

SECOND DECADE, "RENEWED VISION
AND GREATER CHALLENGES"

ELEVENTH ANNUAL REPORT

MOUNTAIN STATE AGRICULTURAL COLLEGE
LA TRINIDAD, BENGUET

1980

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BRUNO M. SANTOS
PRESIDENT

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La Trinidad, Benguet

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BRUNO M. SANTOS
President

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

August 10, 1981

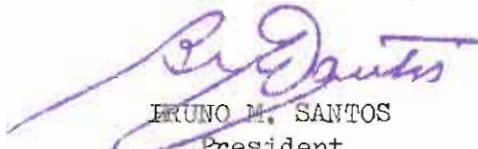
His Excellency Ferdinand E. Marcos
President, Republic of the Philippines
Malacañang, Manila

Thru: The Minister
MEC, Manila

S i r :

I have the honor to submit herewith the Eleventh Annual Report of the President, Mountain State Agricultural College, La Trinidad, Benguet, pursuant to the provisions of Republic Act 5923, covering the calendar year 1980.

Very truly yours,



BRUNO M. SANTOS
President

Copy Furnished:

1. Minister, Ministry of Education and Culture
2. Members, Board of Trustees
3. MEC Representative for State Colleges & Universities
4. PASUC Office, Ministry of Education & Culture

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MOUNTAIN STATE AGRICULTURAL COLLEGE
La Trinidad, Benguet

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SECOND DECADE: "RENEWED VISION AND
GREATER CHALLENGES"

11th Annual Report
1980

Overview:

This annual report covers the sixth year of implementation of the second five-year Development Program of the Mountain State Agricultural College and the first year of the second decade of the college existence as a chartered institution.

Challenged by its success and modest achievements in the first decade, the College is more determined and resolute to expand its functions and services to meet the needs of the studentry and the community.

1. Instruction. Total enrollment was at the same level as that of last year to give the administration ample time to inventory and acquire basic school needs on instructional and service facilities to balance the number of students enrolled with the available facilities.

In the graduate school, the fields of specialization were expanded to serve the expanding needs in the region. This was possible by the return to duty of instructors who finished their graduate studies on scholarships here and abroad.

Of great help to the students were the various scholarships granted by the college funded by the government and/or private entities. This was reinforced by the government's program of "Study-

Now-Pay-Later Plan." This is in line with the policy of helping the poor but deserving students.

2. Research. Given the challenge that every faculty member is expected to undertake a research per year, instructors undertook researches as evidenced by the research output this year as compared with that of the past ten years. There were more or less 540 researches from 1970 to 1980 and out of these were 190 researches in 1980.

The breakdown is as follows:

Graduate Thesis	7
Faculty Research	15
Undergraduate Thesis	<u>168</u>
Total	<u>190</u>

To expand research, a Memorandum of Agreement was inked between MSAC and ASIA, Inc. for a joint venture for development of technology packages in the production of strawberry, potato and other vegetables. This is an addition to the agencies that extended external support as reported in last year's annual report.

The research program has reached the stage wherein the stress is in quality rather than quantity. It is programmed by commodities, namely, vegetable crops, root crops, fruit crops, flower, ornamental, and medicinal crops, fiber and sericulture, livestock, hog and poultry, etc, biogas, macro-micro economics, and applied rural sociology.

The challenge of the Ministry of Education and Culture to all state colleges and universities to double production by 50 per cent in 1980 paid off handsomely. The following figures show the net

income from the different production projects since 1977:

1977	₱166,369.30
1978	196,437.41
1979	194,578.16
1980	309,579.53

The increase on last year's production net income was ₱115,001.37.

With the momentum and added impetus, the 100 percent increase in production for 1981 is expected to be realized to meet the challenge of the Ministry of Education and Culture.

3. Extension. The extension program of the College continues to function in the dissemination of technology to the community as one of trilogy functions of the College. It continues to be funded by the National Manpower Youth Council (NMYC) and from the Oxford Commission on Famine Relief (OXFAM), a London-based foundation through Philippine Business for Social Progress (PBSP). The program covers a wide range of activities through its involvement in numerous training programs and activities.

4. Administration/General Services. The proposed land swap arrangement between the Mountain State Agricultural College and the Province of Benguet will soon be realized. The complete papers were submitted to Malacañang for action. Formal signing of papers and turn-over ceremonies is definitely set in the early part of 1981.

Two lots in the school reservation were finally titled in the name of the College. Meanwhile, negotiations for assistance in the form of loans from either public or private financing agencies are underway. This is for the construction of self-liquidating projects like student dorms or faculty cottages with the title of said lots

as collaterals with a feasibility study.

The settlement of the squatters' problem within the school reservation is being attended to and pursued with sincerity and dedication. Assigned to attend to this problem is a Committee on College Reservation. The bulk of its work is to attend to the filing of judicial and administrative cases and to represent the College when involved as a plaintiff or respondent in such cases.

In the past, the College was represented in court cases by the Office of the Solicitor General or the Office of the Provincial Fiscal, for the reason that the College has no permanent Legal Officer. Fortunately, the position was filled on October 16, 1980. With the filling of the position, the College can better coordinate its efforts in attending to problems concerning squatters and claimants.

As had been done over the years, the cooperation of local and national officials and other agencies concerned is being exploited and solicited in the resolution of problems involving squatters and claimants. The most recent move of the College was the proposed segregation of a relocation site for squatters and/or claimants who vacated the premises of the Agro-Forestation Project at Ampasit, Wangal, La Trinidad, Benguet. The projected relocation site, with an area of 1.0489 hectares, also situated at Ampasit, is covered by survey plan No. Swo-1-000792. Being awaited by the College is a proclamation from Malacañang to declare the area as a relocation site.

Pursuant to the provisions of P.D. 1437, two (2) prominent citizens of Benguet were recommended for appointment as members of the MSAC Board of Trustees. The papers were forwarded to Malacañang for proper action. Approval is awaited to complete the membership in the Board which remained unfilled for sometime.

5. Physical Development. The physical development of the College in accordance with the Ten-Year Capital Outlays Program from CY 1979-1988 is being pushed through to cope up with the academic growth. The construction of eight (8) buildings was completed with a total cost of ₱6,435,000.00 to serve the various needs of the College. Construction of the Animal Science Laboratory building, phase II, is underway. Five (5) construction projects were bid in the latter part of the year with a total cost of ₱4,139,000.00. Work on the five construction will start in January 1981.

6. Personnel Development. The faculty development program was enhanced. Additional instructors and employees were recruited. Some instructors on scholarship finished their studies and reported to duty. A number are still in school while other instructors were sent on scholarship in or out of the country. Many of them enrolled in nearby colleges and universities at their own expense. Some instructors and personnel were also promoted within the year under review.

7. Fiscal Support. The fiscal support for the Mountain State Agricultural College as contained in the 1980 budget was

a total of ₱16,331,000.00 but only the amount of ₱13,598,815.40 was released and obligated broken down as follows:

Personal Services	₱5,404,928.65
Operating & Maintenance	969,106.55
Equipment	24,780.20
Capital Outlay	<u>7,200,000.00</u>
Total	<u><u>₱13,598,815.40</u></u>

CHAPTER I
INSTRUCTION

A. Enrollment

1. Enrollment by Course, by Level, by Term/Semester

1.1 Graduate	<u>Summer</u>	<u>1st Sem.</u>	<u>2nd Sem.</u>
Master of Science	105	115	128
1.2 Undergraduate			
B.S. in Agriculture	660	1,109	954
B.S. in Agr. Education	303	526	497
B.S. in Home Technology	96	164	158
B. of Agri-Bus. Mgnt.	55	88	85
B.S. in Forestry	193	258	251
B.S. in Animal Tech.	114	200	162
B.S. in Ag. Engineering	96	220	207
Total . . .	<u>1,517</u>	<u>2,565</u>	<u>2,314</u>
1.3 Post Secondary			
Agri-Mechanics	-	40	40
Short Courses	14	20	11
Total . . .	<u>14</u>	<u>60</u>	<u>51</u>
1.4 Secondary			
Vocational Agriculture	-	468	-
Special Science	-	88	-
General Curriculum	-	424	-
Total . . .		<u>980</u>	
1.5 Elementary	-	841	-
GRAND TOTAL . .	<u>1,636</u>	<u>4,561</u>	<u>2,493</u>

1.6 Summary of Enrollment by Levels

	<u>Summer</u>	<u>1st Sem.</u>	<u>2nd Sem.</u>
Tertiary	1,622	2,680	2,442
Post Secondary	14	60	51
Secondary	-	980	-
Elementary	-	841	-
Total . .	<u>1,636</u>	<u>4,561</u>	<u>2,493</u>

2. Student Origin. Distribution of students based on the place of birth, tertiary level.

<u>Origin</u>	<u>Total</u>	<u>Percentage</u>
Within Benguet	1,330	57.47
Within Region I but outside Benguet	690	29.81
Within the country but outside Region I	294	12.72
Total . .	<u>2,314</u>	<u>100.00</u>

3. Scholarships. A total of 337 students enjoyed various types of scholarships during the period under review.

3.1 Tertiary. There were seven (7) student scholars under academic as valedictorian or resident honor students; 97 under tuitional scholarships, the Glee Club, KONTAD, CMT Corps Commander, Editor and the Student's Assistance program; 228 under the government scholarship programs such as State Scholarship, PANAMIN, Study-Now-Pay-Later Plan, NISG, FVA, APP, and NFAC. There were also 5 scholars supported by the Baguio-Benguet Petroleum Association.

3.2 Secondary. There were 89 students who enjoyed administrative

scholarships distributed as: 86 for the Special Science Curriculum; 1 for CAT Corps Commander; 1 CAT Adjutant; and 1 Editor, Mountain Breeze.

B. Graduates

1. Tertiary. The data include the graduates as of March, Summer and October, 1980.

<u>Curricular Programs</u>	No. of Graduates		<u>Total</u>
	<u>Male</u>	<u>Female</u>	
MS	9	1	10
BSA	88	125	213
BSAE	11	47	58
BSAEng	6	-	6
BSM	57	19	76
BSAT	-	23	23
BALBM	10	8	18
BSHT	5	2	7
Total . .	<u>186</u>	<u>225</u>	<u>411</u>

2. Post Secondary

Agric'l. Mechanics	41	-	41
Short Courses	-	11	11
Total . .	<u>41</u>	<u>11</u>	<u>52</u>

3. Secondary

Vocational Agriculture	39	-	39
Home Technology	-	37	37
Special Science	7	13	20
General Curriculum	43	61	104
Total . .	<u>89</u>	<u>111</u>	<u>200</u>

4. Elementary	66	51	117
GRAND TOTAL . .	<u>382</u>	<u>398</u>	<u>780</u>

C. Academic and Support Personnel

1. Teaching and Support Staff

	<u>Ph.D./Ed.D.</u>	<u>MS/MA</u>	<u>BSE</u>	<u>Total</u>
Teaching	15	54	159	228
Non-Teaching	-	-	-	202
Total				<u><u>430</u></u>

2. Professional Growth. Four (4) faculty members completed and graduated under the Ph.D./Ed.D. program and five (5) in the MA/MS program.

Of the faculty members on study leave, one (1) is in UP Los Baños under the Ph.D. program and eight (8) under the MS/MA program in and outside the country.

D. Accomplishments, Problems and Recommendations by Departments

1. Graduate Studies

Organized in 1972, the Graduate Studies had developed and offers a variety of specializations in agronomy, agricultural education, agricultural extension, animal science, agriculture, practical arts, and soils.

Of the 36 faculty members one (1) is a Ph.D., 12 Ed.D's and 23 with MA degrees.

The graduate students come from the other state colleges and universities in Regions I and II, agricultural schools and colleges in Region I and from the Ministry of Agriculture and Ministry of Education and Culture. Some 10 students are

expected to graduate on March, 1981.

The following shows the steady increase of enrollment in the Graduate School through the years.

School Term	E N R O L L M E N T								
	1972-:1973-:	1973-:1974-:	1974-:1975-:	1975-:1976-:	1976-:1977-:	1977-:1978-:	1978-:1979-:	1979-:1980	1980
1st Sem.	30	21	49	60	72	43	64	101	118
2nd Sem.	25	24	49	54	58	50	75	56	128
Summer	24	56	52	63	123	77	62	103	-
Total	79	101	150	177	253	170	201	260	246

1.1 Accomplishments:

1. Major and/or minor fields of specialization:

- a. Plant Science - Agronomy/Horticulture
- b. Soils Science
- c. Animal Science
- d. Agricultural Education
- e. Practical Arts (concentration in Home Technology)

2. Action Researches Being Conducted:

- a. Leadership Profile of MSAC MS graduates
- b. Reaction study on the Proposed Ph.D. Program
- c. Development of a Ph.D. Program

3. Coding of "Problems" having to do with graduate studies at

MSAC

4. Publication of Graduate Research Abstracts

1.2 Problems

1. Most graduate students are employed and therefore have little time for consultations with their thesis advisers or for library works.
2. Some textbooks and references are needed to improve the library facilities.
3. The faculty members need a continuing in-service training especially in the mechanics of thesis writing.

Solutions to these problems are being worked out slowly but consistently with the operational coordination and cooperation of the students, graduate office, the administration and the graduate faculty.

1.3 Recommendations:

1. Evolvement of a Graduate Studies Code to serve as a guide in the operation of the graduate program.
2. Inclusion of Crop Protection and Agri-Business/Agri-cultural Economics as additional major/minor fields of specialization.
3. Production of syllabi by courses and monographs by topics.
4. Graduate students with major in extension be required to render one month extension in a special project.
5. Development of a Ph.D. curriculum.

2. Undergraduate. The academic departments during the year under review strengthened their objectives to improve the quality of the teaching-learning situation. The following instruments were implemented to upgrade the performance of the academic and administrative staff.

- a. Evaluation of the performance of faculty members by the students.
- b. Evaluation by the faculty of their Administrative/Supervisory Staff.
- c. Peer evaluation by the faculty members.
- d. Evolvement of a 2-year Action Program by departments in the fields of instruction, research and extension.

2.1. Department of Plant Science. The Department carried out a balance between theory and practice both in the basic and major courses. 1,230 students enrolled in this department. Tabulated is the percentage of passing, failure, and other deficiencies in each subject during the first semester.

Subject	No. of Students	% Passed	% Failed	% Dropped	% Inc/Other Deficiencies	Total %
Plt. Sc.11	30	56.67	0.00	0.00	43.33	100
Plt. Sc.12	419	89.02	3.10	0.00	7.88	100
Botany 13	158	74.68	16.46	3.00	5.86	100
Horti. 20	73	46.58	0.00	4.11	47.95	100
Horti. 21	70	90.00	0.00	0.00	10.00	100
Horti. 40	92	83.70	2.17	0.00	14.13	100
Agronomy 60	33	93.94	6.06	0.00	0.00	100
Agronomy 90	15	100.00	0.00	0.00	0.00	100
Hort/Agron 99	86	97.67	0.00	0.00	2.33	100

Research activities were carried out in all the subjects especially in the major courses. All members of the faculty undertook applied researches in relation to instruction. The on-going researches are shown in the next page.

<u>Title</u>	<u>Researcher</u>	<u>Funding Agency</u>
1. General and Regional Varietal Performance on Solanaceous Crops (Eggplant and Sweet Pepper)	Mr. Pepe E. Toledo	FCARR
2. Weed Control in White Potato	Mr. Pepe E. Toledo	FCARR
3. Assessment of Storage Losses Under Different Low Cost Storage Structure	Prof. Elmo O. Sano	MSAC-CIP
4. Comparative Study on the Yield of Potato Seeds Stored in Diffused Light Versus Seeds Stored in Dark Store	Prof. Elmo O. Sano	MSAC-CIP
5. Effect of Depth of Planting on the Yield of Potato	Prof. Elmo O. Sano	MSAC
6. Effect of Seed Tuber Size on the Yield of Potato	Prof. Elmo O. Sano	MSAC
7. True Potato Seeds Study on Bare Root Seedling Versus Covered with Soil	Prof. Elmo O. Sano	MSAC-CIP
8. Plant Population Study on True Potato Seed	Prof. Elmo O. Sano	MSAC-CIP
9. Regional Advanced Yield Test on Wheat	Prof. Faustino G. Hermano	MSAC-CIP

<u>Title</u>	<u>Researcher</u>	<u>Funding Agency</u>
10. Germplasm Collection and Introduction of Legumes	Prof. Faustino G. Hermano	MSAC-CIP
11. Seed Production Economics of Crucifers	Prof. Faustino G. Hermano	MSAC-CIP
12. Potato Breeding	Prof. Faustino G. Hermano	MSAC-CIP
13. Seed Production Studies for High Evaluation on Crucifers	Dr. William D. Dar	FCARR
14. Multiplication of Apples in Benguet	Dr. William D. Dar	FCARR
15. Effect of Plot Size and Depth of Planting on the Growth and Yield of Three Potato Varieties Cadatal	Mr. Macario D. Cadatal	MSAC
16. Cropping Pattern for Highland Vegetable Crops	Dr. Lucio B. Victor Prof. Franco T. Rawang	FCARR
17. General and Regional Varietal Performance of Crucifers (Cabbage and Lettuce)	Dr. Lucio B. Victor Prof. Franco T. Rawang	FCARR
18. Time Input of Faculty Advisers on Undergraduate Thesis	Dr. Lucio B. Victor	Faculty Research
19. Why Students from Pangasinan and La Union Come to Study in ISAC	Dr. Victor B. Victor	Faculty Research

The extension work of the Plant Science Department consisted of result demonstrations in farming communities and direct participation in community program.

Coordinated by Prof. Elmo O. Sano, the following result demonstrations were conducted along the Halsema Road (Mountain Trail):

- a. On-farm demonstrations on diffused light storage with 15 farmer-leader cooperators.
- b. On-farm demonstration on the use of clamp storage of potato with two farmer-leader cooperators.

On community participation, the following were undertaken:

- a. The Floriculture section participated in the Medicinal Plant Show held in Baguio City on October, 1980.
- b. A team headed by Dr. William D. Dar with Messrs. Ben Ladilad and Danilo Padua went to the University of Northern Philippines, Vigan, Ilocos Sur, as members of the Evaluation Committee during the Second Annual Garden Show held on October 11-12, 1980. The team was requested by Dr. Romualdo B. Tadema, UP President.

