	1 2
16	Tomik 2G	50 kgm./ha.	At planting	1
17	NIA 10242 10	10 kgm./ha.	At planting	1
18	Dithiolane 47031	20 kgm./ha.	At planting	1
19	Dethiolane 47031 (10 G)	20 kgm./ha 20 kgm./ha.	At planting 6 Wks. later	 2
20	Dithiolane 47031 (10 G)	10 kgm./ha.	At planting 6 Wks. later	 2
21	Untuated (Control)	-	-	-

1/ Mixture containing 50% malathion and 10% DDVP.

2/ Endrin applied in first six sprays, malathion in last two sprays.

Injury ratings for each bed were made on four dates: March 16, 31, and April 20. The ratings were according to the degree of injury observed where 0-none to a trace, 1-light, 2-moderate, 3-heavy and 4-severe.

The crop was harvested on April 21 and 22. Heads were weighed and rated as marketable or not marketable.

DISCUSSION

The injury ratings are given in Table 2 and likewise, the yield is presented in Table 3.

TABLE 2. MEAN RATINGS OF INJURY CAUSED BY FEEDING OF PLUTELLA MACULIPENNIS LARVAE ON WONGBOK

Treatments: No.	Mean Injury Ratings			
	March 16	March 31	April 4	April 20
1	0.5	1.0	0.5	0
2	0	1.0	1.0	0.2
3	3.0	3.0	3.2	4.0
4	3.0	2.0	2.7	3.5
5	1.2	3.0	3.2	3.2
6	2.2	3.0	2.5	1.5
7	1.2	4.0	2.2	1.5
8	1.7	1.0	1.0	1.7
9	2.2	3.0	3.7	2.7
10	2.7	2.0	3.5	2.2
11	0.2	1.0	1.0	0.5
12	1.5	2.0	3.7	2.2
13	2.7	4.0	4.0	3.5
14	2.5	3.0	3.7	2.2
15	2.5	4.0	3.5	2.5
16	2.0	4.0	3.5	1.7
17	1.2	4.0	4.0	4.0
18	1.5	4.0	3.7	3.0
19	1.2	2.0	2.2	1.0
20	2.0	3.0	3.2	2.5
21	3.0	4.0	4.0	4.0

0 - None to trace (excellent control)
1 - light (good)
2 - Moderate (satisfactory)
3 - Heavy (poor)
4 - Severe (no control)

TABLE 3. YIELD OF WONGBOK FROM EXPERIMENTAL PLOTS

Treatments No.	Total Harvested Head	Percent of Theoretical Total	Percent Harvested Heads Marketable	Weight in Kgm.	
				Total Heads	Marketable Heads
1	99	35	90	20.10	18.00
2	78	28	74	12.85	11.20
3	0	0	0	0	0
4	6	2	17	.70	0.20
5	23	8	35	3.35	1.00
6	33	12	70	5.10	4.30
7	44	16	73	6.55	4.90
8	65	23	80	13.40	11.80
9	16	6	19	1.50	0.40
10	18	6	50	2.55	1.60
11	81	29	69	11.40	8.30
12	23	8	57	4.20	2.70
13	0	0	0	0	0
14	42	15	55	6.49	4.18
15	19	7	37	2.15	1.15
16	12	4	58	1.90	1.60
17	7	2	100	0.70	0.70
18	9	3	22	0.65	0.20
19	29	10	59	3.00	3.00
20	0	0	-	2.65	1.50
21	0	0	-	0	0

Before evaluating the data, there are certain factors that must be considered. One is that germination of the wongbok seed was very uneven throughout the experimental area. In some beds every hill had at least one plant whereas there were very few in others. In an attempt to improve the stands, excess plants from beds of good germination had been poor. The result was an uneven stand throughout the test area and hence the yield data was too erratic to warrant statistical treatment and close comparisons. Furthermore, some plants were moved into granular treated beds which give rise to the possibility of uneven absorption of the toxicant from one plant to another in the same bed.

One other note of caution should be mentioned. Several workers were involved with the application of the several pesticides, and it is possible that these may not have been entirely uniform.

For the above reasons, it seems wise to use the data primarily as a guide to further studies and evaluation rather than as final results. Nevertheless, the injury ratings and the yield data for the several spray treatments confirm the farmers experience that DDT, Endrin, Malathion, Methyl Parathion (Folidol) and Endosulfan (Thiodan) do not provide effective control of diamond back moth on wongbok. It seems most likely that chlorinated hydrocarbon resistant strains have involved the farmers in Benguet Province the extensive use of DDT and Endrin during previous years. It is not certain whether the failure of the phosphates is the result of acquired resistance or an inherent weakness of this group against this species of insects.

Of these materials more commercially available in the Philippines, only Phosdrin applied either at weekly or semi-weekly intervals provided satisfactory protections. Of the new products, N-4543 (Stanffer Chemical Co.) and Ins. 1642 (Dow Pont) were promising and should be tested further. The yield data given in Table 3 show a close correlation with threatening data. Only plots 1, 2, 8, and 11 gave any appreciable yield of marketable heads.

Thuricide 90 TS, which is a propriety preparation of Bacillus thuringiensis made by Stanffer Chemical gave rather poor control even at the higher rate of application.

None of the systemic soil treatments provided adequate control of Plutella Maculipennis on Wongbok for the entire season. On March 1 or 25 days after planting all the systemic treatments (Plots 13 to 20) were all protected whereas the untreated controls were heavily damaged. Control faded rapidly during late March and by April 4 only the two applications of Dithiolane were providing any measurable degree of protection.

The relatively poor results with Dithiolane 47,031 on Wongbok as compared to the excellent performance on cabbage in the Baguio tests raise some interesting question which eventually must be answered by further tests. Was the difference due to (1) time of application, i.e. seeding vs. transplanting, (2) differential absorption by cabbage and

wongbok, (3) differential decomposition rates in each (4) differences in irrigation procedures (5) differences in the number of insects for infestations? While the answers are not apparent at this time, the roles of crop response and the time of treatment must be considered important and evaluated in future tests.

The results of the experiment show the extreme severity of the Plutella Maculipennis problem of wongbok in the La Trinidad area and point up the necessity for developing suitable control methods for protecting cruciferous crops.

APPENDIX D

EFFECT OF DIFFERENT KINDS OF FERTILIZER ON THE GROWTH OF ONIONS

By Edward Inchan
Agronomy Student

This experiment was conducted in the Department of Agronomy, Mountain State Agricultural College, La Trinidad, Benguet under the direction of Mr. Demetrio S. Somera. In the experiment, three sets of commercial fertilizers were used. They were as follows: Set 1 - Triple 14 or complete; Set 2 - Combined triple 14 and ammonia; and Set 3 - Ammonia alone.

Triple 14 or complete was the best among these three sets of fertilizers because it turned the plant dark green; it multiplied the number of tillers but not so much as did the complete fertilizer. It made the plants grow taller because of its nitrogen contents.

Ammonium sulfate alone turned the plants green and did not make the tillers multiply or expand.

The control set of the plants made them stunted and light green; it did not have any effect on the height of the plants.

The onion, although considered one of the most important Philippine vegetable crops, has hardly been studied especially as regards its fertilizer requirements. It has been an accepted idea that onions could be left to the elements and still somehow augment the family income. With this idea in mind, we made observations and comparative study through trial and error with the different kinds of fertilizers applied as food nutrient of onions.

The purpose of the experiment was to determine the effect of fertilizers on the growth of onions through careful observation method. The fertilizers used were triple 14 or complete, combined triple 14 and ammonium sulfate, and ammonium sulfate alone.

The experiment was done from August to October 1970 at the Mountain State Agricultural College during the first semester of 1970-1971.

MATERIALS AND METHODS

The following materials were used: Triple 14 or complete fertilizer, onions, ammonium sulfate, grab hoe, sickle, meter stick, and measuring cup((5 grams).

The experimental lot was provided with a drainage canal. There were 12 each with a dimension of 1 meter by 10 meters. Onions were planted 23 cms. between rows. Each of the plots was assigned specific treatment and each was presented in the tables in this report.

RESULTS AND DISCUSSION

TABLE 1. ARRANGEMENT OF TREATMENTS AND BLOCKS

Grams	5				:	2.5 + 2.5			:	5		
Blocks	I					II				III		
Treatments	D'	B'	C'	A'	D'	B'	C'	A'	C'	D'	B'	A'
Numbers	1	2	3	4	5	6	7	8	9	10	11	12

Legend:

A - Triple 14 or Complete
B - Combined Triple 14 and Ammonium Sulfate
C - Ammonium Sulfate alone
D - Control

The foregoing table represents 12 plots divided into three Blocks I, II, and III. Each block had four plots, assigned to different Treatments A, B, C, and D. Treatment A represents triple 14 or complete; Treatment B represents the combination of triple 14 and ammonium sulfate; Treatment C represents ammonium sulfate alone; and Treatment D represents the control. In the application of fertilizers, 5 grams per plant or hole were applied in all except for the control.