Two pressing problems are a Research Operation Building to serve as the organized instruction-research link within the department and an adequate area for laboratory for students to conduct their theses work and the faculty to conduct researches.

2.2 Animal and Veterinary Science Department. The department has been undertaking researches as an integral part of the curriculum. Some of the researches are:

<u>Title</u>	<u>Researchers</u>
1. Performance of Ducklings on Different Stocking Densities	Prof. Domingo Q. Casiwan A. Ray-an
2. The Effects of the Different Levels of Booster Dose on the Performance of Broilers	Prof. Sydney E. Moresto G. Leerawat

<u>Title</u>	<u>Researchers</u>
3. Ground Sorghum as a Feed Supplement to Broiler Ration	Prof. Sydney E. Moresto E. Poyaoan
4. Performance of Broilers to Boiled Sugarcane Juice	Prof. Sydney E. Moresto B. Corpuz
5. The Effect of Different Levels of Selenium/Tocopherol on the Growth of Broilers	Dr. Reynaldo B. Galban C. Palad
6. Performance of Broilers Given Sweet Potato Meal as Feed Supplement under Ilocos Sur Conditions	Prof. Sydney E. Moresto A. Rabang
7. Rice-Bran Soybean Meal Combination with Varying Protein Levels for Growth-Fattening Swine	Prof. Sydney E. Moresto F. Flores
8. Effects of Rice Bran Soybean Meal Combination on Carcass Characteristics of Hogs	Prof. Sydney E. Moresto S. Caron
9. The Utilization of Coconut in Poultry Feeding	Prof. Sydney E. Moresto L. Elegado
10. Maximum Amount of Commercial Feeds for Native Pigs	Prof. Sydney E. Moresto R. Albis
11. A Comparative Study on the Performance of Broilers Raised in Dark and in Normal Conditions	Prof. Sydney E. Moresto B. Pasay-an
12. Comparative Study on the Different Levels of Fresh Levels of Fresh Coconut Meat as Feed Supplement for Pigs under IAC Conditions	Prof. Sydney E. Moresto R. Untalan
13. The Utilization of Coconut Oil in Poultry Feeding	Prof. Sydney E. Moresto H. Badua

<u>Title</u>	<u>Researchers</u>
14. Performance of Broilers on the Different Levels of Cassava Meal as Feed Supplement	Prof. Sydney E. Moresto C. Cabrera
15. Study on the Effect of the Different Levels of Dried Chicken Manure on the Performance of Broilers	Prof. Sydney E. Moresto E. Baing
16. Study on the Levels of Corn Soya Milk as Feed Supplement for Broilers	Prof. Sydney E. Moresto P. Chirapunyalert
17. Performance of Peking Duck under M.S.C Conditions	Prof. Sydney E. Moresto Galda
18. Algae as a Feed Supplement for Broilers	Prof. Sydney E. Moresto P. Sonico
19. Minimum Amount of Commercial Feeds for Native Pigs	Prof. Sydney E. Moresto P. Sonico
20. The Effect of Early Weaning on the Performance of Weaning on the Performance of Weanling Pigs under Irisan Conditions	Prof. Domingo Q. Casiwan J. Millare, Jr.
21. Water Treated Ground Ipil-Ipil Seed as a Feed Supplement to Broilers	Prof. Sydney E. Moresto D. Calimlim
22. Effects of Different Levels of Booster Starter Mash on the Performance of Broilers	Prof. Sydney E. Moresto G. Leerewat
23. The Study on the Anthelmintic of Quantrel in Pigs	Dr. Anacleto D. Magtoto B. Masweng
24. Survey on the Incidence of Rabies in the Province of Benguet	Dr. Basito S. Cotiw-an B. Agypas
25. The Efficiency of Terramycin/ I ₂ in Respiratory Infection of Dogs	Dr. Reynaldo E. Galban J. Cadaweng

<u>Title</u>	<u>Researchers</u>
26. Evaluation on the Curative Value of Tetrasole as an Anthelmintic Agent Against Stomach and Intestinal Worms of Cattle under Mountain State Agricultural College Conditions	Dr. Basito S. Cotiw-an M. Dunwan
27. The Incidence of Kidney Worm (<u>Stephanurus dentatus</u>) in Swine Slaughtered at the Baguio Slaughter House	Dr. Judith M. Gawisan R. Guives
28. The Study of Different Levels of Quantrel as an Anthelmintic Against (<u>Ancylostoma Canium</u>) in Dogs	Dr. Anatalia V. Castrence A. Amlag
29. The Incidence of Heartworm (<u>Dirofilaria Immitis</u>) with Emphasis on its Economic Importance in Dogs Slaughtered at Baguio Abattoir	Dr. Judith M. Gawisan Balancio
30. Study on the Effect of Munog-Liquid on the Performance of Feed Lot Fattening Cattle	Dr. Basito S. Cotiw-an Camilo Ogues
31. Study on Swine Fetal Placenta for the Treatment of Second Degree-Burn in Dogs	Dr. Basito S. Cotiw-an B. Guivao
32. Identification of Canine Gastro-Intestinal Parasites Slaughtered at the Baguio Abattoir	Ms. Manolita N. Alvaro F. Ciano
33. A Study on the Effect of Different Doses of Diethylstilbestrol Derivatives on Male Broiler Chicken	Dr. Reynaldo B. Galban R. Quiambao

The NSDB released in December 1980 the amount of ₱300,000.00 for the operation of the MSAC-NSDB Project "Establishment of Dairy Cattle Pilot Project in Highland Areas".

The department was deeply involved in extension work. The faculty and senior students vaccinated animals in Benguet against hog cholera, RHD, rabies, and fowl pox distributed as follows: cattle - 106; swine - 68; goat - 30; dogs - 27 and chicken - 624 with a total of 855 animals treated.

The problem in the department is the lack of laboratory facilities. It is being improved by considering needs and procurement according to priorities.

2.3 Home Technology Department. Some of the notable accomplishments within the year under review were:

- a. Enriched the teaching guides, syllabi and laboratory manuals in all Home Technology subjects.
- b. Unified all BSHT curricular offerings.
- c. Equipment were purchased from the income of the laboratory classes.
- d. Conducted a Population Education Seminar sponsored by the Medical Society and FPOP of Benguet.
- e. The department coordinated the Canteen operations within the campus that resulted to the realization of a substantial amount as shown elsewhere in this report under Production Projects.

In research, the accomplishments were:

- a. Finished a research entitled "Women's Participation in Rural Development of Region I" funded by N&CP, by Mrs. Estela Mangioet.
- b. Some faculty members were involved as Project Leaders or Study Leaders in the on-going researches in the Integrated Potato Research Program, Project IV.
- c. Submitted the following research proposals which were approved for 1981.

	<u>Title</u>	<u>Researcher</u>	<u>Funding Agency</u>
1.	Utilization of Carrots in Food Processing	Mrs. E. Mangioet	PCARR
2.	Marketing for Small Scale Vegetable Farmers in Mountain Province	-do-	NRCP
3.	A Development Concept for Ethnic Group in Northern Luzon	-do-	NRCP-SFP-MSAC

- d. Some seven research proposals were submitted to PCARR for consideration for the ensuing year.

The extension activities of the department consisted in the offering of short courses in dressmaking, native cookery and tailoring. Twenty one students from all walks of life finished the course.

2.4 Agri-Business and Economics Department. The course outlines in the Department were updated at the beginning of the school year. Syllabus in Economics II was developed, printed and distributed to the students.

In line with the College policy of strengthening

the faculty, two faculty members are on PCARR scholarship, namely, Evangelina Buyagawan pursuing MS Economics at UPLB and Alfredo Rigonan pursuing MS Ag. Ed. (Extension) at UPLB.

Other faculty members were encouraged to take up post-graduate studies to improve their competencies. These instructors took up the challenge and enrolled in UP, Baguio and at MSAC.

Extension activities are reported in detail in Chapter III (Extension) of this report.

2.5 Teacher Education and Social Sciences Department. In professional growth, three faculty members are taking up post-graduate studies. In in-service training Prof. L. Villamater attended a seminar-workshop on Research Preparation and Methodology sponsored by PCARR in UPLB on January 6, 1980. Prof. L. Villamater, Mrs. Z. Llanes and Mr. A. Laking attended a seminar-workshop for Loan III representing Socio-Economics from August 28 to September 13, 1980 at the RTC-ED, MSAC. In research, an on-going study entitled "Socio-Cultural Practices of Agricultural Production in the Highland" is being undertaken by the faculty members.

In extension activities, the department participated in a debate entitled "Legalization of Mercy Killing in the Philippines" under the PESS Festival, directed two One-Act Plays on March 4, 1980, and sponsored a "Search for Miss Future Educator Contest".

2.6. Biological Science Department. In professional growth, the following shows the attendance of instructors to ~~some~~ in-service training activities.

	Teacher	Field of Training	Period	Conducted By
1.	Sergia P. Hilagrosa	2nd Phil. Environmental Congress	Oct. 24-27 1980	UPLB
2.	Lorenza C. Idrio	2nd Phil. Environmental Congress	Oct. 24-27 1980	UPLB
3.	Percival B. Alipit	Research Station Development Plan Preparation	Aug. 29- Sept. 1 1980	MSAC
4.	Percival B. Alipit	Benguet Coordinated Agric'l. Development Program	Sept. 23-24 1980	MSAC
5.	Bonnie S. Ligat	Research Program Formulation for Vegetables	Oct. 30-31 1980	FCARR

Under scholarship grants, the following instructors are enrolled in various institutions of learning in and outside the country.

	<u>Name</u>	<u>Scholarship</u>	<u>Place</u>	<u>Funding Agency</u>
1.	Esteban B. Akiew	MS (Pathology)	Australia	Australian Fellowship
2.	Lita M. Colting	MS (Entomology)	UPLB	ICARR
3.	Janet S. Luis	MS (Pathology)	UPLB	FCARR
4.	Orlando C. Ocampo	MS (Biology)	SLU	NSDB
5.	Luciana M. Villanueva	Ph.D. (Pathology)	UPLB	FCARR

The other instructors are enrolled on their own in far or nearby schools.

	<u>Name</u>	<u>Course</u>	<u>Institution</u>
1.	Erlinda C. Bestre	MS (Biology)	SLU
2.	Manuela P. Cadeliña	MS (Botany)	AU
3.	Eulogio V. Cardona, Jr.	MS (Entomology)	UPLB
4.	Jose J. Josue	MS (Biology)	SLU
5.	Nora P. Lucero	MS (Entomology)	AU
6.	Nancita F. Puntawe	MS (Biology)	SLU

Extension services rendered during the year under review was the identification of pests and diseases affecting crops and recommendation of possible solutions.

Some notable accomplishments were the planting of Shiitake mushroom in logs and the setting up of a botanical garden stocked with different species of plants including medicinal plants.

Researches being undertaken by the members of the faculty are:

	<u>Title</u>	<u>Researcher</u>	<u>Funding Agency</u>
1.	Insecticide Screening Against Insect Pests of Cabbage	Eulogio V. Cardona, Jr.	Union Carbide
2.	Ecological Succession and Population Dynamics of the Major Insect Pests and Beneficial Insects of Potato	-do-	
3.	Evaluation of Insecticides Against Major Insect Pests of Potato	Nora P. Lucero	MSAC-PCARR
4.	Collection, Identification and Biology of Insect Pests and Diseases of Potato	Sergia P. Milagrosa Nancita F. Puntawe	MSAC-PCARR
5.	Evaluation of Fungicides Against Late Blight and Rhizectinia Potato	Sergia P. Milagrosa	MSAC-PCARR
6.	Pilot Testing on the Control of Potato Thrips	Bonnie S. Ligat	MSAC-PCARR

One of the problems is the lack of quality supplies and materials for laboratory and classroom use. This is being solved by prioritizing the needs, college-wide. A five-year development plan from 1980-1985 was prepared and submitted. The areas identified covers the curriculum, instruction, faculty development, student assistantships, production, research, extension and administration and supervision.

2.7. Agricultural Engineering Department. The department is in its fifth year of operation with three first batch graduates, two of whom were cum laude's. The two honor graduates were employed after graduation by DARSU, Bacnotan and FETA, Batac. It is housed in an imposing building complex designed to accommodate the classroom and laboratory needs for the next ten years.

Some notable accomplishments are (1) 25 students graduated agri-mechanics (2) the Motor Pool serviced, repaired and maintained the College vehicles, farm tractors, machinery and equipment, (3) assisted research projects with the use of tractors and vehicles (4) repaired and serviced the old deep well and helped install a new deep well pump.

Like in the other departments, its share of problems are (1) the need of tools and equipment in the Motor Pool, (2) a dump truck for utility purposes, and (3) laboratory facilities and equipment.

2.8 Soils and Chemistry Department. The department is handled by regular instructors, several research assistants, and two educational researchers.

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Under professional growth, some instructors are enrolled in pursuit of various areas of specialization: (1) Roger D. Colting pursuing MS (Soil conservation and management) UPLB and Conrado J. Cliveros who completed his Ph.D. degree, UPLB, Both are funded by ICARR, (2) three other instructors are enrolled in MSAC taking MS (Soil Science) at their own expense, (3) a clerk is taking up BSPA in a nearby university also at her own.

An Extension Laboratory was constructed for the students laboratory work and assignments. Students working in their fields of specialization need not go any more to the Bureau of Soils, Baguio City or St. Louis University, Baguio City for soil chemical analyses. It also provides a safe place for the laboratory equipment, chemicals and other materials .

Along extension and community services, the faculty staff participated in tree planting and field work activities of the College. They also acted as resource persons in seminar-workshops in or off-campus. The members of the faculty are deeply involved in research as shown in Chapter II of this report. To many of them, research is a part of their teaching load.

As in the other departments, there is a need to purchase additional laboratory apparatuses, chemicals and materials to augment the present stock.

2.9 Math and Physics Department. Aside from handling the math and related subjects, the instructors also handled thesis advising

and determined experimental designs and statistical analyses, corrected computation of students and computed data for various researches undertaken in the College.

To provide incentives and extend opportunities for professional growth, teachers were sent to summer institutes and scholarships.

	<u>Name</u>	<u>Field of Training</u>	<u>Funding Agency</u>	<u>Place</u>	<u>Period</u>
1.	Marlyn B. Toledo	MS Math	NSDB	UP Diliman	1980-1982
2.	Jonathan A. Bayogan	MS Physics	NSDB	La Salle U.	1980-1982
3.	Edna A. Chua	MS Math	NSDB	MLQU	1980-1982
4.	Salvacion Z. Beligan	MS Stat.	PCARR	UPLB	1980-1982
5.	Conсорcia D. Aquitania	MA Math	NSDB	UP Diliman	Summer 1980-1981
6.	Marcos A. Buliyat	MA Physics	NSDB	La Salle U.	Summer 1980
7.	Jonathan A. Bayogan	Nuclear Technology	NSDB	SLU	Summer 1980

The acquisition of laboratory equipment in physics from the National Science Development Board augmented the laboratory needs of the department.

2.10 Department of Languages. The department served the language needs of the students in all the departments. To play its role and be of better service, it undertook the following

activities:

1. Updated course syllabi in Filipino, English and Spanish.
2. Prepared English for Science and Technology (EST) materials into lessons and course syllabi.
3. Held orientation seminar including demonstration lessons.
4. Celebrated "Dinggo ng Wika" with programs featuring Balagtasan, playlets, songs and speeches.
5. Sponsored a Filipino, English, Spanish (FES) Festival, an annual activity. Features of the program included, spelling bee, extemporaneous speaking contests in English and Filipino, general information, essay writing, (Filipino and English) and debate.
6. Published the maiden issue of the Filipino, English, Spanish (FES) Forum, a publication of the Department.
7. Sponsored two Christmas presentations: (1) The Christmas Chorus Concert participated by all degree programs and (2) KONRAD '80, a cultural show by the NSAC KONRAD depicting the songs and dances of the different ethnic groups in the Mountain Provinces.

Most of the faculty members were engaged in research works.

The researches are:

1. Errors Committed by College Freshmen in Dicto-Composition Exercises E. R. Hufana
2. Qualifications of English Teachers and Their Teaching Competencies as Perceived by Students E.R. Hufana,
E.T. Gonzales
and B.P. Santos
3. The Evaluation of Composition Errors of Freshmen Agricultural Students E.B. Keith,
B.A. Minong,
E.R. Hufana,
E.T. Gonzales,
and B.P. Santos

4. Isang Pagsasaliksik sa Bisa ng Pakikinig at Pagbabasa sa Paglinang ng Kakayahang Umunawa sa Pilipino C.V. Lubrica,
F.C. Victor,
E.B. Guitelen,
and A. C. Degsi
5. A Study on Spanish Cognates Found in Philippine Languages in Region I R. E. Monroe, Jr.,
J.D. Botacion,
V.P. Dimaano,
D.P. Wandit and
R.S. Cualdo

A problem not only of the Department of Languages but the College is the need of an Au-Gym. The felt-need is especially for physical education and literary-socio-cultural presentations and activities.

2.11 Forestry Department

1. Accomplishments:

- a. Improvement of facilities through:
 - (a) Purchase of laboratory equipment, supplies and materials
 - (b) Conducted field experiments and trips
- b. Set up a nursery and raised seedlings
- c. Eight graduates passed the BSF Board Examination

2. Problems and Recommendations

- a. Need to strengthen the faculty
- b. Purchase of more equipment and facilities needed
- c. Need to purchase additional textbooks and journals

Production Projects, The Vo-Ag Science Education Department

production income from June to December 1980 by project:

	<u>Net Share of School</u>
1. Juan P. Martes	P20,158.15
2. Dario D. Dampilag	11,430.10
3. Remedios T. Garcia	10,951.60
4. Gregorio G. Bilango	10,227.37
5. Renato T. Tesoro	8,686.27
6. Araceli G. Ladilad	7,871.52
7. Alfredo G. Tipayno	7,229.30
8. Ramon M. Bocalan	6,295.64
Total	<u><u>P82,849.95</u></u>

Problems and Recommendations

1. Purchase of farm implements such as spray, pumps, water pumps, watering cans, etc. to fully operate and maintain the farming production projects.
2. Provide animal projects for instruction and farm practice of the Vo-Ag Science Education students.

b. General Secondary Laboratory Education Department. The department served well for on-and-off campus student teachers. It also cooperated actively in all College-Community literary-socio-cultural programs of the locality.

Accomplishments:

1. Agricultural students raised vegetables for instructional purposes that netted an income of P2,544.00.
2. Sponsored the celebration of the 1980 Nutrition Month in July 1980.

3. Actively participated in Boy and Girl scouting activities.
4. Improved the guidance and counseling services. The Guidance Counselor conducted an action research on the liked and disliked traits of teachers to improve the teaching-learning situations.
5. Organized and operationalized the Glee Club, Rondalla, YCSC, Science Club and Student Body Government.
6. Received awards from the Provincial Science Quiz, Benquet Girl-Scout Council, and Alay Lakad Sa Pangulo 1980.
7. Solicited musical instruments for the Rondalla and Glee Club.

Participation in Research. An English instructor, started conducting an action research entitled "The Use of Structured and Unstructured Teaching Materials in Vocabulary Development to Second Year Students". A try-out was made of some programmed students for the failing students in reading. Improvements were being assessed every month.

- c. Elementary Laboratory Education Department. Like the other laboratory departments, it also served for on-and-off campus student teachers and activities.

Accomplishments:

1. Revised, updated and geared the lesson plans to the work-oriented curriculum.
2. Reorganized and made functional the Pupil Body Government.
3. Purchased three table glasses out of P.T.A. funds.
4. Raised funds through operetta benefit shows and used it to acquire a complete public address sound system.

5. Actively participated in College and Community activities. The department chairman was a member of the training team in two local and national training courses of the Boy Scouts of the Philippines.
6. Some instructors acted as Proctors in the 1980 NCEP and served in the national and local elections.

E. Student Services and Instructional Facilities

1. Guidance and Counseling. The office coordinated the guidance functions of the secondary and tertiary levels on counseling, testing, information, homeroom, home visitations, extension services, and co-curricular activities during the year under review.

Activities were centered in the administration of psychological tests for admission purposes, orientation especially for freshmen students, home visitation, counseling services on emotional and family problems and cause of failures and drop-outs.

Other guidance activities undertaken:

1. Seminar on Development of Values to BS&E Junior and Senior students.
2. Career Orientation for 3rd and 4th year secondary students.
3. Check up of fraternity organizations and their activities.
4. Conducted guidance extension services in Benguet Division Guidance Seminars; Panel Exhibits on Careers in Agriculture; U.P. Baguio; On-the-Spot Poster Contest, U.P. Baguio and ECF Phase II Homeroom Seminar for Consultation on Facilitating Groups through Group Dynamics.

2. Library Services. The library is composed of a College main library, two libraries for the secondary level and one for the elementary.

2.1. Library collections in 1980

Books

College	832
Secondary	505
Elementary	50

Theses/Dissertations 409

Pamphlets 1,670

Serial Titles

Gifts	21
Exchange	6
Subscriptions	8

Total 3,501

2.2. Attendance Statistics of Library Clientele

<u>Library Unit</u>	<u>Summer</u>	<u>1st Sem.</u>	<u>2nd Sem.</u>
Gen. Circulation	4,077	17,600	3,749
Reserved	11,003	45,441	12,899
Graduate School	1,587	5,321	2,877
Serials	5,321	14,217	5,109
Reference	1,277	3,873	1,209
Secondary	1,364	5,829	3,860
Researches from other Institutions	180	289	68

2.3 Circulation Statistics

2.3.1 Total number of books circulated 69,489

2.3.2 Distribution by Areas

Reference (Encyclopedias, Yearbooks, etc.) . . .	53
Philosophy	303
Religion	5
Social Science	4,669
Languages	73
Pure Science	23,850
Applied Science	28,716
Arts	36
Literature	1,848
History & Geography	605
Pilipiniana Books	8,531
Fiction	390
Pamphlets	410

2.4 Accomplishments:

1. Strengthened the library collection programs through solicitation from government and private agencies in and outside the country.
2. Organized and coordinated a lecture on "Libraries and Librarianship; Their Contributions to National Development" for the professional growth of the MSAC library staff as well as for librarians in Baguio and Benguet.
3. Helped established a Library Consortium with universities in Baguio City to fill in the gap regarding the inadequacy of library collection.

2.5 Problems and Recommendations:

1. Insufficient library fund. Amount earmarked is not enough to meet the needs of students and faculty due to prohibitive prices of foreign books and journals due to inflation.
2. Scarcity and difficulty in acquiring foreign technical books and journals in agriculture and allied sciences.
3. Workout a system for MSAC to be given a dollar allocation for the purchase of books and journals directly from abroad particularly for the basic books on technical agricultural subjects and other allied sciences.

3. Health Services. The clinic was manned by a physician and a nurse.

Medical Services, Jan-Dec. 1980

<u>Physical Exam & Consultation</u>	<u>Jan-May</u>	<u>June</u>	<u>July</u>	<u>Aug.</u>	<u>Sept.</u>	<u>Oct.</u>	<u>Nov.</u>	<u>Dec.</u>	<u>Total</u>
Students	-	1,115	568	635	462	655	293	160	3,888
Faculty & Employees	-	48	70	60	70	73	37	24	388
Dependents	-	13	10	23	21	17	16	3	103
Outsiders	-	2	6	5	100	10	7	10	140
<u>Treatment</u>									
Students	377	150	150	240	150	120	157	99	1,443
Faculty & Employees	80	40	65	60	65	70	37	24	451
Dependents	23	12	9	20	15	17	13	3	112
<u>Referrals</u>	55	10	5	7	10	10	3	2	82
<u>Cases Found According to System</u>									
EENT	97	52	82	78	77	59	51	54	550
Respiratory	155	71	64	55	83	46	35	17	526
Cardiovascular	1	2	1	4	1	6	4	-	19
Gastrointestinal	62	27	21	20	19	17	16	6	188
Genito-Urinary	6	7	21	16	10	10	9	4	73
Intergumentary	33	25	27	39	27	13	11	5	180
Musculo-Skeletal	12	19	18	6	4	3	14	2	68
<u>Other Cases</u>									
Accidents	10	6	18	17	10	16	13	2	92
Allergy	-	-	-	9	14	11	11	2	47
Anemia	-	-	-	15	10	5	5	5	40
<u>Infectious Diseases</u>									
Chicken Pox	-	-	-	-	5	2	-	-	7
Measles	1	-	-	-	-	-	-	-	1
Mumps	3	-	-	-	-	1	1	-	5
Influenza	1	7	9	19	11	14	10	1	72

Problems and Recommendations

- a. Inadequate equipment and medical supplies.
- b. Non-availability of basic instruments.
- c. Purchase of necessary equipment, instruments and medical supplies for a functional clinic.

4. Dental ServicesAccomplishments from Jan. to December 1980

Patients Inspected	600
Patients with Defects	600
Patients Treated	434
Patients given oral prophylaxis	149

Extractives Made

Temporary teeth	14
Permanent teeth	218

Fillings Made

Silver amalgam	64
Cement	9
Synthetic porcelain	7
Zinc oxide	216

DMF Survey

a. Permanent teeth

Teeth with decay (D)	2,504
Teeth missing (M)	1,061
Teeth filled (F)	170

b. Temporary teeth

Teeth with decay (D)	56
Teeth missing (M)	0
Teeth filled (F)	0

5. Ladies DormitoryActivities and Accomplishments:

- a. Average no. of occupants 102
- b. Orientation lectures on Boy-Girl Relations, Effective Study Habits, Personality Development, Dangerous Drugs and School Policies and Regulations.

6. Student Organizations

- 6.1. The Supreme Student Council (SSC) and the Future Vocational Leaders of the Philippines (FVLP) spearheaded co-curricular campus programs and activities. Other active student or-

ganizations worthy of mention were: Entomological Science Society, Veterinary Science Club, Future Homemakers of the Philippines, Youth Community Service Club, Soils Science Society, CMT-WATC Spearhead Fraternity Organizations, Student Pastorate Council, KONTAD and Glee Club, Some clubs and societies helped raise funds to purchase much needed laboratory equipment and facilities aside extending socio-cultural programs and activities on and off-campus.

6.2 The KONTAD Cultural Troupe rendered in the different venues and events:

- a. Terraces Plaza-Hyatt, Baguio City, during the Philippine Businessmen Conference, June 22, 1980.
- b. Baguio Country Club, Baguio City, sponsored by the Philippine Knights of Columbus, July 18, 1980.
- c. Induction Program of the MLC Supreme Student Council at the NSIC, August 9, 1980.
- d. U.P. College Baguio, Baguio City, Linggo Ng Wika, August 22, 1980.
- e. Fort Bonifacio, Metro Manila, sponsored by the Army Reserve Command during their anniversary, September 1, 1980.
- f. Anak BINUK-Melvin Jones, Baguio City, November 24, 1980.
- g. Texas Instruments (Philippines) Incorporated, 50 Years of Innovation, December 7, 1980.
- h. San Jose High School Gym, La Trinidad, Benguet, sponsored by the Department of Languages, December 16-17, 1980.

6.3 Student Publications. The MOUNTAIN COLLEGIAN (Collegiate) and THE MOUNTAIN BROTHER (Secondary) accomplishments:

- a. Published three issues of the MC and MB, which always came out together.

- b. Strive to maintain the performance of the MC when it was adjudged first last year in general excellence among campus newspapers by the MPI, Region I.
- c. Specialized in agricultural newswriting without neglecting matters of general interest.
- d. Held lectures in newswriting under Prof. Rodolfo T. Abastilla, Chief Adviser.
- e. Urged members of the studentry to submit articles for publication and not to rely only on the staffers.
- f. Trained themselves in making personal interviews and getting better photography.

7. Alumni Affairs. The office of Alumni Relations completed the listings of M.S.C graduates from 1924 to 1980. It also coordinated with the Mountain State Agricultural College Alumni Association, Inc. (MSACAA) and gathered the following informations:

- 7.1. Increased rentals of the Alumni Hall which has been leased to the National Grains Authority (NGA) from a monthly rental of P1,000.00 to P1,500.00
- 7.2. Formulated the guidelines and criteria for the MSACAA scholarship grant.
- 7.3. Held its annual general meeting and elected a new set of Board of Directors.
- 7.4. Contacted possible donors of books locally and abroad for the College Library.
- 7.5. On-going Projects and Activities:
 - a. Offer scholarship grants to three deserving MSAC College students effective the second semester of SY 1980-1981.
 - b. Solicit books from local and foreign donors for the College Library.
 - c. Amend the Articles of Incorporation of the MSACAA.
 - d. Contact alumni members for possible feedbacks regarding the relevance of their training at MSAC to their present jobs.
 - e. Solicit more benefactors or donors to the MSACAA scholarship project.

CHAPTER II

RESEARCH

A. Research and Experiment Station

The Research and Experiment Station (RES) was created to carry out and promote research, one of the trilogy functions of the College.

In the past, research activities had been mostly concentrated in technical agriculture. Recently researches in the field of social science was introduced as an indispensable arm in the attainment of a better socio-economic development of the community. This was brought about by the presence of qualified researchers, expansion of the research program and availability of funds. The funding agencies were the National Research Council of the Philippines (NRCP) and the Philippine Council for Agriculture and Resource Research (PCARR) that funded some social science researches.

The research program has reached a point that it became difficult to supervise and control because of the tremendous expansion of research projects. For this reason, the Research Journal was formulated to provide the operational procedures for all research functions of the College. Defined are the policies, guidelines, structures and mechanisms of the organizational efforts. A newsletter was published and distributed for information purposes.

The Research and Experiment Station prepared a form and style in writing manuscripts of undergraduate thesis researches. This Form and Style was finalized and made available to students and

thesis research advisers. It served as a guide in preparing and writing uniform thesis research outlines and manuscripts with regards to form and style.

B. Funded Researches (Completed)

<u>Title</u>	<u>Funding Agency</u>	<u>Budget</u>	<u>Researcher</u>
1. Insecticide Screening Against Major Insect Pest of Cabbage	Rhone Poulenc	₱4,000.00	Eulogio V. Cardona, Jr.
2. Regional Trial of White Potatoes at Highland Elevation	PCARR	8,671.00	Elmo O. Sano
3. Cropping Pattern of Highland Vegetable Crops	PCARR	19,068.00	Lucio B. Victor
4. Soil Conservation of Fertility Studies of Highland Vegetable Areas	NSDB	99,000.00	Conrado J. Oliveros
5. Performance Testing of PAEC Mungbean and Soybean Mutants at MSAC	PAEC	34,792.00	Conrado J. Oliveros

C. Undergraduate Thesis Researches (Completed). A total of 162 theses were completed during the year under review.

D. Graduate Thesis Researches (Completed)

<u>Title</u>	<u>Student</u>	<u>Adviser</u>
1. Effect of Nitrogen Levels Distance of Planting in Rate of Seeding on the Growth and Yield of Cotton	Francisco D. Flores	Conrado J. Oliveros

	<u>Title</u>	<u>Student</u>	<u>Adviser</u>
2.	Rate of Tuber Production of Three White Potato Varieties Grown Under Six Fertility Levels	Elmo O. Sano	Lucio B. Victor
3.	Factors Affecting Transfer of Agro-Technology to Vegetable Farmers of Benguet	Concepcion B. Concepcion	Saturnino M. Ocampo, Jr.
4.	Growth and Yield of Onion as Affected by Planting and Variety at Batac, Ilocos Norte Conditions	Segundo S. Duldul	Faustino G. Hermano
5.	Silk Quality As Affected by Mulverine Fertilizer with Different Levels of NP and Time of Gathering the Leaves	Virgilio S. Libunao	Conrado J. Oliveros
6.	The Response of Irish Potato to the Different Methods of Planting and Rates of Boron	Pablo D. Peña Anuntawang Weerapon	Eriberto C. Alonzo Conrado J. Oliveros
7.	Supplementation of Practical Arts Education Program in Secondary Schools in Region II	Pablo D. Peña	Eriberto C. Alonzo
8.	The Effect of Four Levels of Commercial Feeds on the Performance of Male and Female Growing-Fattening Pigs	Ben B. Luis	Sydney E. Moresto

E. Funded Research Projects (On-going)

	<u>Title</u>	<u>Funding Agency</u>	<u>Budget</u>	<u>Researcher</u>
1.	Potato Integrated Research Program	MSAC	₱1,026.00	Elmo O. Sano et al
2.	Cropping System in Highland Vegetable Area Involving Sweet Potatoes	PCAARR	20,414.00	Rogelio D. Colting

	<u>Title</u>	<u>Funding Agency</u>	<u>Budget</u>	<u>Researcher</u>
3.	Development of Heat Tolerant Varieties of White Potato Varieties for Medium and Low Elevation Area	PCARR	₱19,922.00	Elmo O. Sano
4.	Rapid Multiplication of Pathogen-Free Potato	NRCP-IC-IPDF-MSAC	90,458.00	Esteban B. Akiew
5.	Weed Control in White Potato	PCARR	10,811.00	Pepe E. Toledo
6.	Effects of the Different Rates of Organic and Inorganic Fertilizer on the Yield and Quality of Seeds of Raddish, Pechay and Chinese Cabbage	PCARR	18,279.00	Conrado J. Oliveros
7.	Regional Adaptability Test on Solanaceous Crops (Tomato)	PCARR	18,762.00	Elmo O. Sano
8.	Regional Adaptability Test on Crucifers (cabbage and lettuce)	PCARR	21,874.00	Lucio B. Victor
9.	General Varietal Performance Trial of Solanaceous Crops (sweet pepper and eggplant)	PCARR	23,435.00	Pepe E. Toledo
10.	National Asparagus Research and Production Program	NRCP	23,435.00	Conrado J. Oliveros
11.	Preliminary Study on Pest Management of Selected Highland Vegetables, Cut-flowers and Fruits	NRCP	28,930.00	Lita M. Colting
12.	Nutrient Deficiencies in Some Vegetables and Other Crops	NSDB	20,914.00	Lita M. Colting Conrado J. Oliveros

	<u>Title</u>	<u>Funding Agency</u>	<u>Budget</u>	<u>Researcher</u>
13.	Applied Seed Production Studies for Medium High Elevation	ICARR	₱15,789.00	William D. Dar
14.	Establishment of Dairy Cattle Pilot Project in Highland Areas	NSDB	94,200.00	Basito S. Cotiw-an
15.	Determinants of Land Used Pattern in Highland Areas	ICARR	44,525.50	Cipriano C. Consolacion Methodia B. Mercado Adriano B. Aromin Atanacio P. Silvestre
16.	Trace Element Status of Vegetable Areas in Benguet	NSDB	96,000.00	Conrado J. Oliveros Rogelio D. Colting

Other completed and on-going researches and research proposals for funding under the coordination of the MSAC RES are listed under the different academic departments in Chapter I of this Annual Report.

F. Production Projects. The total income from the different production projects of the College for calendar year 1980 amounted to ₱309,579.53 compared to last year's ₱194,518.16.

<u>Projects</u>	<u>Net Share of College</u>
1. Canteen	₱161,460.34
2. Floriculture	7,871.52
3. Ladies' Dormitory	12,537.00
4. RSIC Guestal	31,452.52
5. Agro-Forestation	4,891.00
6. Various Vegetable Projects:	
Elmo O. Sano	27,327.51
Juan P. Macles	20,158.15
Dario D. Dampilag	11,431.10
Gregorio Bilango	10,227.37
Renato Tesoro	8,686.27
Alfredo Tipayno	7,242.11
Ramon Bocalen	6,294.64
Total	<u>₱309,579.53</u>

G. Highland Agricultural Research Center

The Highland Agricultural Research Center, a consortium among the Philippine Council for Agriculture and Resources Research (PCARR), National Economic and Development Authority (NEDA), and the Mountain State Agricultural College (MSAC), was established to enhance the agricultural development in the highland areas of the Philippines, particularly the Mountain Provinces.