TABLE II. ORIGINAL HEIGHT OF ONIONS BEFORE APPLICATION OF FERTILIZERS

Treatments	Blocks I	Blocks II	Blocks III	Total Treatments	Mean Average
A	26.94	26.91	26.71	80.56	26.85
B	24.62	23.18	24.12	71.92	23.97
C	25.34	24.54	23.32	73.20	24.40
D	23.27	24.11	20.51	67.89	22.63
TOTAL	100.17	98.74	94.66	293.57	97.85

The table shows the height of the onions in centimeters before the application of fertilizers in the three blocks to get the mean average height.

TABLE III. EFFECT OF FERTILIZERS ON THE GROWTH OF ONIONS AFTER TWO WEEKS

Treatments	Blocks I	Blocks II		Total Treatments	Mean Average
A	37.92	35.11	40.64	113.67	37.09
B	33.77	39.22	38.84	114.83	32.28
C	36.29	37.04	38.25	111.58	37.19
D	25.11	27.23	31.25	83.59	27.86
TOTAL	133.09	138.60	148.98	423.69	134.42

The foregoing table indicates the significant effect of fertilizers on the growth of onions in terms of height in centimeters after two weeks.

TABLE IV. INCREASE IN HEIGHT OF ONIONS DUE TO FERTILIZER APPLICATIONS

Treatment	Average Height Two Wks. After Fertilizer Application	Average Original Before Fertilizer Application	Increase in Average Height
A	37.09	26.85	10.24
B	32.28	23.97	8.31
C	37.19	24.40	12.79
D	27.86	22.63	5.23
TOTAL	134.42	97.85	36.57

It appears from the table that of the four treatments, Treatment C with the application of ammonium sulfate alone seemed to have been the best fertilizer for onions followed by Treatment A with the application of Triple 14 or "Complete Fertilizer.

Treatment B with the application of Combine Triple 14 and Ammonium Sulfate as shown in the table did not seem to be as good as in Treatments C and B. Treatment D (Control) in which no fertilizers were applied did not show favorable growth of onions.

CONCLUSION AND RECOMMENDATIONS

From the preceding discussion, it could be concluded in this particular experiment that Ammonium Sulfate alone is recommended to be the best commercial fertilizer for onions. However, the finding in this experiment is not conclusive. This experiment needs further repetition to verify the results.

The experiment conclusively indicated that application of commercial fertilizers showed positive effects on the growth of onions.

It is recommended that aside from inorganic or commercial fertilizer, such organic fertilizers as animal or chicken manure, compost, and green manuring should be used in the culture of not only onions but also all other farm crops.

APPENDIX E

CONTROL OF PECHAY PESTS

By Nicomedes B. Alipit, Jr.
Agronomy Student

Three kinds of insecticides(Folidol, Fosferno, and Phosdrin) were used on Diamond Back Moth and Cabbage Butterfly. The insecticides were sprayed when the plants were beginning to show signs of insect attack. Of the three insecticides, Phosdrin proved to be the most effective, having 90% effectivity. The two other chemicals were less effective. The pechay plants were sprayed two times at five days interval.

The control of insects of vegetables has been one of the major problems of vegetable farmers in La Trinidad. Of the numerous insects that attack pechay plants, the species of Diamond Back Moth and Cabbage Butterfly are most destructive. These insects multiply so rapidly that even chemicals could not control them if their damages are already advanced.

Experiences of farmers disclose that the best control of these pests is the overdosage of chemicals to be applied. But this practice proved to be detrimental to the plants.

The objective of this study was to discover which of the three chemicals, namely, Folidol, Fosferno, and Phosdrin could control pechay pests at the maximum effectivity. Other new brands of insecticides are also effective, but they are too expensive for the ordinary farmer. These three chemicals were chosen because they could easily be procured in the market without much expense.

The experiment was conducted at the College Laboratory Farm from July 30, 1970 to October 16, 1970.

MATERIALS AND METHODS

Three chemicals used in this experiment were Folidol, Fosferno, and Phosdrin. An area of three replications in 12 plots were cultivated and planted with pechay seeds. Fertili-

zers were used at the rate of one-half kilogram per plot (12-12-12). Later when the plants were about one and a half months old they were applied with urea, 46% at the rate of two kilograms per plot.

The first replication was treated with Folidol; second replication, Fosferno; and third replication, Phosdrin.

LAYOUT OF THE EXPERIMENTAL FARM

Replication 1				Replication 2				Replication 3			
	Folidol				Fosferno				Phosdrin		
A	B	C	D	B	C	D	A	C	D	A	B

Randomized Complete Block Design

RESULTS AND DISCUSSION

Effects of Folidol

Folidol was applied at its recommended dosage level at 1 to 2 tablespoons per 5 gallons of water. Spraying was done when the plants were about two months old. This was the time when the plants showed signs of insect attack. The spraying was done at the same time along with the two other chemicals. The later spraying was done after 5 days.

At the first spraying with Folidol, only 2 plants were attacked by worms at 30% damage. Five worms were counted and only one worm was accounted to be dead.

During the second spraying, 2 worms were counted dead on 2 plants at 20% damage. The chemical was ineffective.

Effects of Fosferno

Fosferno was sprayed at the rate of 1 to 2 tablespoon per 5 gallons of water. Nine plants were eaten by worms at 25% damage. Five worms were seen on the plants. Out of the five worms, two were killed.

Three plants at 40% damage were accounted during the second spraying. Ten worms were counted, and 4 worms were killed as a result of the spraying.

Effects of Phosdrin

At the recommended dosage level of 3 tablespoons per 5 gallongs of water, this chemical showed a high degree of effectivity. At the first spraying, 7 worms were counted on 8 damaged plants. Six of these worms were dead after spraying.

At the second spraying, 4 plants were damaged by 11 worms and 9 of these worms were eradicated as a result of the spray.

TABLE 1. EFFECTS OF THE THREE CHEMICALS BASED ON THE NUMBER OF WORMS KILLED PER PLOT AND REPLICATION

Treatment	Replications			Total	Average Mean
	1	2	3		
A	1		4	5	1.7
B		1	9	10	3.8
C		2	2	4	1.3
D		3		3	1.0

TABLE II. ANALYSIS OF VARIANCE

Treatments	D.F.	SS	MS	OF
Blocks	2	65.5	32.75	394.518
Treatments	3	50	16.66	200.722
Error	6	0.5	.083	
Total	11	115.0	48.493	

Regarding residual effects, Phosdrin showed a longer residual effect. Folidol and Fosferno were more or less lower in residual effects. Eggs unhatched during spraying (Treatment of Phosdrin) tended to be deformed when they hatched and others not hatch at all.

Fosferno and Folidol, although they omitted very odorous fumes, did not however effect some of the worms after spraying. The worms were observed to be normal and some came to live through the second application of the two chemicals, Folidol and Fosferno. The worms were somewhat immuned to the repeated treatments given.

CONCLUSION AND RECOMMENDATION

The three chemicals used acted by their contact and stomach reactions. The reactions of Folidol and Fosferno were slower. Probably these two chemicals had lesser chemical concentrations when mixed with water. Phosdrin, however, showed great effects because it killed more worms as shown in the experiment.

It is recommended that the best way to eradicate pests of pechay and other vegetables is to have more concentration of the chemical when mixed with water. There is needed to alternate other kinds of insecticides with the usual kind when controlling insects and to have two different chemicals, thoroughly mixed together before application.

APPENDIX F

A COMPARATIVE STUDY ON TWO INSECTICIDES FOR THE CONTROL OF PECHAY WORM

By William Ambona & Luis Masweng
Agronomy Students

Pechay worm severely damages pechay and other related vegetables. The infestation starts two weeks immediately after the seedlings have been transplanted. Just like most of the important insects damaging vegetable crops, the larvae which attacks the leaves are very fast in eating so that necessary control measures have been made. Plants attacked produce very low yield and quality.

It has been observed that the use of the mixture Phosdrin and DDT insecticides in spraying the plants has greatly reduced infestation and at the same time has increased the yield. The object of this experiment was to determine which of the two chemicals will give a better control of the insect. The experiment was conducted at the College Laboratory Farm, Mountain State Agricultural College, La Trinidad, Benguet.

MATERIALS AND METHODS

An area of 81 square meters was divided into three blocks. Each block consisted of three plots. The area was cleaned, dug, and prepared into plots and were planted with pechay. The materials used were sickle, grub hoe, complete fertilizer (14-14-14) ammonium sulfate, pechay seeds, insecticides, spray pump, and watering cans.

The seedlings were transplanted in the plots with holes prepared and were applied with complete fertilizer three weeks after transplanting. The first spraying was made when the seedlings were three weeks old after transplanting. Three plots were sprayed with Phosdrin, three plots with DDT and three plots with a mixture of DDT and Phosdrin.

Spraying was done regularly with an interval of three days and the plants were sprayed four times. Weeds were not so rampant that there was no need of weeding. Of course, proper care and management was given to all the plants.