Its primary functions are to plan, coordinate, implement, and monitor agricultural researches geared towards the development of the highland region, the leading crop producers of sub-tropical vegetables and fruits. Likewise, through its Regional Agricultural Information Network (RAIN), the Center is commissioned to perform collection, packing and dissemination of usable, practicable, adaptable and profitable technology for utilization among growers/farmers in the highlands.

Specifically, the HARC is committed to develop technology in fruit crops, ornamental horticulture, root crops, vegetable crops, plantation crops, farming system, macroeconomics, soils resources, applied rural sociology, reforestation and forest watershed.

1. Accomplishments

<u>Project Studies</u>	<u>No. of Studies</u>	<u>Duration</u>	<u>Budget</u>	<u>Funding Agency</u>
1. Root Crops Integrated Research on Cultural Production of White Potato for Table Use and Seed Pieces	6	5 Years	₱60,933.08	MSAC

<u>Project Studies</u>	<u>No. of Studies</u>	<u>Duration</u>	<u>Budget</u>	<u>Funding Agency</u>
2. Nutritional Requirements of White Potato	4	5 Years	P48,783.73	MSAC
3. Crop Protection Studies on Pests and Diseases of Potato	5	5 Years	57,942.24	MSAC
4. Integrated Research on Storage Technology for Seed and Table Potatoes	3	5 Years	38,902.20	MSAC
5. Verification of Updated Technology in the Farmers' Field to Maximize Productivity	4	5 Years	45,394.04	MSAC
6. Farmers' Field Test of White Potato	1	2 Years	9,267.00	PCARR
7. Regional Trials of White Potato at High Elevations	1	3 Years	9,329.00	PCARR
8. Weed Control on White Potato	1	3 Years	10,219.00	PCARR
9. Effects of Different Methods of Frequency of Watering on the Growth and Yield of White Potato	1	4 Years	11,143.00	PCARR
10. Storage Studies on Table Potato	3	2.5 Years	45,190.00	CIP-PCARR-- MSAC
11. Optimizing Potato Productivity Research	6	2.5 Years	61,384.00	CIP-PCARR-- MSAC
12. True Potato Seed Research Project	4	2.5 Years	31,060.00	CIP-PCARR-- MSAC
13. Rapid Multiplication of Pathogen-Free Potatoes	4	1.5 Years	74,124.00	NERRTC-- IPDF-MSAC

<u>Project Studies</u>	<u>No. of Studies</u>	<u>Duration</u>	<u>Budget</u>	<u>Funding Agency</u>
<u>Vegetable Crops</u>				
14. Effects of Different Rates of Organic and Inorganic Fertilizers on the Yield and Quality of Seeds of Raddish, Pochay, and Chinese Cabbage	1	2 Years	₱13,095.00	FCARR
15. Cropping Pattern for Highland Vegetable Crops	1	2 Years	19,068.00	FCARR
16. Applied Seed Production Studies for Low, Medium and High Elevation	1	3 Years	15,789.00	FCARR
17. Sty-General Varietal Performance Trials on Crucifers (cabbage and lettuce)	1	5 Years	17,760.00	FCARR
18. Sty-General Varietal Performance Trials on Solanaceous Crops (tomato, eggplant, sweet and hot pepper)	1	5 Years	32,614.14	FCARR
19. Sty-Regional Adaptability Tests on Solanaceous Crops (tomato, sweet pepper, and eggplant)	1	5 Years	25,848.36	FCARR
20. Comparative Study of Selected Insecticides Against Major Pests of Cabbage	1	4 months	3,706.00	Rhone Poulenc
21. Comparative Effect of CL 243,032 100E and Other Pyrethroid Compounds for the Control of <u>Plutella Xylostella</u> and Other Insect Pest of Cabbage at MSAC Experimental Farm	1	4 months	6,401.00	CARFI
22. Trace Element Status of Vegetable Areas in Benguet Province	1	2 Years	179,000.00	NSDB

<u>Project Studies</u>	<u>No. of Studies</u>	<u>Duration</u>	<u>Budget</u>	<u>Funding Agency</u>
23. Soil Conservation and Fertility Studies of Highland Vegetable Areas	5	2 Years	₱241,800.00	NSDB
<u>Fruit Crops</u>				
24. Special Project Strawberry Improvement in the Phil. II	1	1 Year	7,706.00	FCARR
25. Preliminary Study on the Pest Management of Selected Highland Vegetables, Flowers and Fruits	1	3 Years	28,930.00	NRCP
26. Multi-Location Trials of Apple in the Philippines	2	1 Year	12,710.50	FCARR
<u>Animal Science</u>				
27. Establishment of Dairy Cattle Project in High Areas	1	5 Years	300,000.00	NSDB
<u>Extension</u>				
28. Development of Career Orientation Materials for High School Students in Agriculture and Related Areas	1	1 Year	28,108.44	
29. Women's Participation in Rural Development	1	1 Year	28,582.92	NRCP
30. Socio-Cultural Practices of Agricultural Production in the Highlands	1	1 Year	70,785.00	FCARR

<u>Project Studies</u>	<u>No. of Studies</u>	<u>Duration</u>	<u>Budget</u>	<u>Funding Agency</u>
<u>Others</u>				
31. National Asparagus Research and Production Program	1	5 Years	₱53,000.00	NRCP
32. Performance Testing of PAEC Mungbean and Soybean Mutants at the Mountain State Agricultural College	2	1 Year	34,792.00	PAEC
<u>Soil Resources</u>				
33. Determinants of Land Use Patterns in Highland Areas	1	1 Year	34,479.00	PCARR
34. Establishment of Farming Systems Involving Semi-temperate Fruit Types and Vegetables on Sloping Areas of Benguet	1	1 Year	45,845.00	PCARR

H. Agency Consolidated Research Project Budget for CY 1982

On November 28, 1980, the College President submitted to Dr. Jose D. Drillon, Jr., PCARR Director General, the research project proposals for 1982 PCARR and NSAC funding. Included in this research program were on-going research projects. The research program was designed to uplift the socio-economic conditions of the people in the highland region in particular and the country in general.

The research program indicated the details on the priority ranks and research areas of commodities, personal services, main-

tenance and operation, equipment, and capital outlay. Commodities listed in the research program were: fruit crops, ornamental horticulture, vegetable crops, vegetable legumes, root crops, park, applied rural sociology, macroeconomics, reforestation and forest watershed.

I. Printing/Publication Office

1. Accomplishments

- a. Corresponded with local and foreign institutions or individuals regarding publications, especially research publications.
- b. Did printing, binding and typing jobs for the administration, HARC, RTC-RD, Development Office and other offices.
- c. Assisted students in editing and typing of their theses outlines/manuscripts.
- d. Helped faculty and students in the mimeographing and binding of their theses/dissertation.
- e. Coordinated the printing of the student newspapers.
- f. Helped the students and instructors in the publication of the MSAC Research Journal and the MSAC Farm News Bulletin.
- g. Assisted some departments in the mimeographing and binding of their syllabi or instructional materials and reports.
- h. Accepted outside printing jobs.

2. Financial Report

Gross Income	₱14,907.95
Less: Expenses	<u>13,601.65</u>
Net Income	<u>₱ 1,306.30</u>

3. Problems and Needs

1.1 Need of a pica typewriter since most of the typing jobs demand the use of the pica type.

1.2 Recruitment of an illustrator, binder and a typist.

4. Printing Press. The Publication Office proposes the putting up of a College Printing Press to meet the printing needs of the institution. The project entails a big capital, but the items could be purchased gradually according to priority.

J. MSAC-BLISS II Mini Agro-Industrial Estate. Popularly known as "BLISS II" is a project entered into between the Ministry of Human Settlement and Mountain State Agricultural College in a Memorandum of Agreement signed in July 23, 1979. The objective is agro-industrial development pursuant to the objectives of BLISS II, a program designed by MHS to develop and upgrade the livelihood skills, and organization of Philippine Communities.

A project manager and 15 personnel were appointed to lay down the ground work, all on a part time basis. Operation for the Livelihood Project on Strawberry Production and Processing started on June 1, 1980.

Planting was from August to September in a 16 hectare area at the MSAC Production Farm. The amount of ₱549,800.00 was loaned to 127 farmers/students engaged in strawberry planting. Harvest began in mid December and at the end of the month netted 500 kilograms. Jam processing started December 16, 1980 with ₱23,500.92 cost of jam processed at the end of the period. A bountiful harvest is expected up to April next year.

CHAPTER III

EXTENSION

A. Extension Program

The activities of the extension program during the year under review was spearheaded by the Department of Agri-Business and Economics.

Accomplishments

1. National Manpower Youth Council (NMYC) Funded

1.1 Agricultural Skills Trainings

- a. Site - Labey-Nalseb, Tublay, Benguet
- b. Duration - September 14 to Nov. 29, 1980
- c. Enrollment - 89
- d. Funded

- 1) Training supplies . . . P4,000.00
- 2) Personal services . . . None

- e. Lecturers/Resource persons (No instructors employed)

- 1) Daniel Wagang
- 2) Guerzon Tianza
- 3) Carlos Buasen

- f. Course offered: Broiler Production

2. Oxford Commission on Famine Relief (OXFAM) Funded

2.1 On-going Agricultural Skills Training

- a. Site - Labey, Nalseb, Tublay, Benguet
- b. Duration - September 1, 1980-Aug. 30, 1981
- c. Enrollment - 90 farmers

d. Instructors/Technicians:

- | | |
|----------------------|------------------|
| 1) Animal specialist | - Daniel Wagang |
| 2) Crop specialist | - Guerson Tianza |

e. Training Courses:

- 1) Potato production
- 2) Carrot production
- 3) Other vegetable crops
- 4) Poultry production
- 5) Swine production

2.2 On-going Community Organization Training

a. <u>Site</u>	<u>Enrollment</u>	<u>Period</u>
1) Adoyunan, Atok	50	Sept. 1, '79-Aug. 30, '81
2) Topdak, Atok	80	Sept. 1, '79-Aug. 30, '81
3) Basil, Tublay	45	Sept. 1, '80-Aug. 30, '82
4) Labueg, Kapangan	40	Sept. 1, '80-Aug. 30, '82
5) Kapangan Central	<u>40</u>	Sept. 1, '80-Aug. 30, '82
Total	<u>255</u>	

b. Technicians/Resource Speakers:

<u>Site</u>	<u>Technician</u>	<u>Project Established</u>
1) Adoyunan, Atok	Robert Cayanos	Farmers Association Consumers Coop Store
2) Topdak, Atok	-do-	-do-
3) Basil, Tublay	Cristino Balancio	Cooperative Broiler Project
4) Labueg, Kapangan	Consolacion Teofilo	Farmers Association Strengthening of Credit Union (for registration with -BCOD)
5) Datakan, Kapangan	Paulita Taganas	Community Swine Project

c. Training Topics:

- 1) Self-group Awareness Seminar
- 2) Community Leadership Skills Seminar
- 3) Organizational Mechanics
- 4) Program/Project Management
- 5) Cooperative Education

2.3 Completed Project: September 1, 1979-August 30, 1980

Project - Agricultural Skills Training

Project Site (Barangays):	<u>Enrollment</u>
1) Basil, Tublay	103
2) Labueg, Kapangan	109
3) Adoyunan, Atok	65
4) Topdak, Atok	43
5) Ambongdulan, Tublay	<u>56</u>
Total	<u>376</u>

Courses:

1. Potato and poultry production
2. Swine and bean production
3. Carrot production

Personnel Involved:

1. The College President as Administrator
2. Prof. Carlos T. Buasen as Project Director and Coordinator and Supervisor
3. Seven Senior Faculty members as lecturers and resource speakers
 - 3.1 Dr. Basito S. Cotiw-an Animal Disease
 - 3.2 Dr. Lucio B. Victor Vegetable Production
 - 3.3 Prof. Elmo O. Sano Potato Production
 - 3.4 Prof. Esteban B. Akiew Plant Diseases
 - 3.5 Prof. Tessie M. Merestela Soils and Fertilizer
 - 3.6 Dr. Reynaldo B. Galban Animal Production
 - 3.7 Prof. Ben B. Dimas Fruit Production
(plantation crops)

4. One Community Organizer and Follow-Up Instructor

5. Six Full-time Training Instructors

- 5.1 Dizon T. Buasen
- 5.2 Isabelo S. Batawan
- 5.3 Guerzon A. Tianza
- 5.4 Arthur M. Shontogan
- 5.5 Linda A. Biase
- 5.6 Robert A. Cayanos

6. One part-time clerk

7. One part-time bookkeeper

Annual Budget Involved

1. Cash aid from OXFAM	P95,000.00
2. Tools and Equipment	6,000.00
3. Barangay Counterparts	11,000.00
Total	<u><u>P112,000.00</u></u>

B. Non-Formal Education

The Non-Formal Education Program of MSAC has been approved by the MEC and the Office of the President of the Philippines as MSAC's contribution to the Paglilingkod Bayan. The components of this program are:

1. Extension services:

- a. Technical assistance to farmers
- b. Dissemination of technical information and agricultural technology packages through publications
- c. Organizing and conducting

- c.1. Occupational skills training 1 year
- c.2. Agricultural skills training 5 months
- c.3. Cooperative training 6 months
- c.4. Special short courses for out-of-school youth and unemployed adults.
- c.5. Ten, 2-week training seminars for agricultural extension technicians, extension supervisors, demonstrators, and farmer leaders of the MA, MAR, MLGCD, NIA and MEC for Regions I and III.

The extension and non-formal training programs of MSAC are continuing projects. Other extension services rendered are reflected in Chapter I under the various departments.

The OXFAM supported projects provide agricultural skills training for one whole year and cooperative organization training for another year. Thereafter, a regular program of follow-up is instituted.

Since September 1972 to date no less than 32 barangay communities have been serviced by the Extension Program of MSAC.

C. Community Environmental Activities

On the third year of implementation of the Five-Year MSAC Development YCAP Plan approved by the Director of the National YCAP Coordinating Center of the Ministry of Education and Culture, the following were accomplished in 1980:

<u>YCAP Activities & Sectoral Areas</u>	<u>Extent of Completion</u>	<u>Remarks</u>
1. Concreting of two lane campus road from Gate 4 to Sec. Vo-Ag. Building 1 Km. long	Completed	YCAP students will help in concreting the two lane campus road from the Sec. Vo-Ag Building through the main campus to the Lab. Schools 1.5 Km. long

<u>YCAP Activities & Sectoral Areas</u>	<u>Extent of Completion</u>	<u>Remarks</u>
2. Graveling of Balili Farm Road (Animal Projects) to Hanging Bridge near the Mushroom Project 1.5 Km. long	Road graveling was not yet started, but YCAP students maintained the cleanliness of the farm road.	No funds for gravel and sand.
3. Laying out subdivision roads in Housing Area,	Not yet started, but plans for implementation were made.	Work on the project depends on funds available.
4. Cleaning of National Highway (1.5 Km) and white-washing of college concrete fence 1.5 Km. long.	Improved landscape with Virginia Creepers by YCAP students	Beautification and cleanliness of highway was maintained by YCAP students
5. Construction of Main Gate	Not yet started	No funds available
6. Construction & maintenance of irrigation canals in Balili	Maintained cleanliness of irrigation canals and shoulders	Periodically maintained by YCAP students
7. Graveling of Swamp Vegetable Project Farm Roads 2 Km. long	No graveling but cleanliness of the farm-to-market roads 2 Km. was maintained	Graveling of the road depends on funds available
8. Fencing of Main Campus (5 Km.)	Concrete fencing along National Highway (2 Km.) completed	Concrete fencing of a 3-km. stretch depends on funds available
9. Construction of road behind Agric. Eng'ng. Complex (0.50 Km)	Barely started	Project will be done before 1982

<u>YCAP Activities & Sectoral Areas</u>	<u>Extent of Completion</u>	<u>Remarks</u>
10. Construction of road from National Highway to Balili Barangay .05 Km	Completed	YCAP students maintained cleanliness and landscaping of roadsides
11. Landscaping and improving Floriculture Project Road deadend (including drainage system) to Laboratory Schools and Balili from National Highway to Balili Suspension Foot-bridge	Completed	Cleanliness and landscape work in this sector was periodically maintained by YCAP students

In addition to the aforementioned YCAP accomplishments in 1980, the following job activities were done:

1. Maintained cleanliness of College Street No. 1 to the deadend 500 m.
2. Reinforced the tree-lined road with 50 bottlebrush trees along College Street No. 1 500 m.
3. Cleaned and ringweeded 250 agocho trees and pilinut trees with guards in front of Ag. Engineering Complex to the MSAC Clinic 1,500 m.
4. Reinforced 200 African tulips and 500 bottlebrush with tree guards three meters away from College Concrete Fence (Vo-Ag Building frontage to Benguet Division Office) 5,000 m.
5. Maintained cleanliness of campus lawns and premises of buildings and all YCAP sectoral areas 10 hectares

6. Reinforced planting of 100 alnus and bottle-brush trees behind the Soils-Chem. and Agri-Economics Buildings 200 m.
7. Ringweeded 60 alnus trees on both sides of canals along Betag Barangay Road 60 m.

D. Agro-Forestation Special Project

The agro-forestation program using fruit trees intercropped with annual crops is being developed as a model for the country. It offers some alternative solutions to the problems of denudation, erosion and floods. Foreign and local citrus fruits are being propagated. About 5,000 budded Satsuma orange seedlings are ready for planting on June 1981. A two-year vocational post-secondary course in Agricultural-Forestry will be opened in the school year 1981-1982. This is a consortium with some of the College departments, namely, Agricultural Education, Plant Science, Forestry Science, Agribusiness and Economics and Animal and Veterinary Science.

1. Accomplishments:

- a. Harvested 327,50 kilograms of camote and 4 sacks of cassava.
- b. Harvested and pulped coffee beans (250 gantas).
- c. Budded 5,000 citrus of calamandarín and sic-satsuma oranges.
- d. Constructed a diversion road.

- e. Reforested the watershed, 500 sq. m. with alnus, agoho, pine, bottlebrush, and eucalyptus. trees.
- f. Prepared an apple nursery and planted it with wild apple from Indonesia.
- g. Budded 350 apple rootstocks with Rome Beauty, Winter Banana, Manalagad, Prince Noble, and Cahort.
- h. Planted 1,610 one-year old coffee trees.

2. Plans for 1981

- a. Increase the production of coffee
- b. Raise more coffee seedlings
- c. Plant the 5,000 coffee seedlings in the new site
- d. Plant the propagated citrus in the new site
- e. Propagate more citrus for sale
- f. Plant more rootcrops in-between the fruit trees

3. Problems and Recommendations

- a. Need to employ additional guards to improve the security for the project and College reservation.
- b. Extend electricity to the project.
- c. Expeditious solution of the squatters' and claimants' cases.

E. Regional Staff Development Center (RSDC)

The center has been the venue of a continuing education seminar of activities of staff and personnel of Region I. It centered to the board and lodging needs of participants to seminar-workshops and transients alike. Income derived is reported under Production Projects found elsewhere in this report.

Activities:

1. Board. Board of participants to seminar-workshops and other groups was provided by the Home Technology Department and charged a minimal fee. Some groups who were served were:

<u>Group</u>	<u>Date</u>	<u>Purpose</u>
1. HARC-PCARR	June 16-28, 1980	Research Seminar
2. Pilot Testing Project	July 5-7, 1980	Seminar
3. SAC-YCSC	July 8-10, 1980	-do-
4. CAR-MSAC	July 14-20, 1980	-do-
5. US Peace Corps	July 13-26, 1980	-do-
6. FCCS	Aug. 13-23, 1980	-do-
7. Benguet Corporation	Aug. 29-30, 1980	-do-
8. CIP-PCARR	Sept. 1-2, 1980	-do-
9. Biological Science Society	Sept. 4-6, 1980	-do-
10. COA-NGA	Sept. 8-11, 1980	-do-
11. PSDC	Sept. 15-22, 1980	-do-
12. YCSC-MSAC	Sept. 15-16, 1980	-do-
13. SEARCA	Sept. 14-27, 1980	-do-
14. FTC	Sept. 28-30, 1980	-do-
15. Potato Research	Sept. 28-30, 1980	-do-
16. SAC-YCSC	Oct. 1-5, 1980	-do-
17. MATC	Oct. 19-31, 1980	-do-
18. Commission on Audit	Dec. 1-5, 1980	Barangay Seminar
19. PPAA	Dec. 23-24, 1980	Seminar

2. Lodging. The MSAC Guestel which operates within the RSIX building served the lodging needs of the seminar-workshop participants and the transients. Those who availed of the services were:

a. Seminar-Workshop		No. of
<u>A c t i v i t y</u>	<u>Period</u>	<u>Participants</u>
1. COA Seminar on Local Accounting	Jan. 1-10, 1980	30
2. Seminar-Workshop on Government	Jan. 14-18, 1980	40
3. RTC-RD Seminar	Feb. 10-20, 1980	50
4. RTC-RD Seminar	Mar. 9-20, 1980	53
5. Seminar on Population Control	Mar. 28, 1980	23
6. COA Seminar	Apr. 10-12, 1980	24
7. RTC-RD Seminar	Apr. 30, 1980	14
8. RTC-RD Seminar	May 2-20, 1980	40
9. RTC-RD Director	May 25-30, 1980	20
10. COA Seminar	Aug. 8-10, 1980	20
11. Farm Systems Develop- ment Corporation	Sept. 15-22, 1980	20
12. SCARCA Seminar	Sept. 15-20, 1980	20
13. COA Seminar	Dec. 2-4, 1980	30
	Total	<u>384</u>

b. Transient Groups

1. CLSU Students	Jan. 25-26, 1980	90
2. CLSU Students	Jan. 26-27, 1980	39
3. U.S. Peace Corps Volunteers	Feb. 9-27, 1980	20
4. CLSU Faculty	Mar. 1-2, 1980	20

<u>Transient Groups</u>	<u>Period</u>	<u>No. of Participants</u>
5. CLSU Faculty	Mar. 19-21, 1980	13
6. SEARCA	Apr. 3-5, 1980	10
7. IIRRI	Apr. 30-May 1, 1980	20
8. SEARCA	May 2-3, 1980	35
9. YCSC Students	Jul. 6, 1980	27
10. Australian Tourists	Jul. 21, 1980	15
11. YCSC Students	Oct. 4-5, 1980	25
12. IIRRI	Nov. 11, 1980	20
13. YSTAPHIL	Nov. 11-16, 1980	15
Total . . .		<u>349</u>

F. Tree Planting Program . As in the past, 45,000 assorted seedlings, pine, alnus, eucalyptus and guava were procured from the Bureau of Forest Development, Baguio City. The MSAC Forest Nursery produced 10,100 seedlings of ipil-ipil, alnus, agohe and pine trees. These seedlings were planted in a total area of 34 hectares in the College forest reservation in the months of July, August and September. As of December 31, 1980, the percentage of survival was 90.4%.

<u>Departments</u>	<u>No. of Planters</u>	<u>No. of Trees</u>	<u>Area</u>	<u>% of Survival</u>
Elem. Education	712(10-yr. olds and above)	8,544	Balili River side & S. Bal. Mt., 5 Has.	75*

* 25% of the trees planted were submerged by typhoon "Aring".

<u>Departments</u>	<u>No. of Planters</u>	<u>No. of Trees</u>	<u>Area</u>	<u>% of Survival</u>
Sec. Vo-Ag Sc. Education	534	6,408	Alumni Grove & Bal. Riverside, 7 Has.	90
Gen. Sec. Education	428	5,136	Balili Riverside & N. Bal. Mt., 5 Has.	95
Tertiary Education	2,417	29,004	Ampasit, Watershed (Agro-Forest Project) 10 Has.	96
MSAC Staff/Personnel	500	6,000	Adm. & Faculty Hill, 7 Has.	96
Total . . .	<u>4,591</u>	<u>55,092</u>	<u>34 Hectares</u>	<u>90.4%</u>

G. Regional Training Center for Rural Development (RTC-RD)

Nature of Program

- Regular training courses to upgrade the competencies and skills of extension workers and farmer leaders of the following ministries of Regions I & III: MA, MAR, MNR, MELCCD, NWC and NIA.
Duration 2 weeks
- Farm and community surveys to determine needs and problems of the areas where the respective clientele come from.
Duration 1 week

3. Ten batches of trainees were brought in for 2-week sessions during the year. Each batch ranges from 75-120, or an annual total of 750-1200.

(a) Development Program Extensionists/Development Program Managers (DPE-DPM) Trainings

<u>Batch</u>	<u>Province</u>	<u>Municipalities Covered</u>	<u>No. of Trainees</u>
1	Pangasinan	Alcala, Aguilar, Basista, Bautista, Bayambang, Bugallon, Binmaley, Lingayen, Mangatarem, San Carlos, Sto. Tomas, Urbiztondo	44
2	Zambales	Botolan, Cabangan, San Marcelino, San Felipe, San Narciso	53
3.	Zambales Bataan	Sta. Cruz, Candelaria, Iba, Masinloc, Palauig, Olongapo, City, Subic, San Antonio, Castillejos	63
4	A b r a	Bangued, Bucay, Danglas, Dolores, Lagangilang, Langiden, La Paz, Licuan, Peñarrubia, Pidigan, San Isidro, San Quintin, Tayum	54

(b) Integrated Training Program on Rural Development (ITP-RD)

1	Benguet La Union Ilocos Sur	Atok, Bakun, & Kibungan Santol Sugpon, Alilem	58
2	Benguet	Baguio City, La Trinidad, Kapangan, Sablan, Tuba, Tublay, Buguias, Bokod, Kabayan	60

<u>Batch</u>	<u>Province</u>	<u>Municipalities</u>	<u>No. of Trainees</u>
3	La Union	Aringay, Ageo, Sto. Tomas, Tubao, Pugo	44
4	La Union	Caba, Bauang, Naguilian, Bagulin, Burgos	51
5	Pangasinan La Union Benguet	Sison, Binalonan, Manaoag, Pozorrubio, Urdaneta, San Manuel, Rosario, Baguio City	79
6	Pangasinan	San Fabian, San Jacinto, Malasiqui, Sta. Barbara, Calasiao, Dagupan, Mapandan, Mangaldan	56
7	Ilocos Sur	Banayoyo, Galimuyod, Tagudin, Suyo, Sigay, Sta. Cruz, Sta. Lucia, Candon, Salcedo, Gregorio del Pilar	84
8	Ilocos Sur A b r a	Santa, Burgos, Lidlidda, Nag- bukel, Narvacon, San Emilio, San Esteban, Sta. Maria, Santiago, Pilar	88
9	Ilocos Norte	Dingras, Espiritu, Marcos, Nueva Era, Piddig, San Nicolas, Sarrat, Solsona	75
10	La Union	Bacnotan, Balaoan, Bangar, Luna, San Fernando, San Gabriel, San Juan, Sudipen	75
11	Mountain Province	Barlig, Bauko, Bontoc, Natonin, Paracelis, Sadanga, Sabangan, Sagada	67
12	Ilocos Norte	Adams, Bacarra, Banguin, Burgos, Carasi, Dumalneg, Pagudpud, Pasuquin, Vintar, Laog	74

LIST OF TRAINING BY TYPE

(a) Integrated Training Program on Rural Development (ITP-RD)

Batch	Inclusive Dates	BREAKDOWN OF PARTICIPANTS				TOTAL	Province Covered
		DCS	DEI	DPE	DPO		
1	Feb. 17-29, 1980	-	9	27	22	58	Benguet, La Union, Ilocos Sur
2	Mar. 17-23, 1980	-	7	33	20	60	Benguet, Baguio City,
3	Apr. 14-25, 1980	-	6	26	19	51	La Union
4	Apr. 14-25, 1980	-	10	21	13	44	La Union
5	May 7-21, 1980	-	12	28	39	79	Pangasinan, La Union
6	May 7-21, 1980	-	4	33	19	56	Pangasinan
7	June 18-30, 1980	-	12	36	36	84	Ilocos Sur
8	Aug. 13-23, 1980	-	13	32	43	88	Ilocos Sur
9	Sept. 14-27, 1980	4	15	28	48	95	Ilocos Norte
10	Sept. 28-Oct. 10, 1980		8	31	36	75	La Union
11	Oct. 19-31, 1980		7	22	38	67	Mt. Province
12	Nov. 10-22, 1980	1	16	27	30	74	Ilocos Norte

(b) DPE-DPI Trainings

1	Feb. 10-20, 1980	11	33	44	Pangasinan
2	Mar. 10-19, 1980	20	33	53	Zambales
3	June 16-27, 1980	19	35	54	Abra
4	Jul. 13-26, 1980	3	16	47	Zambales

CHAPTER IV

ADMINISTRATION AND SUPERVISION

A. Fiscal Support

1. Current Operating Expenditures

Higher Education	P2,821,000.00
Secondary Education	692,000.00
Elementary Education	392,000.00
Research	1,024,000.00
Extension Services	104,000.00
Auxiliary Services	449,000.00
General Administration and Support Services	<u>1,849,000.00</u>
Total	P7,331,000.00

2. Capital Outlays 9,000,000.00

GRAND TOTAL P16,331,000.00

B. Personnel Development. The number of personnel benefited in terms of professional growth and development is indicated as follows:

1. Scholarship Grants	9
2. Promotions	38
3. Accretions	31
Total	<u><u>78</u></u>

On scholarship are eight (8) faculty members taking post graduate studies under the Master of Science program and the other instructor under an exchange training program. Twenty eight (28) members of the faculty and ten (10) non-teaching personnel were promoted. Sixteen (16) instructors and fifteen (15) employees were recruited as additional personnel during the year under review.

C. School Sites

1. Proposed Land Swap with Benguet. The text of the proposed proclamation exchanging a portion of the MSAC reservation with certain school sites titled in the name of the Province of Benguet was submitted with other documents in a 1st Indorsement, dated January 10, 1980, by Hon. Jose A. Janolo, Acting Assistant Secretary, Ministry of Natural Resources, to the Presidential Executive Assistant, Malacañang. The indorsement with its inclosures were received by Malacañang on January 15, 1980.

As already mentioned in the 1979 annual report, the portion of the College reservation involved in the proposed exchange has an area of 540,421 square meters, situated at the Stock Farm, Wangal, La Trinidad, Benguet, more particularly described as Lot 1-B, Swo-1-000288, surveyed on February 8-10, 1977 and approved on February 1, 1978.

To be exchanged with Lot 1-B, Swo-1-000288 are six (6) parcels of land registered in the name of the Province of Benguet covered by Original Certificate of Title No. 23 and Transfer Certificate of Title Nos. 179, 374, 6264, 11151 and 13487, with an aggregate area of 396,627 square meters.

2. Registered School Sites. Pursuant to Decree No. N-176417 dated November 14, 1979, the Register of Deeds for the Province of Benguet issued on January 14, 1980 Original Certificate of Title No. O-185, entered on Page 185 of Book A-3, covering two (2) parcels

of land which form part of the main campus, more particularly described in survey plan Swc-01-02-00001, sheet 3, to wit:

Lot 7	79,331 Sq. M.
Lot 8	<u>130,594 Sq. M.</u>
Total	<u>209,925 Sq. M.</u>

Authority to make use of the aforesaid two (2) parcels of land as collateral for loans from public or private financing agencies was obtained under Resolution No. 6, dated January 25, 1980, of the College Board of Trustees. Such loans shall be used in the construction of self-liquidating projects, like student dormitories and faculty cottages.

D. Infrastructure

1. Buildings and Facilities. The problem of inadequate classrooms/laboratory buildings and facilities was partially solved with the completion of a number of buildings. Due to fiscal restraints, a few buildings were not programmed though included in the Ten Year Capital Outlays Program for 1979-1988.

2. Construction Projects

2.1 <u>Buildings Completed</u>	<u>Date Completed</u>	<u>Cost</u>
a) RTC-RD Housing	January 1980	₱1,000,000.00
b) Agro-Forestry Bldg. Phase II	March 1980	437,260.00
c) Food Processing Building	March 1980	399,150.00

<u>Buildings Completed</u>	<u>Date Completed</u>	<u>Cost</u>
d) Multi-Purpose Machine Shed	March 1980	P424,000.00
e) Machine Shed	April 1980	250,000.00
f) Agri-Economics Bldg.	May 1980	662,000.00
g) Training Department	July 1980	1,548,000.00
h) Research Building Phase I NERCRTC	September 1980	1,500,000.00
i) Digester Laboratory for Soils-Chemistry Building	October 1980	275,000.00

2.2. On-Going Construction

a) Animal Science Laboratory Building 6,000,000.00

2.3 Bid Projects

Under Capital Outlay National Fund:

a) Research Building Phase II NERCRTC	1,685,000.00
b) Camp Dormitory for NERCRTC Phase II	300,000.00
c) Auditorium for NERCRTC Phase II	1,448,000.00
d) Four Nursery Buildings for NERCRTC	288,000.00
e) Animal Science Laboratory Clinic	468,000.00

E. Board Resolutions Approved. The MSAC Board of Trustees held six (6) meetings during the Calendar Year 1980. It passed fifty (50) resolutions touching on the various projects and programs of the College.

The Honorable Onofre D. Corpuz, MEC Minister and Chairman of the College's Board of Trustees, presided over one of the six meetings which was held in the College campus during the 55th Commencement Exercises on March 25, 1980. Some of the important

resolutions passed and approved are presented in this Annual Report.

1. 54th Meeting, January 25, 1980

Res. No. 2, s. 1980

CONFIRMING the Owner-Contractor Agreement executed on December 29, 1979 between the MSAC and the Renaissance Builders Company, Inc. for the construction of Phases I and II of the Bio-Plant Science Complex, in the total amount of ₱1,390,400.00 which was duly acknowledged on January 11, 1980 as Document No. 42, Book I, s. 1980 in the notarial register of Atty. Francis A. Buliyat of Baguio City.

Res. No. 3, s. 1980

CONFIRMING the Owner-Contractor Agreement made and entered into by and between the MSAC and the Spectrum and Development Corporation for the construction and development of the Multi-Purpose Machine Shed of the MSAC Experiment Station, in the amount of ₱424,025.99 as acknowledged on December 31, 1979 as Doc. No. 35, Page 8, Book I, S. 1979 in the notarial register of Atty. Francis A. Buliyat of Baguio City.

Res. No. 4, s. 1980

GRANTING an extended authority to the MSAC, represented by its President to enter into contracts or agreements with any and all winning bidders for the construction or prosecution of all its present and/or future projects; Provided, that the proposed building constructions shall conform to duly-approved master plans of the college campus, and subject to compliance with all laws, policies, rules and regulations on public buildings; Provided further, that contracts or agreements of this nature shall be subject to the confirmation by the College's Board of Trustees.

Res. No. 5, s. 1980

APPROVING, in order to expedite the filing by the College of application for title to the subject parcels of school sites, the request for authority to pay the realty tax arrearages on TD Nos. 11114 and 11312 in the total amount of ₱6,914.84 under protest; Provided, that should the College not be satisfied with the ruling of the local Assessor's office, she is hereby authorized to appeal the same to higher authorities.

Res. No. 6, s. 1980

Authorizing the College, represented by its President, to negotiate for assistance (loans) with either public or private financing agencies, for the construction of self-liquidating projects, like student dorms and/or faculty cottages; with the use as collaterals of Lots 7 & 8, SWO-01-01-00001, covered by OCT No. 0-185 and TD No. 2715; Provided, a feasibility study is made and subject to the final confirmation by the Board of Trustees of all contracts/agreements made and entered into pursuant to this authority.

2. 55th Meeting, March 4, 1980Res. No. 8, s. 1980

APPROVING the conferment of masteral and baccalaureate degrees to 309 candidates for graduation from the various degree programs of the College; the awarding of certificates to 13 candidates from the 2-year Forest Ranger Course, and 25 from the Agricultural Mechanics; the granting of diplomas to 201 candidates from the various types of secondary courses, and 122 from the General Elementary Curriculum, subject to completion of all the requirements pertinent to their respective degrees, diplomas and/or certificates, as of March 25, 1980.