RESULTS AND DISCUSSION

It was evidently shown in Table I below that the plants sprayed with a mixture of DDT and Phosdrin were not severely damaged while those sprayed with Phosdrin were a little bit damaged followed by those sprayed with DDT.

TABLE I. NUMBER OF PLANTS ATTACKED

No. Times Sprayed	Replications									
	I			II			III			
	A	B	C	B	C	A	C	A	B	
1st	2	4	1	4	0	1	1	1	4	
2nd	4	5	3	3	0	3	0	2	2	
3rd	1	6	4	2	3	4	1	0	4	
4th	2	6	3	1	4	2	3	4	3	
TOTAL	9	21	11	10	7	10	5	6	13	

Total plants attacked by counts:
1. Phosdrin ..... A - 25
2. DDT ..... B - 34
3. Mixture ..... C - 23

TABLE II. NUMBER OF INSECTS ATTACKED BY COUNTS

No. Times Sprayed	Replications									
	I			II			III		
	A	B	C	B	C	A	C	A	B
1st	1	2							
2nd	2	2	1	1					1
3rd	1				1	1			
4th	1	2		1	1			2	
TOTAL	5	6	1	2	2	1		2	1

CONCLUSION AND RECOMMENDATION

It could be seen in Table I and II that the most effective among the chemicals used was a mixture of DDT and Phosdrin. Used without any mixture, Phosdrin is more effective than DDT.

A mixture of Dichlorodiphyneltrichloroethane with Phosdrin gave a very good protection to the plants. The plants sprayed with this mixture of chemicals were found to have lesser damage compared to those sprayed with DDT and Phosdrin.

It is, therefore, recommended that in the control of pechay worm, a mixture of DDT and Phosdrin be used. Without a combination, Phosdrin is more effective than DDT.

Another experiment on the control of pechay worm is further recommended.

APPENDIX G

A STUDY OF THE UTILIZATION OF DILIS FLOUR

By Laura A. Agayam
Food Tech 107 Student

The experiment utilized dilis flour in place of meat in meat loaf, ffied lumpia, meat balls and for the duplication of Kroepeck utilizing fish flour from unspecified fish species. The prepared dilis flour was added to pinachet to improve its nutritive value.

All the recipes using the fish flour were rated highly by the taste panel except for two, the fish loaf and fish balls. The fish balls had an undesirable rough texture that could be felt on the throat. The loaves had a pronounced fishy odor. All the rest were very acceptable of good taste and flavor.

INTRODUCTION

Longjawed anchovies, Stolephorus Commersoni, locally known as dilis, is a popular salt water fish. It ranks third in the list of the most common and abundant fish in Philippine fishing centers, but there are few studies conducted on its usefulness.

Dilis is commercially sold in the market in its fresh and dehydrated form. Fresh dilis is cooked as viand with vinegar, salt and spices or is made into bagoong and patis of high quality. The dried ones are commonly toasted and eaten with tomatoes or champorado.

Fresh and good quality dilis are best for drying. They are washed, salted and dried artificially or by sundrying, with

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[1]J. Mendoza, Philippine Foods, Their Processing and Manufacture, (Manila, Bureau of Printing in the Philippines, 1961), p. 206.

heads removed or intact. If they are dried artificially in tunnels, the temperature for drying must not exceed 70°C.[2] The final moisture content ranges from 20 to 40%, a condition unfavorable for the growth of micro-organism.[3]

Nutritionally, dilis is a good source of calcium, protein, iron, and B vitamins.[4] According to Perez, its calcium content is much more than that found in an equal weight of fresh milk. Analysis shows that every one hundred grams of dried dilis gives 16.7 gms. moisture; 331 gms. calories; 68.7 gms. protein; 4.2 gms. fat; 13.3 gms. ash; 2,381 gms. calcium; 1,489 mgs. phosphorous; 23.4 mgs. iron; .01 mg. thiamine; .23 mg. riboflavin; and 7.5 mgs. niacin.[5]

Since dried dilis is a nutritious food, this experiment was conducted to find out the acceptability of products made with its flour. The products were fish loaf, lumpia, fish balls, fish kroepeck, and pinacbet. The flour was prepared because it seems more convenient to use and store.

This experiment was performed on March 26 to April 4, 1971 at the Mountain State Agricultural College, La Trinidad, Benguet.

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[2]T. N. Morris, The Dehydration of Foods. (London: D. Van Nostand Company, 19600, p. 173.

[3]H. C. Sherman, Foods Products. (New York: The MacMillan Company, 1948), p. 226.

[4]P. Perez, Everyday Foods in the Philippines. (Quezon City: Banaue Publishing Company, 1953), p. 285.

[5]Institute of Nutrition. Handbook I Food Composition Table. (Manila: Biochemistry Division, 1957), pp. 52-53.

MATERIALS AND METHODS

A. Materials

Fish flour, wheat flour, onions, salt, pepper, fat, eggs, soy sauce, tomatoes, winged beans, eggplant, okra, ampalaya, camote, carrot, lumpia wrapper, milk, lime, ground rice, bread crumbs and water were the ingredients used.

The materials were a set of measuring spoons, knife, chopping board, steamer and loaf pan, gas stove, basin, portable oven, flatform balance, tray, set of weights, and cornmeal grinder.

B. Experimental Design

Flour obtained by grinding well-dried dilis with corn meal grinder was used for the preparation of the fish loaf, fish balls, fish kroepeck, fried lumpia and pinacbet.

In the preparation of these products, 100 grams of the flour was used to substitute for 1-1/2 cups of the ground meat in meat loaf; 50 grams, to substitute for 500 grams of grount meat in meat balls; and 25 grams to fortify the nutritive value of a recipe of pinacbet. A recipe for fish kroepeck was duplicated using the fish flour prepared for the experiment. The recipes are in the appendix.

The modification in procedures that deviated from what are indicated in the recipes were as follows:

Lumpia - The fish flour was wet with four tablespoons of water before it was stirred into the half-cooked vegetables.

Fish balls - The mixture of fish flour, egg, pepper and wheat flour was wet with one-half cup of evaporated milk before it was formed into balls.

Fish loaf - The fish flour was wet with six tablespoons of water before it was added to the bread crumb mixture.

Pinacbet - Three tablespoons of water was used to wet the fish flour before it was added to the sauted onions and tomatoes.

Kroepeck - The kroepeck recipe called for one teaspoon salt and three tablespoons of fish flour. This was prepared but subsequent samples used 1-3/4 teaspoons salt and six tablespoons of fish flour for the same amount of rice and the rest of the ingredients in the original recipe.

C. Evaluation

The products were all evaluated by a taste panel of 12 members from the Food Technology 107 class. Samples of the rating cards used follow:

SCORE CARD FOR FRIED LUMPIA

Trial No. _____

(Please check the boxes that best rate the characteristics of the product.)

Qualities Scored	Perfect Score	Scorer's Score
1. Color		
golden brown	5	☐
pale	3	☐
burnt	0	☐
2. Texture (exterior)		
crisp	5	☐
soggy and limp	3	☐
tough	1	☐
3. Flavor		
a. wrapper		
pleasing	5	☐
tallowy	2	☐
acrid	0	☐

b. Filling

well-blended	5	☐
too spicy	3	☐
fishy	2	☐
too bland	0	☐

4. Taste

tasty (well-seasoned)	5	☐
salty	3	☐
tasteless	1	☐
TOTAL	25	☐

Remarks: (Please indicate undesirable characteristics if any.) _____

SCORECARD FOR FISH LOAF

Trial No. _____

(Please check the boxes that best rate the characteristics of the product.)

Qualities Scored	Perfect Score	Score's Score
1. Color		
uniform browning	5	☐
pale	2	☐
burnt	0	☐
2. Texture		
a. Crust		
crisp, smooth	5	☐
tough & leathery	3	☐

hard & thick	1	
b. Crumb		
tender & moist	5	
slightly dry	2	
tender but rough & irritating on the throat	0	
3. Flavor		
well-blended	5	
too spicy	3	
fishy	1	
off-flavor	0	
4. Taste		
pleasing or tasty	5	
salty	3	
bland	1	
TOTAL	25	

Remarks: (Indicate undesirable characteristic if any.)

_____

SCORECARD FOR FISH BALLS

Trial No. _____

(Please check the boxes that best rate the characteristics of the product.)

Qualities Scored	Perfect Score	Score's Score
1. Color		
evenly browned	5	☐
pale w/dark streaks	2	☐
burnt	0	☐
2. Texture		
tender & juicy	5	☐
coarse & dry	2	☐
tender but sandy, rough and irritating on the throat	1	☐
3. Flavor		
well-blended	5	☐
fishy	2	☐
off-flavor	0	☐
4. Taste		
pleasing and tasty	5	☐
too spicy	3	☐
tasteless	1	☐
TOTAL	20	☐

Remarks: (Indicate undesirable characteristics if any.)