Res. No. 9, s. 1980

APPROVING the restoration of the permanent status of the following personnel; Messrs. Felipe B. Taa, Rosendo S. Gualdo, and Mrs. Juliet P. Pagano; and the appointment of Mrs. Luisa C. Cotiw-an, Mrs. Cecilia B. Dumaguita, Mr. Basilio S. Sito, Miss Josefina A. Dacanay, and Mr. Tranquilino B. Baniwas, effective as of date presented for each personnel listed.

Res. No. 11, s. 1980

GRANTING authority to the MSAC, represented by its President, to negotiate with and enter into contract with the CARICA Agro-Marine Development Co., Inc., for a joint venture on poultry raising under the Animal Husbandry Department of the College; Provided, the proposed project is treated as a pilot or experimental phase, and that the contract or agreement shall be subject to the confirmation by the Board of Trustees.

3. 56th Meeting, March 25, 1980Res. No. 12, s. 1980

NOTING the progress report of the College President touching on some highlights of college activities during the past CY 1979, with particular attention to the two pending papers in Malacañang on the land arrangements between the MSAC and Benguet Province, and the settlement of squatters on a 3-hectare residential lot segregated from the school reservation; and the challenge of MEC Minister O.D. Corpuz for the College to double its production by 50% in 1980 and 100% by 1981.

Res. No. 14, s. 1980

NOTING the fiscal report of the College for CY 1980 and the proposed budgetary estimates for CY 1981 in the total amounts of ₱16,331,000.00 and ₱31,345,840.00 respectively, with the recommendation that henceforth the internal operations and/or application of the annual budgetary appropriations for the College be presented to, reviewed, and approved by the Board of Trustees.

Res. No. 15, s. 1980

APPROVING the conferment of degrees to (1) six (6) candidates for graduation from the Bachelor of Science in Agriculture: Monis, Cresencio A., Gammad, Marina D., Carpio, Ines V., Salda, Raymundo M., Natura, Rene D., and Ngaseo, Esperanza P.; and two (2) candidates for Bachelor of Science in Forestry: Matbagan, Domingo L., and Dulnuan, Alfonso G. subject to completion of all the requirements pertinent to their respective degrees.

Res. No. 16, s. 1980

APPROVING the study grant for Professor Jose B. Lubrica, Sr., effective the first semester, SY 1980-1981 to the end of Summer, 1981, with a monthly stipend of ₱350.00 during the period and a book allowance of ₱200.00 per semester/term.

Res. No. 17, s. 1980

NOTING the request to follow-up the recommendation to the President of the Philippines for the appointment of two prominent citizens of the place as Members of the Board of Trustees, pursuant to the provisions of P.D. No. 1437; Provided, that should the regionalization of the Boards of State Colleges and Universities be in effect in the future, the new law or directive shall be followed.

Res. No. 18, s. 1980

APPROVING the position that as a matter of policy on fraternities, sororities, and other student organizations, the General Orders, Letters of Instruction, Ministry Orders, particularly Department Order No. 63, s. 1976, implementing LOI No. 348 of the National Defense, the College rules and regulations, or the code of the institutions shall be in vogue; Provided, that the position aspects of the rules shall be applied on a case to case basis after due investigation of any alleged violations; Provided, further, that the Dean of Student Services, and the Offices under him shall play an important role on this matter; Provided finally, that instructors and/or professors shall be subject to the provisions of the latest Civil Service Decree and Rules.

4. 57th Meeting, July 23, 1980Res. No. 20, s. 1980

CONFIRMING the approved referendum, dated July 8, 1980, re: the OWNER-CONTRACTOR Agreement made and entered into by and between the MSAC as the Owner, and the Goldwater Drilling and Machinery Corporation, as the Contractor, for the drilling of an alternate deepwell for the College Waterworks at a contract price of ₱138,081.90 as provided for in the Agreement.

Res. No. 21, s. 1980

CONFIRMING the Memorandum of Agreement made and entered into by and between the MSAC and the CALICA Agro-Marine Development Corporation, on broiler farming as a joint venture under the terms and conditions spelled out in the Agreement.

Res. No. 23, s. 1980

NOTING the College Budget for Calendar Year 1980 in the total amount of ₱13,657,704.00 excluding the unprogrammed amount of ₱3,091,296.00 as approved by the Minister of the Budget.

Res. No. 24, s. 1980

APPROVING the proposed Development budget for the MSAC for CY 1981 in the total amount of ₱31,345,840.00 as prepared and justified by the College, and recommending the same to the Budget Commission for consideration and approval.

Res. No. 25, s. 1980

APPROVING the proposed Memorandum of Agreement by and between the MSAC, represented by its President, Dr. Bruno M. Santos, and the ASIA Corporation, Inc., represented by Dr. Ponciano A. Portugal for the conduct of a joint research venture for development of technology packages in the production of strawberry, potato, and other vegetables in accordance with the terms and conditions spelled out therein, and effective upon the signing of the same by the parties hereto.

Res. No. 26, s. 1980

GRANTING authority to the MSAC to quitclaim in favor of Mr. Santiago P. Palacpac some 304 square meters of land which he occupied at the Poblacion of the town for a token fee of ₱7,500.00 to the College in consideration of the quitclaim.

Res. No. 27, s. 1980

AUTHORIZING the use of the money proceeds from the entrance-selection tests given by the College for the purchase of testing materials, equipment, and supplies and materials for the proper administration of such tests; Provided, that such funds are constituted as special trust funds under the management of the Guidance and Counseling Office and/or linked with the MSAC Sub-Chapter of

the Philippine Guidance Personnel Association (PGPA); Provided further, that an annual special budget is prepared and recommended by the Dean of Student Services; and Provided finally, that the disbursement of the same shall be approved by the College President.

Res. No. 29, s. 1980

APPROVING the detail of Dr. Saturnino M. Ocampo, Jr, as Director of the Regional Training Center for Rural Development (RTC-RD) at MSAC on a full-time basis without prejudice to the College's asking him to do other assignments in connection with his position as Vice President for Development. This shall be effective June 1, 1980.

5. 58th Meeting, October 9, 1980

Res. No. 32, s. 1980

CONFIRMING the General Memorandum of Agreement made by and between the MSAC and the NSDB/PTRI for the maintenance of the existing PTRI mulberry plantation by the MSAC thru the Vocational Agricultural Secondary Department, as spelled out in the agreement.

Res. No. 33, s. 1980

CONFIRMING the approved trip of the MSAC President to attend the 4th Biennial Conference of the AAACU at the University of Tokyo, Japan, from October 27 to November 2, 1980, as approved.

Res. No. 34, s. 1980

CONFIRMING the change of appointment status from temporary to permanent of thirty-two (32) personnel of the MSAC whose appointments were made temporary pursuant to the college policy approved by the Board of Trustees under Res. No. 67, s. 1971.

Res. No. 35, s. 1980

CONFIRMING the Owner-Contractor Agreement made and entered into by and between the MSAC and the Manaois General Construction anent the Design Computations of the structural components of the auditorium of the Northern Philippines Root Crops Research and Training Center at a total contract price of ₱51,100.00.

Res. No. 36, s. 1980

APPROVING the request of Atty. Francis A. Buliyat, a Legal Officer of the College, to practice his law profession; Provided, that the College President is hereby authorized to make flexible arrangements with him relative the rendition of service to satisfy the requirements of law in the government of at least 8 hours a day or 40 hours per week; Provided further that this authorization/permission shall be good only within the City of Baguio and the Province of Benguet.

Res. No. 37, s. 1980

APPROVING the request of the College to collect a P10.00 fee for each certification issued by the College on the status of parcels of land in relation to and as plotted in and verified on the consolidated control maps of the college reservation.

Res. No. 38, s. 1980

APPROVING the reduction of the fee from P10.00 to P5.00 for each ordinary certification issued by the College on the status of students' current or completed curriculum year in the College, with their degree/course enrolled in, and their major/minor fields or specialization, as partial amendment to the Administrative/Regulatory fees under Item No. VI, No. 3 (b) of the approved school fees covered by Board Res. No. 68, s. 1979.

6. 59th Meeting, December 10, 1980Res. No. 42, s. 1980

CONFIRMING the promotion of the above-listed members of the faculty and employees in accordance with the guidelines set by the College Promotion Board, concurred in by all the department chairmen concerned, and attested by the representative of the CSC, Region I, as presented above.

Res. No. 43, s. 1980

CONFIRMING the scholarship grants and/or extension of the study leaves with or without pay of Mrs. Edna Chua, Mrs. Marilyn B. Toledo, Mr. Orlando C. Ocampo, and Miss Norma Palispis, respectively, as presented above.

Res. No. 44, s. 1980

APPROVING the grant of merit salary increases to all the nominees recommended under Section 4(a), and (d) of EC No. 286 and CS Memorandum Circular No. 3; Provided, that the effective date for those recommended under Sec. 4(d) be made in accordance with the guidelines set forth therein—that is, at least six (6) months after completion of the degree - the usual rating period in vogue by the College; Provided further, that funds for the same are available; and Provided finally, that other members of the faculty and employees who may be equally qualified, may be recommended for the same merit increases.

Res. No. 45, s. 1980

APPROVING the employment of Dr. James F. Fournier, Jr., an American citizen, as Assistant Professor, item No. 9-3, BP Blg. No. 40, at ₱14,532.00 per annum, under temporary status, effective December 15, 1980, subject to the conditions that he shall not teach Philippine History, social/political sciences, and subject further to the submission of all required clearances for employment with the government.

Res. No. 46, s. 1980

CONFIRMING the Owner-Contractor Agreement between the MSAC, represented by its President, as the Owner, and the Renaissance Builders Co., Inc., represented by its President and General Manager, as the Contractor, for the construction of the NPPCRTC, Phase II, for a total contract price of ₱1,680,000.00 as presented above.

Res. No. 47, s. 1980

CONFIRMING the Owner-Contractor Agreement between the Mountain State Agricultural College, represented by its President, as the Owner, and the Vicitan Construction, Inc., represented by its Proprietor/Manager, as the Contractor, for the construction of the NPPCRTC Dormitory Camp, for a total contract price of ₱299,189.00, as presented above.

Res. No. 47-a, s. 1980

APPROVING the request for authority to enter into contracts/agreements with the winning bidders for the construction of the

buildings listed above, and other buildings that may be funded for construction; Provided, that such contracts/agreements shall be subject to confirmation by the Board of Trustees, as presented above.

Res. No. 50, s. 1980

APPROVING the inclusion of the two personnel recommended above in the selective merit salary increases authorized under Sec. 4(a) of the Budget Circular No. 286 and Civil Service Memorandum No. 3, implementing LOI No. 562; Provided, that the College President duly informs the College Administrative Council of this action; Provided further, that this action shall not preclude the inclusion of other members of the staff who may be equally qualified; Provided finally, that funds for the same are available.

A P P E N D I C E S

SELECTED THESIS ABSTRACTS

A. Graduate Thesis

ANDRADA, ALFREDO GARCIA. March 1980. Influence of IAA at Various Concentrations and Durations of Exposure on Rooting of Grape Cuttings. Mountain State Agricultural College, La Trinidad, Benguet.

Adviser: Dr. Conrado J. Oliveros

The influence of IAA at various concentrations and durations of treatment of IAA at various concentrations and studied at the Pomology Project of the Don Mariano Marcos Memorial State College from May to June, 1980. The split-plot design was used in the study with the IAA concentrations composing the mainplots and the durations of exposure composing the subplots in three blocks. There were two experiments: the soaking method and quick dipping method.

Root growth of grape cuttings was observed best when soaked at 150 ppm IAA. The longest roots, however, were observed from cuttings soaked in 50 ppm IAA and the 0 ppm had the longest period for buds to develop. The 250 ppm had the most number of dead roots. The 50 ppm IAA and the 12 hour-duration of exposure combination had the best effects on rooting of grape cuttings by the soaking method.

In the case of the quick dipping experiment, the 200 ppm IAA had not only the most number of roots but also the most number of dead roots. The 1000 ppm IAA concentration and the 15-second time of exposure combination had the longest roots, longest shoots, and the shortest period for bud to emerge on rooting of grape cuttings. However, there were no significant differences in the results. For economic reasons, on the use of IAA concentration as root regulator and the shortest time needed to develop roots on grape cuttings the 500 ppm IAA quickly dipped in 15 seconds are recommended since there was no significant difference in the effects between the 500 ppm and the 1000 ppm IAA.

Comparing the two methods, soaking and quick dipping for rooting of grape cuttings, quick dipping is recommended. In terms of duration of exposure in seconds there is no need to wait for longer periods than 15 seconds. In terms of IAA concentration the 500 ppm, though it is more than the 500 ppm IAA that was used for the soaking method, is still more economical because it can be reused several times.

It is therefore the quick dipping method at 500 ppm IAA concentration and 15 seconds as the duration of exposure to be recommended for rooting of grape cuttings.

PEÑA, PABLO D. March, 1980. Implementation of Practical Arts Education Program in Secondary Schools of Region II. Mountain State Agricultural College, La Trinidad, Benguet.
 Adviser: Dr. Eriberto C. Alonzo

This study was conducted to determine the educational qualifications of the practical arts teachers in the different secondary schools of Region II, the areas of practical arts offered, the reasons why there is lack of educational facilities in the school related to the carrying-out of the program, the methods of teaching used, the methods used by the students in selecting their practical arts activities, the methods used in evaluating the practical arts activities of students, and the problems encountered by the practical arts teachers in teaching practical arts.

Twenty-eight secondary schools from the agriculture, fishery, trade and general high schools offering the complete four-year revised secondary education program in Region II, were included in this study.

Findings in this study are stated in the following order:

Educational Qualifications

On degree received, 36 percent finished the Bachelor of Science in Industrial Education course, followed by 15 percent and 14.7 percent who completed respectively the Bachelor of Science in Agricultural Education and Bachelor of Science in Agriculture courses. There were 0.7 percent M.A. holders, while 14 or 5.0 percent were holders of Teacher's Certificates in Fishery and Trade. Three were holders of Bachelor of Science in Elementary Education, Bachelor of Science in Business Administration and Bachelor of Science in Commerce. The rest were holders of degrees which could qualify them to teach practical arts subjects.

There were 33 major fields of specialization of the practical arts teachers. The leading field of specialization by 23 percent was agronomy. The other fields comprised less than 15 percent each: food trades and animal husbandry, garment trades, industrial arts, auto mechanic, cosmetology, furniture and cabinet making, and electricity.

Fifty-one percent of the respondents had earned units ranging from 5 to over 36 units in the graduate school. The remaining 48 percent had not earned a single unit.

One hundred twenty-four or 41.3 percent of the respondents passed government examinations and 176 or 58.7 percent did not. However, only 95 or 76.6 percent of the eligibles had the appropriate eligibilities to teach in the secondary schools.

Most (146 or 48.6 percent) of the respondents were sent for training which was meant to upgrade their knowledge and competencies in teaching practical arts.

Areas of Practical Arts Education Program That Are Implemented

The areas of practical arts offered for exploratory purposes varied according to the type of school. The distribution, arranged from the highest to lowest percentage, was as follows: homemaking arts, agricultural arts, industrial arts, business and distributive arts, and fishery arts. The trend of offering the areas of practical arts in the specialization phase, on the other hand, was similar to that in the exploratory phase. Most of the students centered their activities in the area of homemaking arts, then in agricultural arts, industrial arts, business and distributive arts, and finally, fishery arts.

Reasons for Lack of Instructional Facilities

The main reason for the lack of instructional facilities was that there were no funds to purchase them. The other reasons, arranged from the highest to the lowest percentage, were: supply was not available in the community and requisitions have not yet arrived, administrators are not sympathetic with the practical arts teachers, and no requisitions were made.

Due to this condition, the respondents resorted to the use of magazines, newspapers, lecture notes from college, and resource persons. In some few cases, they resorted to the use of radio, projectors, handouts/pamphlets and books.

The students, to support their practical arts activities, sought financial help from themselves, their parents, brothers and sisters, and from practical arts teachers.

Methods of Teaching Used in Practical Arts

Some 94 percent of the respondents used teaching guides or course outlines prepared either by the practical arts teachers

themselves, the Educational Development Program Implementing Task Force, the Ministry of Education and Culture, by administrators, or the Pampanga Curriculum,

Field laboratory demonstration was the leading method used by the respondents. The other methods used, arranged according to the highest to the lowest percentage of users, were as follows: modular instruction, assigning students to the different school projects as assistants, on the job training, visitation of well-known farms and projects in the community, and field trips.

Under methods of teaching used, lecture method led. This was followed accordingly by demonstration method, laboratory method, practicum, supervised study, individual instruction, modular instruction, problem solving, field trips, and modified conference.

Persons Influencing Students in Selecting Their Practical Arts Activities

Most of the students were engaged in gardening. The following activities, arranged from the most to the least number of students engaged in them, were: handicraft, food processing, sewing and embroidery, poultry raising, knitting and weaving, swine raising, rice farming, and swine raising. Most of the students conducted their project in school; about one-fourth of them had their projects in their homes.

The four leading persons who influenced the students in selecting their practical arts projects and activities were: the students themselves, their practical arts teachers, and administrators and their parents.

Methods Used in Evaluating Student Activities

More than 75 percent of the respondents evaluated the projects or activities of students by the quality and quantity of accomplished projects or activities. Sixty three percent availed of written examination and 31.6 percent, by oral examination. Some 18 percent made a follow-up of the activities done in school in the homes of students.

Problems Encountered by the Practical Arts Teachers in Implementing the Program

The most pressing problems encountered by the practical arts teachers in implementing the program ranked in their order were:

inadequate facilities, tools, equipment and supplies; inadequate books and other references; lack of funds for practical arts program; poor reading ability of students; lack of updated teaching guides; too big class sizes; poor financial support on the part of students; inadequate supplies in the community; overloading of teachers; the use of Pilipino as a medium of instruction; and poor support of the program by the administrators.

One hundred twenty-four or 41.3 percent of the respondents passed government examinations and 176 or 58.7 percent did not. However, only 95 or 76.6 percent of the eligibles had the appropriate eligibilities to teach in secondary schools.

Most (146 or 48.6 percent) of the respondents were sent for training which was meant to upgrade their competencies and knowledge in teaching practical arts.

Areas of Practical Arts Education Program That Are Implemented

The areas of practical arts offered for exploratory purposes varied according to the type of school. The distribution, arranged from the highest to the lowest percentage, was as follows: home-making arts, agricultural arts, industrial arts, business and distributive arts, and fishery arts. The trend of offering the areas of practical arts in the specialization phase, on the other hand, was similar to that in the exploratory phase. Most of the students centered their activities in the area of homemaking arts, followed by that in agricultural arts, industrial arts, business and distributive arts, and finally, fishery arts.

Based on the foregoing findings and conclusions, the following are recommended:

1. To ensure high quality of performance in the implementation of the practical arts education program, the recruitment and selection of practical arts teachers should be based not only on the qualifications of the applicants but also on their appropriate major field of specialization which is truly needed by the school..
2. School administrators should exert maximum efforts in providing the appropriate kind and number of instructional supplies, materials, facilities and equipment in their respective school, to ensure better quality instructions in the program. It is likewise necessary that a thorough appraisal of the quality, quantity and

relevance of the instructional facilities be conducted to determine their status, which may serve as a basis for the administrator in requesting for more funds for the acquisition of these facilities. It is also meritorious that local materials and resources found in the locality should be used to augment the existing facilities in the school.

3. The program of student activities should be well identified and defined and classroom activities should coincide with the laboratory phase of instruction, to maximize the acquisition of knowledge and skills among the students. Likewise, the activities of students especially those related to their specialization areas should be well planned and organized to synchronize with the needs of the development thrusts of the locality and region for a ready market of the graduates.

It is necessary that NEDA and the National Manpower and Youth Council of the Region be consulted for proper appraisal of the skills needed by the employment market and proper adjustment of the program be made to be able to turn out the right kind and number of graduates. In view of this, there is a need to strengthen a functional system of placement and an urgent need to revitalize the guidance and counseling services of all the schools.

4. Each school should establish viable projects to serve as the training ground for the students. The profits derived may be used to purchase tools, equipment and supplies needed in the implementation of the practical arts program.

5. Students undertaking specialization activities should be engaged in projects that are viable and profitable in their homes rather than in the school, so that after graduation, the student will have an immediate employment as self proprietor.

6. The school administrators as well as practical arts teachers need to undergo in-service training related to practical arts teaching or enroll in graduate schools to specialize on practical arts teaching. The mentioned activities will make them keep abreast with and conversant of the modern trends in teaching practical arts.

7. The curriculum of teacher training institutions should be restructured to include more courses in practical arts to provide future teachers with a good background and understanding of teaching practical arts.

8. Similar studies along this area should be conducted to include secondary private, Catholic, non-sectarian, barangay and community high schools, and to devise a better picture of the status of the implementation of the practical arts education program in the region.

SAWO, ELMO O. December 1979. Rate of Tuber Production of Three White Potato Varieties Grown Under Six Fertility Levels Under La Trinidad Conditions. Mountain State Agricultural College, La Trinidad, Benguet.
Advisers: Dr. Lucio B. Victor
Prof. Faustino G. Herrano

This experiment on the rate of tuber production of three varieties of white potato grown under six fertility levels was conducted at the Balili Experimental Area of the Mountain State Agricultural College from December 1977 to March 1978 using the split-plot design with three replication.

The potato varieties that served as main-plots in the experiment were: Red Pontiac (V_1), Fina (V_2) and Conchita (V_3). The rates of fertilizer or sub-plots applied per hectare basis were:

- F_1 - 0-0-0
- F_2 - 100-100-100
- F_3 - 200-200-200
- F_4 - 100-100-100 plus $6.43m^3$ chicken manure (700 cans)
- F_5 - 200-200-200 plus $6.43m^3$ chicken manure (700 cans)
- F_6 - $6.43m^3$ chicken manure (700 cans)

The best variety in terms of tuber weight was Red Pontiac. In terms of the number of tubers, the yield of Conchita was highly significant over the yield of Fina and significant over Red Pontiac.

The best variety in terms of tuber weight was Red Pontiac that yielded 5.1 kg. per 10 plants or 21.45 tons per hectare compared to Fina and Conchita that produced 3.28 kg. per 10 plants or 15.67 tons per hectare, respectively. The yield of Red Pontiac was significantly higher over the two varieties. In terms of the number of tuber per hill, the yield from Conchita was highly significant over the yield of Red Pontiac and significant over Fina.

Among the different rates of fertilizer, the application of 1/2 big kerosene can of chicken manure alone or 6.43m³ per hectare (F₆) outyielded significantly F₅ and F₄ and highly significantly over F₃, F₂ and F₁ based on the weight of tubers per hill. In terms of number of tubers per 10 hill, F₄ produced the highest, which was highly significant over F₁ and significant over F₃.

Tuber yield depended directly on the number of basal branches, number of leaves, height of plants, fresh weight of haulm, and dry weight but inversely on the number of mainstem. With more mainstems, tuber yield slowed down in growth. These factors were indicators as to the best stage to harvest the crop. The above contributing factors for increase of tuber yield compensated an eventual decrease in price.

B. Undergraduate Theses

NAHAUL, CECILIA, H. August 1980. Effects of Inoculation and Different Rates of Lime on the Growth and Yield of Baguio Beans. Mountain State Agricultural College, La Trinidad, Benguet.
Adviser: Prof. Tessie M. Merestela

This study was conducted to determine the effects of inoculation and different rates of lime on the growth and yield of Baguio Beans. A pot experiment was employed involving inoculation with Rhizobium phaseoli and 5 levels of liming materials (CaO).

The growth of inoculated Baguio beans was significantly greater than that of uninoculated plants. The number of pods, length of pods, yield and number of root nodules are increase with rhizobial inoculation. The N content of the tissues and soil and N uptake and the amount of N fixed by plants significantly increased with inoculation.

The rates of lime had favorable effects on the growth of plants. Growth and yield comparison showed that plants applied with 3 tons lime per hectare combined with inoculation were tallest (2.62).

The application, therefore, of 3 tons lime per hectare coupled with inoculation affects favorably the growth of Baguio beans. With this combination, the highest yield (436.25 g/plant) was

obtained. Likewise, on the N content of the tissues and soil the N uptake and the amount of N fixed by bean plants significantly increased as plants were inoculated with rhizobia.

The pH, originally, 3.86, increased to 5.2 after harvest. Liming could have created a suitable environment for the rhizobium and host plants to carry the symbiotic relationship favorably.

OMENGAN, PETER B. May 1980. Response of Irish Potato to Different Rates of Potassium Using Sliced and Unsliced Seedpieces. Mountain State Agricultural College. Adviser: Prof. Tessie M. Merestela

The study was conducted to determine the effects of the different rates of potassium using sliced and unsliced seedpieces on the growth and yield of Irish potato. The study was conducted from October, 1979 to January, 1980 at the Mountain State Agricultural College, La Trinidad, Benguet. The rates of potassium used were: 0 kg K_2O /ha. 120 kg K_2O /ha 240 kg K_2O /ha. 360 kg K_2O /ha and 480 kg K_2O /ha. The types of seedpieces used were: unsliced and sliced.

The highest mean weight and the greatest number of marketable tubers were obtained from the plants applied with 240 kg K_2O /ha. (4.78 kg/plot and 94.66 tubers/plot, respectively) and from unsliced seedpieces (5.13 kg/plot and 102.3 tubers/plot, respectively).

The rates of potassium and the types of seedpieces had no significant effect on the height of the plants at maturity. The tallest plants (62.6 cm) were obtained from the application of 360 kg K_2O /ha. using sliced seedpieces.

The nitrogen content of the soil after harvest did not differ significantly as affected by the varied levels of potassium and the type of seedpieces used. Though the phosphorous content after harvest showed no significant difference as a result of the varied levels of potassium it was noted that the control at yielded less gave the highest mean phosphorous content of 92.67 ppm. The lowest mean phosphorous reading was registered by the application of 240 kg K_2O /ha which yielded the most.

The difference rates of potassium showed no significant effect on the potassium content of the soil after harvest. However, the highest potassium content (156 ppm) was obtained from the application

of 480 kgK₂O/ha which was the highest potassium application. The control noticeably yielded the lowest potassium content of the soil after harvest with a mean of 112 ppm. The potassium content of the soil after harvest using unsliced seedpieces gave a mean of 113.6 ppm while that of the sliced seedpieces gave a slightly mean of 137.8 ppm.

PANDOSÉN, MAGDALENA DIASÉN. March 1980. Effect of the Different Rates of N-K and Organic Fertilizers on the Yield of Irish Potato. Mountain State Agricultural College, La Trinidad, Benguet.
Adviser: Prof. Conrado J. Oliveros

The effect of the different levels of chicken dung and inorganic fertilizers on the yield of potatoes was studied. A split-split plot design was used involving potassium, nitrogen, and organic matter. The rates of nitrogen and potassium used were: N₁-control, N₂-120N/ha, N₃-340N/ha, N₄-360N/ha. K₀-control, K₁-150K/ha, K₂-200N/ha, K₃-250K/ha. The rates of chicken manure used were: O₁-control, O₂-10 tons/ha. Phosphorous was applied in all treatment at a rate of 100 kg P per hectare.

Results obtained revealed that the application of potassium did not adversely affect the vegetative growth of the plants but increased the total weight of the yield. The exceeding rates of potassium resulted to a decrease in the starch content of the tuber or to flouriness. Furthermore, excess application of nitrogen prolonged the vegetative growth but delayed the formation of tubers.

It was observed that the plants applied with organic matter showed vigorous growth and produced high and good quality yield, while the plants not fertilized with organic matter and nitrogen were stunted and produced less yield.

The application of organic matter effectively improved the physical properties of the soil. It decreased the bulk density and increased the porosity and waterholding capacity of the soil effects which favored plant growth and the tuber production.

SA-ONG, RAFAELA E. May 1980. Effects of Rates and Methods of N Application on the Tubers and Mineral Composition of White Potato at La Trinidad, Benguet. Mountain State Agricultural College.
Adviser: Prof. Conrado J. Oliveros

The study was conducted from October 1979 to January 1980 at

the Mountain State Agricultural College Experimental Station and February 1980 at the Soils Laboratory to determine the effects of 4 rates of fertilizers in 3 methods of N application the yield and mineral composition of white potato.

The fertilizer rates used were: 0-0-0, 45-45-45, 90-90-90, 150-150-150, and 180-180-180. These were applied by soil application of all NPK at planting, split soil application, and soil application plus foliar application of 1/2N.

It was found that as regards the yield (total and marketable), the method of applying the fertilizer was negligible. However, with the rate of fertilizer, at increasing rate, even up to the highest rate used here, potato yield was increased. This indicates that potato can still require higher rate as no diminishing data on the yield was observed. The more or less observable yield of the control does not suggest that crops can be self supporting but that it was provided by the initial nitrogen (N) content of the soil. The slight differences on the non-marketable yield was attributed to the marble and over-sized or cracked tubers is a varietal characteristics of Cosima, the cultivar used.

With the mineral composition, it was revealed that in some ways the treatments increased the acidity of the soil. Applying the fertilizer also increased the NP content of the soil. The higher the rate of fertilizer, the higher the NP of the soil at harvest. The soil application of N, all at planting increased the N content of the soil. For phosphorous (P) content at harvest, no difference were effected by the method of application. With the tissue analyses (vegetative part and tubers), results revealed that the rates were inadequate. For both tissues, N increased with the increase in rate. Basal application is best for the vegetative parts but in the soil application plus foliar spray for the tubers.

With the yield, result show negligible effect of applying N. With soil acidity, however, NP content of the soil at harvest, and mineral composition of the tuber thus suggesting importance in the food composition, the method is still important to consider. With the rates used here indicated that maximal rate was not achieved, potato can be provided with still higher one, which then may be a further study to undertake.

BALAWIS, MARCIA C. April 1980. Effects of the Different Rates and Time of Fertilizer Application on the Growth and Yield of Ginger. Mountain State Agricultural College, La Trinidad, Benguet.

Adviser: Prof. Conrado J. Oliveros

This study was conducted from April to December, 1979 at the MSAC Experiment Station to determine the effects of the different rates and time of fertilizer application on the production of ginger.

The different treatments employed in relation to levels of fertilizers were: R_0 (control), R_1 (300 kg NPK/ha.), R_2 (250-180-180 kg NPK/ha.), R_3 (240-90-90 kg NPK/ha.), R_4 (240-70-220 kg NPK/ha.). The treatments concerning the time of fertilizer application were: T_1 (all NPK at planting), T_2 (1/2 NPK at planting plus 1/2 NPK one month after planting), T_3 (1/2 NPK at planting plus 1/2 NPK two months after planting), T_4 (1/2 NPK at planting plus 1/2 NPK two months after planting plus 1/3 NPK three months after planting), T_5 (1/2 N all PK at planting plus 1/2 N two months after planting).

The different rates and time of fertilizer application did not give any significant effect on the height and yield of ginger. The plants fertilized with 250-180-180 kg NPK/ha. registered the greatest yield.

Statistical analysis revealed that there was a highly significant effect of the different rates and time of fertilizer application on the NPK content of the soil and tissue. It was only in the P content of the soil that the time of fertilizer application had no significant effect.

The plots treated with 250-180-180 kg NPK/ha. had the greatest mean N content. The highest N absorbed in the leaves came from those fertilized with 300 kg NPK/ha. On the other hand, the soil fertilized with 1/2 NPK at planting plus 1/2 NPK two months after planting had the greatest N content.

The plots fertilized with 240-90-90 kg NPK/ha. had the greatest amount of P left in the soil. Regarding K, the greatest amount left in the soil was obtained from those fertilized with 300 kg NPK/ha.

PAYONGAYONG, ROSALY G. October 1980. Yellowing in Potato Plants Due to Nutrient Deficiency and Pathogen. Mountain State Agricultural College, La Trinidad, Benguet.

Advisers: Mrs. Ester P. Gacelo
Mrs. Lorenza G. Lirio

Potato cuttings were used in search of the nutritional and pathological disorders that would greatly impair growth and synthesis of chlorophyll leading to yellowing.

Plants grown in nitrogen deficient solution and inoculated with fungus were severely stunted.

Yellowing of the midrib on the lower leaves was observed in nitrogen deficient plants five days after treatment. Fungus inoculated plants showed yellowing as early as three days after treatment. Dispersed yellow spots which turned brown on the lower leaves were evident. Yellowing in plants as induced by Factors A and B combined (nitrogen deficient with fungus) exhibited midrib discoloration which appeared two days after treatment.

Tissue analysis revealed that plants grown in nitrogen deficient culture solution with fungus inoculation had the lowest percentage of nitrogen.

SALDAEN, FELISA A. October 1980. Biological Interference of Tomato and Bactospeine Against Diamondback Moth of Cabbage. Mountain State Agricultural College, La Trinidad, Benguet. Adviser: Mr. Eulogio V. Cardona, Jr.

The biological interference of tomato and of Bactospeine insecticide against diamondback moth was studied at the Mountain State Agricultural College Experimental Station from February to May 1980.

On plots without tomato but only with cabbage, the lowest count of diamondback moth was taken from plants protected with standard check insecticide Decis 2.5 E.C., followed by plants treated with the highest concentration of Bactospeine 2.86 g/4.5 liters water. On the degree of damage and weight of marketable yield, plants treated with Decis showed the least degree of damage followed by plants protected with the highest concentration of Bactospeine of 2.28, 1.17 and 1.12 g per 4.5 liters water each had the least protecting against diamondback moth.

On the other hand, plots of cabbage intercropped with tomato, together with Decis 2.5 EC had the least damage. Likewise, plants treated with 2.86 g Bactospeine per 4.5 liters water had significantly higher control over diamondback moth compared with those plants treated with lower concentrations of Bactospeine.

The interaction of tomato and Bactospeine against diamondback moth showed a highly significant effect on the control of diamondback moth in terms of larval count, degree of damage and weight of marketable yield. This means that when tomato and Bactospeine are combined, lesser diamondback moth and damage, thus, yield is increased.

MARQUEZ, JANE C. 1980. A Preliminary Study on the Biological Control of Garden Pea Leaf Miner (Phytomyza horticola) Using Bactospeine. Mountain State Agricultural College, La Trinidad, Benguet.
Adviser: Mr. Eulogio V. Cardona, Jr.

This study was conducted to test the efficacy of the different concentrations of Bactospeine, a biological agent of Bacillus thuringiensis, in controlling leaf miner of garden peas at the Mountain State Agricultural College, La Trinidad, Benguet, from February to April, 1980.

The treatments consisted of the different concentrations of Bactospeine, namely: 1.12, 1.17, 2.28, 2.86 grams per 4.5 liter of water each. The standard check used was 3 ml Decis 2.5 per 4.5 liter of water. Their effectiveness was based on larval count, percentage degree of damage and weight of marketable pods harvested.

The standard check insecticide, Decis 2.5 E.C. showed more protection than Bactospeine. But, among the different dosages of Bactospeine used the 2.86 grams dissolved in 4.5 liter of water was the most effective to control leaf miner of garden pea. This was followed by 2.28, 1.17 and 1.12 grams Bactospeine with the ratings of next highest, moderate, and least, respectively.

LIPKIT, VICTORIA P. 1980. Ecological Succession of the Pests of Strawberry. Mountain State Agricultural College, La Trinidad, Benguet.

Adviser: Mr. Eulogio V. Cardona, Jr.

A study on the ecological succession of the pests of strawberry was conducted at the Mountain State Agricultural College, La Trinidad, Benguet from October, 1979 to February, 1980. The experiment aimed to determine the occurrence of the pests throughout the growth of strawberry and to find out the ecological succession of the pests associated with strawberry. The evaluation measures considered were: pest population count, occurrence and the nature of damage.

The adults and grubs of snout beetle, aphid, cabbage looper, and slug were counted manually. The hills per plot were considered as samples from the completely randomized block layout of the experiment.

Snout beetle was the most common pest observed followed by aphid, cabbage looper and slug. The snout beetle damaged the plant by making holes on the surface of the leaves. The aphid infested the plant by sucking the sap of the shoots. The cabbage looper damaged the leaves by rolling and eating the young leaves and flowers. The slug ate the fruit leaving slimy substances on the plant.