_____

SCORECARD FOR PINACBET

Trial No. _____

(Please check the boxes that best rates the characteristics of the product.)

Qualities Scored	Perffect Score	Scorer's Score
1. Appearance		
attractive, uneven color	5	☐
unattractive	3	☐
discolored	1	☐
2. Tender (vegetables)		
pleasing (well-blended)	5	☐
soft	3	☐
tough	1	☐
3. Flavor		
pleasing (well-blended)	5	☐
fishy	2	☐
off-flavor	0	☐
4. Taste		
tasty and well-seasoned	5	☐
salty	3	☐
tasteless	1	☐
TOTAL	20	☐

Remarks: (Indicate undesirable characteristics if any.)

_____

SCORECARD FOR FISH KROEPECK

Trial No. ____

(Please check the boxes that best rate the characteristics of the product.)

Qualities Scored	Perfect Score	Scorer's Score
1. Color		
uniformly white	5	☐
dull	2	☐
dark	0	☐
2. Texture		
crisp	5	☐
soggy	3	☐
tough	1	☐
3. Flavor		
pleasing	5	☐
fishy	2	☐
off-flavor	0	☐
4. Taste		
tasty & well-seasoned	5	☐
salty	3	☐
tasteless	1	☐
acrid	0	☐
TOTAL	20	☐

Remarks: (Indicate undesirable characteristics if any.)

_____

RESULTS AND DISCUSSION

Based on the results, as shown in Table I, it is evident that use of fish flour on fried vegetable lumpia gave very acceptable product. The filling was considered to have well blended flavor and was tasty. The fishry odor of the flour was not noted in the cooked lumpia and other products utilizing it except fish loaf.

The pinacbet was unattractive or unappetizing in appearance because of the grayish streaks that the fish flour imparted on the vegetables. At any rate, the pinacbet was more tasty than one without the fish flour.

The final fish balls were evenly brown, had well-blended flavor and were tasty. On the first trial, when plain water was used to wet the flour, the cooked products had a sandry and dry texture. The use of milk instead of water, and increasing its amount from four tablespoons to one-half cup, made the fish balls tender and moist. However, the undesirable roughness felt on the throat remained. Nonetheless, they were acceptable to the panel members as long as they were taken in small amounts.

Apparently, the amount of fish flour used in the loaf was too much. The product possessed a prominent fish odor, was tough, and had a leathery crust. Despite the above, the fish loaf was rated to be tasty.

Increasing the amount of salt from one teaspoon to one and three-fourth teaspoons and the amount of fish flour, from three tablespoons to six tablespoons, improved the taste and flavor of the kroepeck. Their textures were as cripp, and their color as white, as those prepared with less salt and fish flour.

TABLE I. SUMMARY OF PANEL EVALUATION OF FIVE PRODUCTS UTILIZING FISH FLOUR QUALITIES SCORED

Products	Color	Texture	Flavor	Taste
Fried lumpia	Filling unattrative	Vegetables (tender)	Pleasing	Tasty and well seasoned
Fish loaf	Pale	Crust (tough) Crumb (tender and moist)	Fishy	Tasty and well seasoned
Fish balls	Unevenly browned	Tender and juicy but with rough texture felt on the throat	Pleasing (well-blended	Tasty and well seasoned
Pinacbet	Unattrative	Vegetables (tender)	Well-blended	Tasty
Fish kroe-peck	Uniformly white	Crisp	Pleasing	Tasty

CONCLUSION AND RECOMMENDATION

The use of dilis flour for the preparation of fried lumpia, kroepeck and as a fortifier for pinacbet gives acceptable product. In the preparation of fish balls and fish loaf, it is suggested that further studies be conducted on how to improve them. The fish balls were rough on the throat, and the fish loaf had a strong fish odor. Perhaps, the product can be improved by the adjustment of the amount of flour used or by the incorporation of other ingredients that may be able to mask the undesirable characteristics observed. It is also suggested that sutides on more ways of utilizing dilis flour be conducted because it can be a cheap substitute for meat.

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APPENDIX

Standard recipes used as guides in the preparation of fish loaf, fish balls, fish lumpia, and fish kroepeck.

Meat Loaf

1 beaten egg
1/2 c. soft bread crumbs
1/2 c. milk (evaporated)
1 1/2 c. ground beef
3 tbsp. chopped onions
3/4 tsp. salt
1/2 tsp. pepper

Turn on the oven and set the temperature control at 350°F. Put the beaten egg, bread crumbs, and milk in a mixing bowl. Add the beef, onions, salt, and pepper to the bread crumbs mixture and mix lightly. Press the meat lightly into a greased loaf pan. Bake 30 minutes to one hour depending upon the size. Serve hot or cold with tomato sauce.

Pinacbet

300 gms. eggplant
192 gms. ampalaya
200 gms. tomatoes
100 gms. onions
2 tbsp. lard
1 c. bagoong juice
6 pcs. medium size okra
2/3 c. shrimp meat
salt to taste

Cut the vegetables into quarters and 1" cubes. Saute the onions and tomatoes for 5 minutes. Add the shrimp meat, and bagoong juice. Add the ampalaya, eggplant, and okra. Cover and cook until done.

Meat balls

2 1/2 c. pork or 500 gms. (ground)
1/2 c. flour (wheat) or 55 gms.
2 large eggs or 140 gms.
salt and pepper to taste

Mix the ground pork, eggs, and flour in a bowl. Season with salt and pepper. Form into balls and fry in hot fat. Serve with a sweet sour sauce.

Fried Lumpia

1 c. or 20 gms. pork
1 T. or 10 gms. garlic
1 c. or 100 gms. onions
2. T. or 55 gms. lard
2 c. or 100 gms. cabbage
2 c. or 335 gms. sweet potatoes
2 c. or 190 gms. beans
2 medium carrots
shrimp juice or water 1/2 c.
salt and pepper to taste

Saute the garlic in lard until brown. Add the onions and stir for 2 minutes. Add the pork and shrimps juice. Cover and cook until meat is done. Add the vegetables and season with salt and pepper and stir once in a while to prevent scorching. When done, remove from fire and cool. Wrap about 3 tbsp. in lumpia wrappers. Fry in deep fat and serve with a sauce.

Fish Kroepeck

1 c. uncooked rice
1 c. water
1 tsp. fine salt
3 tbsp. fish powder
1 tsp. lime solution
(1/4 T. lime to 1/2 c. water)

Wash the rice once and soak overnight. The next morning, wash rish thoroughly, then drain. Add 1 caup water and grind thoroughly on a meal grinder. Stir ground rice and blend in fish powder, salt and lime solution. Prepare a steamer or a boiler or any pan with a cover. It should be wide and deep enough to accommodate the molds where the kroepeck batter will be steamed in. Place a rack at the bottom of the steamer and place enough water just to cover the rack. Place 2-3 tbsp. of the prepared batter into a pie pan or in a similar pan; spread evenly and steam for 3-5 minutes or until batter is thoroughly cooked. Reduce the amount of batter to 1 tbsp. when small molds are used. Removed molds from steamer and cool in a basin of cold water. Cut into desired sizes and lift from the mold with a knife. Dry all pieces in trays in the sun for 2-3 days. Serve by frying it first in deep fat or store in moisture proof bags.

APPENDIX H

UTILIZATION OF PIGEON PEA FLOUR

By Erlinda S. Sonido
Food Tech 107 Student

Flour from matured and well chosen pigeon peas was used in the preparation of ukoy, espasol, beverage, and onion soup.

Pigeon pea flour can serve as binder in ukoy, as filler in espasol, and as thickener in soup. It imparts a pleasant flavor to these products although it tends to give a flat taste in ukoy and soup.

With coconut, its hydration or thickening property is reduced so that more of it is needed to prepare espasol.

Pigeon pea flour cannot substitute for coffee in beverage because it gives unpleasant flavor and bland taste.

REVIEW OF LITERATURE

Pigeon pea, scientifically known as Cajumus cojca,[1] belongs to the family leguminaceae. Its native name is cadius.

This plant can be found in any land above sea level. It is abundant during summer. It is dried like beans and similarly utilized.

It provides nutritious and easily digested food for both man and animal. It is high in protein and may be good substitute for meat. The nutrients found in 100 grams of the seeds are: protein, 19.6 grams; fat, 1.3 grams; carbohy-

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[1]University of the Philippines, College of Agriculture, Bean and Pea Production of the Philippines, (Laguna; UPCA Printing Press, 1963), p. 67.

drates, 63.9 grams; and iron, 3.5 miligrams. Every one hundred grams of its gives 339 calories.[2]

The seeds are utilized as viands but no literature had been found to show its use as a flour. This research, was therefore, performed to determine whether pigeon pea flour can adequately act as binder and thickener and whether it can substitute for coffee in beverage. It was also conducted to find ways of utilizing the flour to increase the nutritive value of some commonly prepared dishes.

MATERIALS AND METHODS

This experiment was conducted at the Mountain State Agricultural College, La Trinidad, Benguet from November 4, up to December 8, 1970.

A. Materials

Pigeon pea flour, sugar, malagkit, coconut milk, shrimp, shrimp juice, onion, papaya, purico, salt, and garlic were used as ingredients.

B. Preparation and Utilization of Pigeon Pea Flour

Mature pigeon peas that were well podded were selected. The seeds were removed from the pods, dried for two weeks and ground finely. The flour was used as a substitute for the starch binder in ukoy, filler in espasol, and thickener in onion soup. The toasted flour was used as a substitute for coffee in beverage. The recipes are in the appendix.

C. Evaluation

The products were evaluated by four tasting panel members. The quality of the products appraised were color, texture or consistency, flavor and taste.

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[2] Institute of Nutrition Handbook I, Food Composition Tables, (Manila: Biochemistry Division, 1957), p. 61.

RESULTS AND DISCUSSION

Results shown in Table 1, indicate that the use of pigeon pea flour is accepted in ukoy, espasol, and onion soup.

No changes were made in the ukoy and onion soup recipes. Equivalent amounts of pigeon pea flour in ukoy produced the same degree of cohesiveness as wheat flour. The ukoy with pigeon pea flour were golden brown in color, and very pleasant flavor, but flat in taste and coarse in texture. The coarse texture could be due to the absence of a more efficient grinder that grinds to a finer flour.

TABLE I. SUMMARY OF PANEL EVALUATION ON FOUR PRODUCTS USING PIGEON PEA FLOUR

Products	Color	Texture	Flavor	Taste
1. Ukoy	golden brown	coarse	very pleasant	flat
2. Espasol	brown	coarse	pleasant	moderately sweet
3. Onion Soup	Yellowsih	coarse	pleasant	flat
4. Beverage	brown		unpleasant	bland

In the espasol, the piegeon pea flour was increased by one-half cup because it absorbed less liquid than the rice flour so that the espasol appeared wet. The texture was course, but the flavor was pleasant.

The onion soup had a consistency like that thickened with wheat flour. It had a well blended flavor, yellow color, coarse texture, and flat taste.

As a substitute for coffee, the toasted pigeon pea flour gave a color like that of coffee, but the flavor was unpleasant and the taste was bland.

CONCLUSION AND RECOMMENDATION

Pigeon pea flour is as good a binder as wheat flour in making ukoy and as good a filler as rice flour for espasol if the proportioj used in the recipe is slightly increased by one-half cup. The flour is also a good thickener for soup. It cannot substitute for coffee in beverage because of its unpleasant flavor and bland taste.

Pigeon pea flour tends to produce viands that are flat in taste so that it is suggested that studies on how to improve taste by the use of seasoning like monosodium glutamate be made.

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APPENDIX

Ukoy[3]

flour 1 1/2 cup
shrimp 1/2 cup
shrimp juice 1/2 cup
onion 1/4 cup
papaya 1/2 cup
fat for frying
salt and pepper to taste

Place the fat in a frying pan over a moderate flame. Meanwhile, prepare the batter by mixing the flour and shrimp juice in a bowl.

Add the rest of the ingredients and season with salt and pepper. Place 1/3 cup of the mixture at a time in a saucer and drop it in the deep hot fat. Cook until golden brown. Serve hot with vinegar.

Espasol[4]

malagkit 1/2 cup
rice flour 2-1/2 cup toasted until light brown
sugar 1 cup
coconut milk 1/2 cup

Boil the malagkit. Meanwhile, place the sugar and coconut milk. Then add the boiled malagkit. Stir and cook until it thickens. Add 2-1/2 cup of toasted flour. Mix well with a wooden spoon and pound in a lusong or pass through a meat grinder. Divide into 2 parts and roll each portion to about 1 foot long with a diameter of about 2-1/2".

Coffee Beverage

Toast the pigeon pea flour over a moderate flame until light brown. For every cup of hot water, add 1 tablespoon pigeon pea flour. Add sugar and milk according to the individual preference

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[3]Presentacion Perez, Everyday Foods in the Philippines. Quezon City: (Banaue Publishing Co. Inc., 1953), p. 131.

[4]Ibid., p. 163.

Onion Soup

onion 1/2 cup minced
pork 1/2 cup sliced
water 2 cups
flour 1/8 cup

Boil the pork until tender. Slice into small pieces. Cook with water. Add the prok and onion. Simmer for a while. Then add the flour. Stir well and cook one minute. Season with pepper and salt. Serve hot.

APPENDIX I

CONTROL OF DISCOLORATION IN DRIED PERSIMMON

By Josephine W. Tibong
Food Tech 107 Student

This experiment was performed to determine the best method of controlling discoloration in dried persimmon. The three treatments used on the fuits were blanching, sulfuring, and a combination of blanching and sulfuring.

The best result was obtained when the fruits were blanched and exposed to sulfur dioxide fumes before drying. Discoloration was minimized. The fruits were firm, had a good taste, but a slightly medicinal odor.

Although discoloration was prevented when persimmons were exposed only to sulfur dioxide fumes, they were tough. Also, astringent taste of the fruit was very apparent. They had strong medicinal odor.

The darkest products resulted from the blanched samples. They however, had the most desirable taste and odor among the three differently treated foods.

Persimmon is a principal fruit of Japan, Korea, China, and some parts of the East Indies. It has a very attractive bright yellow-orange color and it contains a very sweet pulp when ripe. Unless fully ripe, it remain astringent.[1]

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[1] H. F. MacMillan, Tropical Gardening and Planting. (Colombo, Ceylon: H. F. Cave & Company, 1935), p. 175.

Persimmons are generally preserved by means of drying. Persimmons lose all their astringency if peeled and dehydrated.

The difficulty in drying as a preservation method lies with the fact that persimmons generally discolor when peeled and cut into halves and exposed to dry.[2] This gives the fruit a very undesirable appearance and reduces its acceptability.

Haas and Stadtman, as cited by Cruess,[3] in their experiment on discoloration of dehydrated fruits found out that darkening of fresh-cut fruit is caused by the enzymatic oxidation of phenolic substance in the fruit tissue. They also showed that darkening reactions occur between nitrogenous substances and organic acids and between sugars and organic acids. Tater, Mark and Fisher,[4] found that the darkening of fresh cut fruits such as apples, appricots, figs, peaches and pears is greatly delayed by exposure to fumes of burning sulfur or when they are dipped in bisulfite solution before dyring them. It is also believed that sulfuring checks fermentation and destroys insect attacks in dried fruits.

This experiment was conducted to find means by which discoloration of dried persimmons can be prevented.

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[2]William Benton, (Encyclopedia Britanica, Inc., 1964), p. 179.

[3]B. W. V. Cruess, Commercial Fruit and Vegetable Products. (New York: McGraw-Hill Book Company, Inc., 1948), p. 673.

[4]Ibid., p. 674.

EXPERIMENTAL PROCEDURE

A. Materials

Matured and fully ripe persimmon, set of measuring spoons, stainless steelknife, a sulfuring box made out of kerosene cans, wooven baskets, aluminum trays, and powdered sulfur were used.

B. Time and Place

The experiment was conducted from November 9 to November 27, 1970 at the Mountain State Agricultural College.

C. Procedure

Matured and ripe persimmons were treated differently before drying them. One lot was blanched for five minutes, peeled, sliced into quarters, and then exposed to the fumes of sulfur for thirty minutes.

A second lot was peeled, sliced into quarters, and exposed to fumes of sulfur for two hours.

The last lot was blanched for five minutes, peeled, sliced into quarters and dried.

All were spread on aluminum trays separately according to each treatment and dried in the sun. Three replications were performed.

The finished products were evaluated by a taste panel immediately after each trial.

RESULTS AND DISCUSSION

Preliminary trials showed that discoloration can be prevented by exposing the fruits to the fumes of sulfur dioxide before drying them.

The actual trials showed that blanching and sulfuring was the best treatment to prevent discoloration. The products were firm in texture, bright-orange in color, but had a slight medicinal odor.

SUMMARY OF THE SUBJECTIVE EVALUATION OF SUNDRIED PERSIMMONS

Treatment	Color	Taste	Texture	Odor
Blanched	Dark color	Sweet	Tough	Pleasant
Sulfuring	Bright orange	Astringent	Tough	Medicinal
Combination of Blanching and Sulfuring	Bright	Sweet	Firm	Slight medicinal

Those that were exposed to sulfur fumes alone also did not discolor but they were tough and had a very astringent taste and strong medicinal odor.

Blanching alone gave the best taste. The products were sweet and had no taste of astringency. However, they were tough and markedly discolored.

CONCLUSION AND RECOMMENDATION

As a result of the experiment, it is concluded that among the three methods used in the control of discoloration in dried persimmon fruits, a combination of blanching and sulfuring is recommended. This method control discoloration without resulting in a toughly texture product. Despite the slight medicinal odor, the products tasted sweet.

To eliminate the medicinal odor, it is suggested that further studies should be undertaken to determine the exact extent of sulfuring.