The snout beetle, aphid, cabbage looper and slug were infesting throughout the growth stage of the strawberry.

A highly significant population of aphids and cabbage looper was observed: aphid was significantly high from 3-5 weeks after transplanting, and cabbage looper pest, at 8, 10, and 15 weeks after transplanting. Likewise, slug pests was observed highly significant abundant at 3, 5, and 10 weeks of the plant growth stages.

The population of snout beetle was normally the same throughout the strawberry duration as there was no significance derived from analysis of variance.

CAWI, TERESITA C. 1980. Preliminary Study on the Chemical Control of Insect Pests of French Mushroom (Agaricus bisporus) Mountain State Agricultural College, La Trinidad, Benguet.

Adviser: Prof. Esteban B. Akiew

The effectiveness of Malathion E 57, DDVP 50EC and Kalil and

the time of spraying against the insect pests of French mushroom (Agaricus bisporus) were studied. The effectiveness of insecticides was evaluated in terms of maggot count, damage on mushroom pinheads and weight of harvested buttons.

Based on the number of maggot counted, spraying done at 7-day interval had the lowest mean. A higher population was obtained from the beds sprayed with the insecticides during bedding in.

From the data gathered on damaged pinheads, the analysis of variance showed no significant difference with the time of application. However, spraying done during cropping at 7-day interval resulted to higher yield which was significant compared to the other treatments.

The interaction of insecticides and time of application in relation to the number of the number of damaged pinheads and weight of harvested buttons was found significant. The highest number of damaged pinheads was obtained from DDVP treatment which was sprayed during bedding in. On the other hand, the highest yield was obtained from Kafil-treated beds with spraying done at 7-day interval.

Further study is recommended to verify these results and to determine the best rate for economic threshold.

BADOL, ESTERA O. and WILEY, ELEANOR T. March 1980. Chemical Control of Mushroom Damping-off Caused by Fusarium Oxysporum. Mountain State Agricultural College, La Trinidad, Benguet. Adviser: Prof. Esteban B. Akiew

Four fungicides namely, Carbothoxy pyrazole (Afugan), Benomyl (Benlate), Zaneb (Parzate), and Thiaphanate methyl (Fungitox) were evaluated against mushroom damping-off at the Mountain State Agricultural College, La Trinidad, Benguet from August to October 1979.

These fungicides were applied in two methods: spraying and dusting. The bases on determining their effectiveness were yield and degree of disease infection. Of the two methods, spraying proved to be more effective.

Results of the study showed that, among the fungicides used, Fungitox and Benlate were effective against Fusarium oxysporum; they effected a high yield and low degree of disease infection on mushroom. Fungitox was also observed to have a longer efficacy in controlling damping-off. The other two chemicals, Afugan and Parzate, were also able to reduce infection.

Statistically, a significant difference was obtained between the treated and untreated in terms of yield of marketable cushroom, especially through spraying.

DOMINGUEZ, ROSALIND C. September 1980. Screening Some Possible Repellent Juice of Local Plants Against Diamond Back Moth of Two Crucifers. Mountain State Agricultural College, La Trinidad, Benguet.
Adviser: Prof. Faustino G. Hernano

Eight juices of local plants against diamondback moth of two crucifers were screened at the Mountain State Agricultural College, La Trinidad, Benguet from January to April 1980.

The results revealed that crucifers sprayed with plant juices differed significantly in terms of larval count, on degree of damage and marketable yield.

In terms of larval count, lantana, marigold and hot pepper juice controlled to some extent diamondback moth of crucifers such as cabbage and Chinese cabbage. In terms of damage inflicted by diamondback moth, crucifers sprayed with juices of marigold, tomato, lantana and hot pepper showed significant differences from one another. Those crucifers sprayed with juices of ageratum, onion, "bluet" and wild sunflower had significant damage inflicted by diamondback moth. However, Kafil, the control insecticide, controlled diamondback moth better than the plant juices used.

As expected, cabbage and Chinese cabbage sprayed with Kafil yielded the most. This was followed by plants sprayed with hot pepper juices. Those cabbages sprayed with wild sunflower juice ranked third but in Chinese cabbage, it ranked fifth, showing these plant juices had some sort of interaction with the kind of cruciferous crops. However, the hot pepper, wild sunflower and lantana juices protected cabbage and Chinese cabbage crops against diamondback moth to some extent.

GONZALES, FERNANDO: October 1980. Comparative Effects of Growth Hormones on the Rooting of Roses C.V. Queen Elizabeth. Mountain State Agricultural, La Trinidad, Benguet.
Adviser: Mr. Ben D. Ladilad

Comparative effects of growth hormones, GA₃ and NAA, on the rooting of roses C.V. Queen Elizabeth were studied from November

1979 to January 1980. The concentrations of growth hormones applied were 0 ppm, 100 ppm, 500 ppm, and 1000 ppm; the control was used as the standard basis.

The growth hormones hastened root formation and induced greater rate of root growth in terms of number and length of roots per cutting.

Comparison on the effect of growth hormones on the growth of shoots produced after one month showed no significant differences. However, cuttings dipped in 100 ppm of NAA showed the most vigorous shoot growth among the treated cuttings. The control group and cuttings dipped in 1000 ppm GA_3 had the poorest shoot growth.

It was further observed that cuttings treated with 1000 ppm of GA_3 and NAA produced the highest number of roots, had rapid root elongation and earliest root formation.

VIRAY, MARJORIE P. October 1980. Effect of Moisture Stress and Plant Arrangement on the Growth and Yield of Chinese Cabbage. Mountain State Agricultural College, La Trinidad, Benguet. Adviser: Prof. Franco T. Bawang

The effects of plant arrangement and moisture stress on the growth and yield of chinese cabbage was studied from November 1979 to January 1980.

The critical stages on the growth of Chinese cabbage most sensitive to moisture stress appeared to be at the seedling stage or 20 days after planting and the initiation of head formation or 52 days after planting.

Suspended watering from the 28th day after planting enhanced optimum growth and suspended watering from the 44th day after planting appeared to favor optimum yield of Chinese cabbage.

The square plant arrangement tended to increase the percentage of heading, average weight of heads, number of heads per plot, weight of heads, yield per plot and weight of marketable heads.

KUDAN, SILVESTRE L. October 1980. The Effect of Hydroisolation on the Growth and Yield of Carrot. Mountain State Agricultural College, La Trinidad, Benguet. Adviser: Prof. Franco T. Bawang

A study was conducted to investigate the effect of hydroisolation

on the number of days to emergence, rate of emergence, height increment, days to maturity, length of roots, yield per plot, weight of marketable roots, and peso value of marketable roots of carrot.

Results of the study revealed that subjecting carrot seeds to wetting and drying enhanced optimum growth and yield. The benefit derived from the technique is greatest when the seeds are wetted and dried three times before sowing. The hydroisatation technique appeared to initiate faster rate of emergence, shorten the maturity of carrot for two weeks and increase the yield by 11.65%.

PACIO, GABRIEL C. October 1980. Effect of Suberization on the Growth and Yield of Two Varieties of Irish Potato. Mountain State Agricultural College, La Trinidad, Benguet.
Adviser: Prof. Franco T. Bawang

The effect of suberization on the growth and yield of 2 Irish potato cvs namely "Cosima" and "Greta" was studied from January to March 1980.

Results showed that of the 2 cvs studied, cv 'Cosima' produced higher yield/plot and yield/ha. However, cv 'Greta' had the most number of stems/hill and most number of tubers/plot.

All the suberization treatments affected the growth and yield of the 2 potato cvs studied, but the appropriate period that enhanced optimum growth and yield appeared to be 8 days. Allowing cut seed-tubers to suberize for 4 days may enhance early sprout emergence and the production of more tubers.

SAGUILOT, ADELINA P. March 1980. Cost and Return Analysis of Rice Production in Lamut, Ifugao. Mountain State Agricultural College, La Trinidad, Benguet.

The cost and returns and labor utilization of rice production were analyzed and compared among farms which were classified according to size.

There were 50 farmer-respondents proportionately sampled from the different rice producing barangays of Lamut, Ifugao namely: Lawig, Lucban, Panopdopan, and Pieza. The total crop area of the 50 rice farms in the four barrios was 64.63 hectares, 17% of which were small farms; 42% medium farms; and 41% large farms.

The majority of the small farm operators produced 51-83 cavans per hectare, while the majority of the medium and large farm operators produced 84-116 cavans per hectare.

The small farms had a total expense of ₱3,293.00 a total receipt of ₱3,976.00 and a net farm earning of ₱683.00 per hectare per cropping. For medium farms, a net farm earning of ₱670.00 per hectare was obtained after deducting the total farm expenses of ₱2,866.00 from the total farm receipt of ₱3,582.00. The large farms, with a total receipt of ₱3,676.00 and a total expense of ₱2,667.00 realized the highest net farm earning of ₱902.00 per hectare. All the farms obtained a total farm receipts of ₱3,316.00 and total farm expense of ₱2,920.00 per hectare, with an average net farm earning of ₱896.00.

The net cash farm income per hectare for small, medium and large farms were ₱302.00, ₱910.00 and ₱1,682.00 respectively.

Thirty respondents utilized about 71-110 man-days per hectare to do all the operations in a cropping season while only 20 respondents used about 30-70 man-days per hectare. On the average, a hectare used about 77 man-days for all operations in one cropping.

Most (50%) of the total respondents lacked capital to finance their farm, thus they secured usurious loans from neighbors, friends and other people which contributed much to their expenses. Another problem that confronted most (36%) of the farmers interviewed was the control of pest and diseases. Sixteen per cent had no problem at all regarding their farming operation.

BUYAGAO, AIDA B. 1980. Costs and Returns Analysis of Broiler Production in La Trinidad, Benguet. Mountain State Agricultural College, La Trinidad, Benguet.
Adviser: Miss Evangelina Buyagawan
Mrs. Herminia A. Francisco

The cost and returns of broiler production under La Trinidad, Benguet conditions from January 15, 1980 to March 11, 1980 were analyzed. The study was aimed to determine the profitability of producing broilers in the study area and to find out the most efficient selling practice for broilers. Factorial in completely randomized design was employed with breed as factor A and marketing practice as factor B. Each of the four treatments contained 50 chicks.

The results of the study showed that the strain of broilers used and the marketing practice adopted had a highly significant effect on the profitability of raising broilers. It was found that the Peterson broilers outweighed the Cobb broilers with a mean of 0.61 kg.

Although there was a significant differences on the weights of birds between the two strains used, no significant differences was found in total sales. However, the selling practice had a highly significant effect on the sales of birds. Such differences can be attributed to the weight loss in dressing. Despite the higher selling price of dressed chicken than live birds, returns from sales of dressed birds were still lower than those from live birds.

The costs incurred in the production of broilers in different treatments varied. Broilers sold on dress weight basis had higher cost than those in live weight. This was due to the additional expenses in labor and in marketing.

The costs and returns of broilers studied revealed that Cobb broilers sold on live weight basis incurred the lowest production cost. In spite of the lower cost of production incurred in raising Cobb broilers, Peterson broilers gave the highest net returns since they gained heavier weight than the Cobbs. Dressed Cobb broilers gave a very low return which caused a loss in the investment.

GALAD, REBECCA B. May 1980. Marketing Practices of Farmers on Selected Vegetables in Sagada, Mountain Province. Mountain State Agricultural College, La Trinidad, Benguet.
Adviser: Mr. Luke Cuanguay

The study aimed to determine the different marketing practices employed by the Sagada farmers, and to suggest possible solutions to minimize the problems of the farmers on their marketing scheme so as to increase their income from their farm products.

This study found that the average Sagada vegetable farmer aged 33, planted an area of 5,000 square meters, had four household members who helped in the marketing process, and had normal education up to the intermediate grades.

On market outlets, sweet pepper, cabbage and potatoes were bought by retailers and tomatoes and onions by direct consumers.

By farm size, there was significant difference on the five vegetables on the marketing outlets at the .05 level of confidence.

The transportation channel used by the farmers according to farm size had a highly significant difference at the .05 level of confidence. This means that the wider the area of farms planted to vegetables, the more were the different marketing channels utilized.

The market prices of each of the vegetables on the marketing activity were significant at .05 level of confidence, meaning the pre-marketing activities by the farmers brought higher prices to the vegetables. At the same time, the prices of the five vegetables were significant to the distance of the farms to the market at .05 level of confidence. This means the greater the distance of the market or where the product are sold, the higher is the price of the farm products.

Statistical analysis of the Chi-square (X^2) showed that the computed value was very much larger than the tabulated Chi-square value. This result does not give information on the effect of marketing cost on: the marketing outlets, pre-marketing activities and the method of sale employed by the farmers. This suggests that another tool should be utilized in order to have the best result.

For the benefit of Sagada farmers to have an efficient and orderly marketing system for their farm products, it is suggested that they be given government assistance.

DOMINGUEZ, C.R. and HERRANO, F.G. September 1980. Screening Some Possible Repellent Juice of Local Plants Against Diamondback Moth of Two Crucifers. Mountain State Agricultural College, La Trinidad, Benguet.

The possible control of diamond moth of cruciferous crops using juices of local plants was studied from January to April, 1980 at the Research and Experiment Station of Mountain State Agricultural College, La Trinidad, Benguet.

The results revealed that the larval count, degree of damage and marketable yield of crucifers sprayed with plant juices

significantly. It was observed that juice of lantana, marigold, and hot pepper controlled to some extent diamondback moth on cabbage and Chinese cabbage. Damage inflicted by diamondback moth on crucifers sprayed with juices of marigold, tomato, lantana, and hot pepper were observed lower than the rest of the plants sprayed with other plant juices. These crucifers sprayed with juices of aegeratum, onion, "bluet" and wild sunflower had significantly higher damage. However, plant sprayed with insecticide (Kafil) controlled diamondback moth better than any of the plant juices used.

As expected, cabbage and Chinese cabbage sprayed with Kafil yielded the most. This was followed by the plants sprayed with hot pepper juices. These cabbages sprayed with wild sunflower juice ranked third but in Chinese cabbage, it ranked fifth, showing that these plant juices had some sort of interaction with the kind of cruciferous crops. The control of diamondback moth using hot pepper juices therefore seemed to be better on cabbage than on Chinese cabbage.

GUZMAN, A.M. de and MERRILL, T.M. 1980. A Study on Some Physical, Chemical and Biological Properties of Mine Tailings in Baguio and Benguet. Mountain State Agricultural College, La Trinidad, Benguet.

This study was conducted to (1) determine some physical, chemical and biological properties of mine tailings of the different mining industries in Baguio and Benguet (2) know the relationships among the three properties of the mine tailings.

The mine tailings collected had normal bulk density of 1.56 to 1.62 gm/cc. However, the particle density of the tailing used was higher than the standard value. Also, the water holding capacity which ranged from 0.26 to 0.37 m.c./gm was relatively lower than the typical soil. The tailings were found to be alkaline (pH of 7.77 to 7.83). The Ca content ranged from 3.71 to 4.67 m.c./100 g. The organic matter content was very low 1.23 to 1.43% but the Mg content (.29 to 5 m.c./100g) was very high compared to normal soil.

The sample tailings were found to have low cation exchanged capacity and that the same tailings were devoid on N, P, K and microorganism.

The physical and chemical properties of the tailing were found to have no relationships except that the bulk and particle density had positive relationship.

PASAY-AN, B.R. and MORAYTO, S.E. 1980. A Comparative Study of the Performance of Broilers Raised in Dark and Normal Conditions. Mountain State Agricultural College, La Trinidad, Benguet.

The performance of broilers raised in total dark, 18-hour dark and 6-hour dark pens were compared.

The birds raised in total dark pens, 18-hour and 6-hour dark pens consumed the same amount of feed. However, these birds raised in total dark pens have higher final weight, gain in weight but they had lower feed conversion efficiency. These results showed that raising broilers in pens without light have about 1/4 of a kilogram heavier than those raised in pens with 12 dark and 12 hour light. Those birds raised with 18-hour dark also outweighed those birds raised in 12 hour dark and 12 hour light pens. Although the observations are not yet too conclusive that total dark condition favors better performance of the birds, longer dark time of raising broilers tended to make heavier weights, gain in weight and better feed conversion of the birds.

GALAD, R.B. and CULANGUEY, L. May 1980. Marketing Practice of Farmers on Selected Vegetables in Sagada, Mt. Province. Mountain State Agricultural College, La Trinidad, Benguet.

This study aimed to determine the different marketing practices employed by Sagada farmers, and to suggest possible solutions to minimize the problems of the farmers on their marketing scheme in order to increase their income from their sales of vegetables.

On market outlets, sweet pepper, cabbage and potatoes were bought by retailers while tomatoes and onions by direct consumers.

The farmers incurred the least cost of the vegetable products that were packed by buyers in the farmers. This cost was shouldered by the buyers. They also were responsible for the transportation cost of the products to where they desire to sell them.

For the benefit of Sagada farmers to have an efficient and orderly marketing on their vegetable, it is suggested that they be given government assistance in order to facilitate sound marketing and production management.

UMAYAT, B.A. and TOLEDO, P.E. 1980. Control of Weed Germination by Sunflower (Helianthus annuus) Extracts. Mountain State Agricultural College, La Trinidad, Benguet.

This study was conducted under laboratory condition at the Mountain State Agricultural College, La Trinidad, Benguet to determine the effect of sunflower extracts on the seed germination of some common weeds namely: galinsoga (Galinsoga parviflora Cav.), begarticks (Bidens pilosa L. var. radiata Sch. Bip), flatnutsedge (Cyperus iria L.), and heartleaf drymary (Drymarin cordata (L.) Willd.).

Sunflower extracts obtained from leaves and barks were observed to have inhibited the seed germination of the four weeds used. The sunflower extracts were assumed to contain germination inhibitory substances that blocks the germination process. The occurrence of these inhibitory substances in the plant system offers an opportunity to search for specific compounds that have a phytotoxic effect on plant metabolism. Such substances if discovered may provide a clue for the synthesis and development of new herbicides which may be more efficient, selective, and economical for weed control in crop production.