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APPENDIX J

SUBSTITUTION OF AGAR-AGAR FOR GELATIN IN GELATIN RECIPES

By Felicidad C. Sapaen
Food Tech 107 Student

Agar-agar of equal eight was used to substitute for the gelatin in marshmallow, ice cream, and molded vegetable salad recipes.

The use of agar could not exactly duplicate the qualities of the products prepared with gelatin. The ice cream was less sweet, the marshmallow was soft, and the salad was cloudy. Reduction of the proportion of agar used for the salad to one-sixth bar per cup of water gave exactly the same results as those made with one tablespoon of gelatin.

Agar-agar is a gelatin-like product of red seaweeds, scientifically known as Gracelaria lichenoides.[1] It is prepared by boiling the Agarophatus in water and subsequently purifying and drying the product. It is insoluble in all water but swells absorbing as much as twenty times of its own weight.[2] It dissolves in boiling water easily and is able to set to a firm gel at a concentration as low as five tenths percent. It melts at about 203°F and a one percent solution will not stiffen until it is cooled to 104°F. But after it stiffens, it may be placed in a warm room without melting.[3]

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[1] William Benton. Encyclopedia Britanica. (Chicago: 1964. Volume 1), p. 64.

[2] Jusie W. Harris and Elizabeth Lacey. Everyday Foods. (Boston: Houghton Mifflin Co., 1956), p. 302.

[3] Ibid., p. 64

Agar is used for food as a stomach filler because it is not digested and absorbed. It is also used in making jelly dessert, icings, and salad dressings. It can act as base in molded products or as a constituent of laxative preparations.[4]

Gelatin is derived from collagen which is the prime constituent of all white fibrous connective tissue occuring in fish and animal tissue. It is insoluble in pure cold water but will absorb moisture considerably by swelling. Unless it is first allowed to swell in cold water, it will not be dissolved in hot liquids. This is the general characteristics of all gelatin except the especially prepared by-products.[5]

Gelatin is the base for a wide variety of dishes such as jellies, sponges, creams, salads, and deserts. In salad; it makes the products hold its shape; in marshmallow, it gives a spongy, resilient texture by trapping the air incorporated with the beaten egg white. The viscous gelatin solution is useful in ice cream to give it body, to keep the crystals small; and to retard melting. When used in frozen deserts, it is added in small quantities so as to thicken best not to set the product.[6]

Since physically, agar solution behaves like gelatin and because it is much cheaper, this study was conducted to determine if it can adequately substitute for gelatin in salad, marshmallow, and ice cream.

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[4]Loc. cit.

[5]Ibid., p. 323.

[6]Margaret N. Justin et. al. Foods. (Boston: Houghton Mifflin Co., 1956), p. 207.

EXPERIMENTAL PROCEDURE

Time and Place

This experiment was conducted at the Mountain State Agricultural College on August 25, 1970 and ended on December 4, 1970.

Materials

Sugar, corn syrup, water, eggs, gelatin, gulaman, vanilla, powdered sugar, milk, whipping cream, vinegar, calamansi, juice, salt, celery, cabbage, pimiento, saucepan, spoons, forks, knife, freezing tray, refrigerator, kerosene stove, measuring spoon, strainer, bowl, measuring cup, thermometer, weighing scale and weights were the equipment, materials and ingredients used.

Experimental Design

Equal weights of gulaman or agar-agar were used to substitute for the weight of gelatin called for in marshmallow, ice cream, and molded vegetable salad. Because agar-agar takes a long time to dissolve, they were first boiled with the necessary amount of water plus addition of four tablespoons to replace whatever is lost during boiling. The agar solutions were cooled to about 50°F before the other ingredients were added. The recipes of the three products are in the appendix.

To determine the best proportion of agar to liquid for vegetable salad, the following ratios were studied: 1/6 bar (3.75 gms.); 1/5 bar (4.4 gms.); 1/4 bar (5.5 gms.); and 1/3 bar (7.3 gms.) of gulaman per cups of water.

Evaluation

All the recipes prepared were evaluated by a taste panel of five members.

SCORE CAR FOR PERFECTION
SALAD

Please place a check on the box opposite the score that closely rates the description of the product.

	Score	A	B	C	D	E
1. Color						
Color of vegetables deepened by sugar	5					
Dull	3					
Discolored	0					
2. Clearness (colloid only)						
Sparkling clear	5					
Translucent	3					
Cloudy	0					
3. Texture (colloid)						
Tender, but holds shape	5					
Hard	3					
Flowing	0					
4. Texture (vegetables)						
Crisp	5					
Hard	3					
Mashy	0					
5. Flavor						
Well blended, distinct vegetable flavor	5					
Mild vegetable flavor	3					
Flavorless	0					
6. Taste						
Tart	5					
Too sweet	3					
Sour	1					

Please write your comments below:

SCORE CARD FOR ICE CREAM
(Flavored with vanilla=

Please place a check on the box opposite the score that closely rates the description of the product.

	Score	Sample B	Sample B
1. Appearance			
Attractive cream colored	5	☐	☐
Light	3	☐	☐
Discolored	0	☐	☐
2. Texture			
Smooth, velvety	5	☐	☐
Pasty and lumpy	3	☐	☐
Sandy and grainy	0	☐	☐
3. Consistency			
Firm	5	☐	☐
Soft	2	☐	☐
Watery	0	☐	☐
4. Flavor			
Well-blended pleasing vanilla flavor	5	☐	☐
Mild flavor	3	☐	☐
Off-flavor	0	☐	☐
5. Taste			
Sweet	5	☐	☐
Very sweet	3	☐	☐
Bland & flat	0	☐	☐

Please write your comments below:

SCORE CAR FOR MARSHMALLO

Please place a check on the box opposite the score that closely rates the description of the product.

	Score	Sample A	Sample B
1. Appearance			
White	5	☐	☐
Discolored	3	☐	☐
Burnt color	0	☐	☐
2. Texture			
Resilient, spongy & tender	5	☐	☐
Soft, sticky	3	☐	☐
Hard	0	☐	☐
3. Flavor			
Well blended & pleasing flavor	5	☐	☐
Mild flavor	3	☐	☐
Distinct egg flavor	1	☐	☐
Off-flavor	0	☐	☐
4. Taste			
Sweet	5	☐	☐
Very sweet	3	☐	☐
Flat	0	☐	☐

Please write your comment below:

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Gulaman is a good substitute for gelatin in molded vegetable salad if the proportion used is 1/6 bar or 3.75 grams per 1-1/4 cups of water. The gelled colloidal part was tender and sparkling clear like the one using gelatin.

TABLE I. SUMMARY OF PANEL EVALUATION OF SALAD USING DIFFERENT PROPORTION OF AGAR-AGAR

Proportion of agar per 1-1/4 cups of water		Qualities Rated					
Bar	Grams	Color (Vegetable)	Clearness (Gelatin)	Texture (Colloid)	Texture (Vegetable)	Flavor	Taste
1/6	3.75	Bright	Sparkling	Tender	Crisp	Well-blended	Tart
1/5	4.4	Bright	Translucent	Tender	Crisp	Well-blended	Tart
1/4	5.5	Bright	Translucent	Tender	Crisp	Well-blended	
1/3	7.3	Dull	Cloudy	Tender	Crisp	Well-blended	Mildly tart
Control gelatin	7.3	Bright	Sparkling clear	Tender	Crisp	Well-blended	Tart

The vegetables were all brightly colored. They were crisp, their flavor distinct, and their tastes tart. With direct substitution by weight of gelatin with agar, the jellied part of the salad was stiff and cloudy. The product was less tart than those using less than 1/3 bar/1-1/4 cups of liquid.

TABLE II. SUMMARY OF PANEL EVALUATION OF ICE CREAM USING AGAR OR GELATIN

Variables	Weight	Color	Texture	Consistency	Flavor	Taste
Gelatin	1 gm.	Cream	Smooth velvety	Firm	Well-blended Pleasing flavor	Sweet
Agar-agar	1 gm.	Cream	Smooth velvety	Firm	Well-blended Pleasing flavor	Bland

Gulaman is also a very good substitute for gelatin in ice cream. Table II shows that both ice creams were smooth and fine in texture, firm in consistency and with blended, distinct pleasing vanilla flavor. But their taste had a slight difference. The recipe using gelatin was sweet. The ice cream using agar was somewhat bland.

TABLE III. SUMMARY OF PANEL EVALUATION OF MARSHMALLOW USING AGAR OR GELATIN

Variables	Weight	Appearance	Texture	Flavor	Taste
Gelatin	7.3 gms.	White	Resilient Spongy	Pleasing	Sweet
Agar-agar	7.3 gms.	White	Soft	Distinct egg flavor	Sweet

The marshmallow using agar was white just like the one using gelatin but its texture was soft and sticky. It did not have a resilient and spongy body which were characteristics of those made with gelatin. Also, the egg white odor was pronounced when agar was used.

CONCLUSION AND RECOMMENDATION

Based on the findings of the study made, it is concluded that equal weight of agar-agar cannot duplicate the products made with an equal weight of gelatin. However, modifications of the amount of agar-agar used by lowering its proportions in the salad to one sixth bar (3.75 grams) per one and one-fourth cups of water gave the same characteristics as those using one tablespoon of gelatin for the same amount of water.

An equal weight of gulaman can substitute for gelatin in ice cream provided that the agar is first boiled and dissolved in the necessary amount of water before it is added to the custard and that the amount of sugar be slightly increased.

It cannot be said if agar can substitute for gelatin in marshmallow. It is suggested that a further study be made along this line.

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APPENDIX

Marshmallow

1/2 cup sugar
1/8 cup corn syrup
1/8 cup hot water
1 egg white
1 tbsp. granulated gelatin
1 tbsp. cold water
1/4 tsp. vanilla
1/2 c. powdered sugar

Soak granulated gelatin in cold water. Put sugar, hot water and corn syrup into a saucepan; and stir until sugar is well dissolved. After it dissolves, cook to 240°F, add softened gelatin; remove from fire, add vanilla, pour on well-beaten egg white, and beat vigorously until very stiff. Pour in a tin pan, which has been dusted with powdered sugar. Sift powdered sugar over the top of the candy and allow to stand until firm. Cut into boiling water occasionally or cut with small cutter.

Vanilla Ice Cream
(Using gelatin)

1 1/4 c. milk
1 c. whipping cream
1/2 c. sugar
2 egg yolks
2 egg whites
1 tsp. gelatin
1 tsp. vanilla

Mix milk, sugar, egg yolks, and gelatin, cook to custard or until slight coating forms on spoon and cool. Add vanilla. Whip egg whites and mix with custard. Place in freezing tray and freeze to slush. Whip cream. Remove tray from refrigerator. Mix partially frozen custard with whipped cream and return promptly to freezing compartment of refrigerator. Cover with parchment paper if ice cream is not to be served for several hours. The above portions will make a quart of ice cream.

Perfection Salad

1/4 c. vinegar
1 tbsp. lemon juice
1 c. boiling water
1/2 tsp. salt
1/4 c. sugar
1 tbsp. gelatin softened
1/4 c. cold water
1 c. dried celery
1/2 c. shredded cabbage
1 pimiento chopped

Add the vinegar, lemon juice, boiling water, salt, and sugar to the gelatin softened. Then strain and chill. When mixture begins to set, add celery, cabbage, and pimiento. Then remove from the mold and serve.

APPENDIX K

THE PERFORMANCE OF DIFFERENT BRANDS OF HARD WHEAT FLOUR IN PAN DE SAL

By Hilaria Depot
Food Tech 107 Student

This experiment was conducted to find out which of the three brands of hard wheat flour known as first class flour by manufacturers is best for pan de sal. The brands are: Willington, Eliphante, and Ul Montana.

Based on the data gathered after several trials, Willington was found to be the best for pan de sal. It produce large sized pan de sal with finely textured crumbs, pleasing flavor. Their shape, interior and exterior color was the same as those made with the two other brands of flour.

Eliphante flour products ranked second best in crust, texture and grains. Except for few cracks, their crusts were almost similar to the breads made with Willington. Their crumbs were tender and fine but slightly dry.

The breads made with Ul Montana flour were slightly coarse in texture and had dry crumbs. Like those made with Eliphante, they were slightly smaller than those made with Willington.

Flours are obtained by grinding cereal grains to powder of varying degree of fineness. Among the cereals used for the production of flours, wheat is the most preferred by manufacturers because it can be used in many food preparations like leavened breads, cakes, pastries, macaroni, spaghetti, and other semalina products.

Wheat is an annual crop that belongs to the *graminae* family and of the genus *triticum*.[1] Its grain is a single seed and nutlike fruit called caryopsis. It is covered by a thin cell, the pericarp and other cell layers called the bran. After the bran coat is the endosperm which is made up of walled cells filled with starch. Embedded in the starch are protein particles called gluten. Other proteins found in wheat and rye are gliadin and glutenin.[2]

Naturally, wheat contains the important elements needed for an adequate diet. Such substances are water, carbohydrates, protein, fat, crude fiber and minerals. It contains also the B-vitamins and Vitamin A. Some are lost during the milling process.

There are three general types of wheat: hard, soft and durum wheat. Soft wheat flours are best suited for products leavened with baking powder or soda. It can be made into breads leavened with yeast but require less moisture because of its low protein content.[3]

Hard wheat flours are best suited to the making of yeast bread. They contain much protein which increases the capacity of the flour to absorb varying amounts of water. Good bread flour from hard wheat usually absorbs 60 to 65 per cent of the weight of the flour in water indicating that the protein present have the capacity of forming strong gluten.[4] The better the hydration power of the flours, the more loaves can be derived per given weight of it.[5]

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[1] *Encyclopedia Britanica*. Vol. 23. (Chicago: William Benton Publisher, 1964), p. 559.

[2] *Ibid.*, p. 560.

[3] J. S. Wilmot and M. Q. Batjer. *Foods for the Family*. (Chicago: J. B. Lippincott Co., 1960), p. 197.

[4] M. N. Justin, *et. al.* *Foods*. (Boston: Houghton Miflin Co., 1956), p. 108.

[5] *Loc. cit.*

The aim of this experiment was to determine which among the three brands of wheat, Willington, Eliphante and Ul Montana flour would be best for pan de sal.

EXPERIMENTAL PROCEDURE

Time and Place

This experiment was conducted at the Mountain State Agricultural College from August 15, 1970 to October 5, 1970.

Materials Used

Willington, Eliphante and Ul Montana flours, yeast, salt, sugar, eggs, oil, lard, milk, measuring cup, table knife, mixing spoons, plates, baking sheets, portable oven, weighing scale, and set of weights were the ingredients and materials used.

Experimental Design

Willington, Ul Montana, Eliphante, Sun Goddess, Mother Hen, Pearl, and El Superior are the different brands of hard wheat flour in the market. Willington, Eliphante and Ul Montana were the only ones used for the experiment because they were the brands found in most stores in Baguio City.

Their performance in a standardized pan de sal recipe was compared. The recipe follows:

Recipe and Procedure

Ingredients:
14.5 gms. flour (Willington, Eliphante, Ul Montana)
15 gms. yeast
3.2 gms. salt
2.8 gms. sugar
7.1 gms. oil
39.8 gms. milk
1 egg
bread crumbs

The yeast was dissolved in 1/4 cup of war water containing one teaspoon sugar. It was allowed to stand for 10 minutes until foamy and completely dissolved. Meanwhile, the salt, sugar, lard, oil, and milk were mixed in another bowl.

The remaining 1/4 cup of water was added to the dissolved yeast mixture and the egg was stirred into it. This mixture was then added to the mixture of sugar, salt, and shortening. The flour was added gradually until the ingredients were well blended.

The dough was kneaded for 15 minutes. Kneading was done to make the doughelastic and smooth and to blend all ingredients more thoroughly. After kneading, the dough was covered with a cloth and placed in a warm place to rise for about an hour. This allowed it to double in size. It was punched and kneaded again before it was divided into desired sizes and shaped into pan de sal. Each pan de sal before cooking weighed 36.5 grams.

The molded pan de sals were placed on slightly greased baking sheets and dashed with bread crumbs. They were covered with a moist cloth to prevent drying up. They were allowed to rise for two hours until they doubled in size. Then they were baked at 375°F for thirty minutes or until they were delicately brown.

The cooked pan de sals were allowed to cool. Seven pieces from each batch were picked at random and their total volume taken. Table I shows the volume of the products after baking.

The remaining bread were evaluated by a taste panel on the different characteristics: shape, crust, volume, texture, grains, color, and flavor. The summary of panel scores on the acceptability of the pan de sals using the three brands flour are shown in Table II.

RESULTS AND DISCUSSION

Among the three brands of flour used in the experiment, Willington was found to produce the biggest pan de sal. Eliphante and Ul Montana produced slightly smaller breads.

TABLE I. COMPARATIVE VOLUME OF SEVEN PAN DE SAL FROM THE DIFFERENT BRANDS OF FLOUR

Brands of Flour	Volume (ml.)
Willington	470
Eliphante	445
Ul Montana	427

The pan de sals using Willington flour were moist, finely textured, and thinly celled. They had the same shape, exterior and interior color and flavor as those made with the two other brands of flour. Their crusts were free from cracks and bulges and their flavor was well-blended.

TABLE II. AVERAGE PANEL SCORES ON THE ACCEPTABILITY OF PAN DE SAL USING THREE BRANDS OF HARD WHEAT FLOUR

Characteristics	Perfect	Willington	Eliphante	Ul Montana
1. Shape-well proportioned semetrical	10%	8	8	8
2. Crust-uniform browning, free from cracks and bulges	10%	9	8	7
3. Volume-large and light in weight in proportion to size	10%	10	9	9
4. Texture-tender elastic crumbs free from dryness or doughness	20%	20	18	17
5. Grains-finely thin called	10%	9	8	8
6. Color-free from dark streaks, golden brown on top	10%	8	8	8
7. Flavor-well blended flavor of ingredients, free from undesirable flavor	30%	30	27	27
Total Score	100%	94	86	84

Eliphante flour products ranked second best in crust texture and grains. Their crusts had few bulges while those made with Ul Montana had few cracks. Breads made from Eliphante flour were less moist than those made with Willington but they were tender and finely textured. Those from Ul Montana were dry and coarse.

CONCLUSION AND RECOMMENDATION

Of the three brands of flours used in making pan de sal, Willington was found to the best. Its baked products were almost doubled in size, finely textured and had well blended flavor. It could be that this is the reason why a survey shows that most bakeries in Baguio and La Trinidad use Willington for bread-making. However, Eliphante and Ul Montana flours are still considered good bread flours. Their products were only slightly inferior compared to those made with Willington in volume and texture. Although Eliphante flour is better than Ul Montana in crusts, softness of crumbs and fineness of grains, both had similar products with respect to size.

It is suggested that the performance of these flours in other breads leavened by yeast be made as a check on the results of this experiment.

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PART IV. THE COLLEGE CHARTER

SIXTH CONGRESS OF THE REPUBLIC)
OF THE PHILIPPINES) H. NO. 16642
FOURTH SESSION)

(REPUBLIC ACT NO. 5923)

AN ACT CONVERTING THE MOUNTAIN AGRICULTURAL COLLEGE IN THE MUNICIPALITY OF LA TRINIDAD, PROVINCE OF BENGUET, TO A STATE COLLEGE TO BE KNOWN AS THE MOUNTAIN STATE AGRICULTURAL COLLEGE.

Be it enacted by the Senate and House of Representatives of the Philippines in Congress assembled:

SECTION 1. The present Mountain Agricultural College in the Municipality of La Trinidad, Province of Benguet, is hereby converted into a state college to be known as Mountain State Agricultural College effective upon availability of funds.

SECTION 2. In addition to its present four-year secondary agricultural homemaking courses; one-year farm mechanics courses and four-year teacher education curriculum leading to the degrees of Bachelor of Science in Agricultural Education and Bachelor of Science in Home Technology, the College will offer the following collegiate and graduate courses:

a) Four-year technical curriculum leading to the degree of Bachelor of Science in Agriculture;

b) Graduate course leading to the degree of Master of Science in Agricultural Education;

c) Graduate course leading to the degree of Master of Science in Home Technology; and

d) Graduate course leading to the degree of Master of Science in Agriculture.

SECTION 3. The aim of the said College shall be to provide professional, technical, and special training and promote research, extension services, and progressive leadership in the field of agriculture and home technology.

SECTION 4. The head of the institution shall be known as the President of the Mountain State Agricultural College. He shall be appointed by the President of the Philippines upon recommendation of the Board of Trustees as hereinafter provided. The powers and duties of the President of the College, in addition to those specifically provided in this Act, shall be those usually pertaining to the office of the President of a college.

SECTION 5. The Mountain State Agricultural College shall have the general powers set out in Section thirteen of Act Numbered Fourteen hundred and fifty-nine, as amended, and the government and administration of said College and the exercise of its corporate powers are hereby vested in the Board of Trustees. The Board of Trustees shall be composed of the Secretary of Education, who shall be ex-officio Chairman of the Board, the Chairman of the Committee on Education of the Senate, the Chairman of the Committee on Education of the of Representatives, the Director of Vocational Education, the Director of Public Schools, the President of the College, and the President of the Mountain State Agricultural College Alumni Association. In the absence or the inability of the Secretary of Education, the Undersecretary of Education shall act as ex-officio Chairman of the Board of Trustees. When both the Secretary and the Undersecretary of Education are unable to exercise the powers of the Chairman of the Board of Trustees, the members of the Board may elect among themselves a temporary Chairman who shall act as Chairman of the Board of Trustees.

Members of the Board of Trustees shall serve without compensation, other than actual and necessary expenses incurred either in attendance upon meetings of the Board or upon other official business authorized by resolution of the Board.

SECTION 6. The Board of Trustees shall have the following powers and duties, in addition to its general powers of administration:

a. To receive and appropriate to the end specified by law such sums of money as may be provided by law for the support of the College;

b. To confer the degree of Bachelor of Science in Agricultural Education, Bachelor of Science in Home Technology, Bachelor of Science in Agriculture, Master of Science in Agricultural Education, Master of Science in Home Technology, and Master of Science in Agriculture.

c. To appoint, on the recommendation of the President of the College, professors, instructors, lecturers, administrative and supervisory officials, and other employees of the College as may be necessary for the effective implementation of the college program; to fix their compensation, hours of service and such other duties and conditions as it may deem proper; to grant to them, in its discretion, leave of absence under regulations as it may promulgate, other provisions of law notwithstanding; to prescribe rules of academic discipline for the educational and professional growth of faculty members and other personnel; and to remove them for cause after an investigation and hearing shall have been held;

d. To approve the curricula and rules of discipline drawn up by the College Council as hereinafter provided;

e. To fix the tuition fees, as well as matriculation fees, graduation fees and fees for laboratory courses, and all special fees, and to remit the same on special cases;

f. To provide fellowships for faculty members and scholarships to students showing special evidence of merit;

g. To provide rules for its government, and to enact for the government of the College such general ordinances and regulations, not contrary to law, as are consistent with purposes of the College, as defined in Section three of this Act.

h. To receive in trust legacies, gifts, and donations of real and personal property of all kinds and to administer the sum for the benefit of the College or for aid to any student, in accordance with the directions and instructions of the donor, and in default, thereof, in such manner as the Board of Trustees may, in its discretion, determine;

i) A quorum of the Board of Trustees shall consist of a majority of all its members holding office at the time the meeting of the Board is called.

SECTION 7. On or before the fifteenth of June of each year, the Board of Trustees shall with the President of the Philippines a detailed report, setting forth the progress, conditions, and needs of the College.

SECTION 8. There shall be a College Council consisting of the President of the College as presiding officer and of all professors and instructors of the College as members. The Council shall have the power to prescribe the curricula and rules of discipline, subject to the approval of the Board of Trustees. It shall fix the requirements for admission to the College, as well as for graduation and the receiving of a title or a degree. The council alone shall have the power to recommend students or others to be recipients of titles or degrees. Through its president or committee, it shall have disciplinary power over the students within the limits prescribed by the rules of discipline approved by the Board of Trustees.

SECTION 9. The body of professors and instructors of the College shall constitute the faculty of the College. In the appointment of professors or instructors of the College, no religious test shall be applied nor shall religious opinions or affiliations of the faculty of the College be made a matter of examination or inquiry: Provided, however, That no professor or instructor in the College shall inculcate sectarian teachings, nor attempt either directly or indirectly, under penalty of dismissal by the Board of Trustees, to influence students attending the College for or against any particular church or religious sect.

SECTION 10. Professors and other teaching personnel of the College shall be exempt from any civil service examination or regulation as a requisite to appointment.

SECTION 11. There shall be a Secretary of the College, appointed by the Board of Trustees. He shall be the secretary of such Board of Trustees and also of the College.

SECTION 12. To help the Mountain State Agricultural College achieve its educational, research and extension aims, the College Council is hereby empowered to negotiate or make arrangements with sister government colleges or universities, private colleges and universities, other government agencies, and private or semi-private organizations for cooperative projects in instructions, research, and extension; and to seek the assistance of educational foundations in promoting the programs of instructions, research, and extension.

SECTION 13. Subject to the approval by the Board of Trustees, the President of the College, upon the recommendation and by the authority of the College Council, is hereby authorized to negotiate and contract financial loans, for and in behalf of the College, from the Government Insurance System, Development Bank of the Philippines or Philippine National Bank, to finance self-liquidating construction projects such as dormitories and cottages of students faculty and employees' cottages, and housing and other physical improvements for income and non-income producing projects of the College: Provided, That the total yearly amortization of such loans, including interests, will not exceed seventy-five per cent of the total expected yearly production net income of the College.

SECTION 14. Heads of bureaus or offices of the National Government are hereby authorized to loan or transfer, upon request of the President of the College, equipment, apparatus, or supplies as may be needed by the College, and to detail employees for duty therein, when in the judgment of the head of the bureau or office such supplies or employees can be spared without serious detriment to the public service.

SECTION 15. The College, by arrangement with the Director of Vocational Education and Director of Public Schools, may use one or more vocational or general public schools as training or laboratory schools of the College.

SECTION 16. The present faculty of the College, as well as the administrative and supervising officials and other personnel of the former college as well as the present buildings, equipment and facilities and other properties, real and personal, shall be absorbed by the new College. Salaries of these personnel shall be adjusted at the discretion of the Board of Trustees within the amount availble for appropriation.

SECTION 17. This Act shall take effect upon its approval. Enacted without executive approval, June 21, 1969.

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