REPORT AND RECOMMENDATIONS

On Teaching and Research

in

PLANT PATHOLOGY

Department of Biology, College of Agriculture

Seoul National University

by

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SUMMARY

More than 100 plant diseases were collected and identified during the assignment in Korea. Every major crop was found to be affected with one or more well known destructive diseases.

Losses as high as 80 percent of the total stand of plants occurred and it was not unusual to find at least a 30 percent reduction in yield in most all the important crops grown in Korea.

Attempts are being made to control plant diseases by the application of fungicides and the use of resistant varieties when available. However, control is ineffective because the proper fungicide is not used for the disease concerned; the applications are not timed correctly to control the disease; the spray equipment is inadequate to cover the plant thoroughly with the fungicide; and often the chemicals applied cause more injury to the crops than the disease.

Many good fungicides are being imported into Korea for the control of plant diseases and in addition there are a number of agricultural chemical companies formulating fungicidal sprays and dusts. At the present time, Sulphur, Fermate, Ceresan M, Captan, Arasan, Calcium Ceresan, Bordeaux Mixture and Liquid Lime Sulphur are available and many of the diseases that are now causing enormous losses could be controlled, if there were trained plant pathologists to provide the necessary technical information.

As far as the adviser could determine there are no trained Korean plant pathologists. There are a few graduates of the Biology Department of the College of Agriculture of Seoul National University who have Bachelor of Science degrees and are teaching plant pathology in some of the provincial agricultural colleges. The same is true of personnel in charge of the plant pathology sections of the national and provincial

experiment stations. It appears that there has been little realization on the part of the agricultural administrators of the importance of plant diseases and as a result the existing plant pathology sections are staffed with inadequately trained as well as poorly paid personnel.

The greatest service that the College of Agriculture of Seoul National University could render to Korean agriculture and welfare of Koreans would be the development of an outstanding department of plant pathology for training the plant pathologists necessary to control the diseases of Korean crops.

It is recommended that the Department of Biology Curriculum of the College of Agriculture be reorganized to permit a student to specialize in plant pathology in his undergraduate training. It will be necessary to add some new plant pathological courses, change some required courses to elective courses and in some cases reorganize or consolidate existing courses. A plant pathology major should learn more about the crops he will be working with than is required in the present biology curriculum.

The Biology Curriculum for Master of Science degree candidates as now constituted requires that a student take the same wide range of subjects that he took in his undergraduate studies. It would seem advisable for the candidate to specialize more in his chosen field, especially in the case of those interested in plant pathology since they are exposed to only a few courses in this specialized profession in the undergraduate curriculum. A system of major and minor courses could be specified in the requirements for both the Master of Science and Doctor of philosophy degrees. To adequately train candidates to become professional plant pathologists, it is recommended that seventeen new courses be gradually developed for addition to the curriculum in the next ten years.

The most urgent and pressing problem facing the College of Agriculture is the selection and training of at least five more students for staff positions in the field of plant pathology. These students should be sent to the United States for advanced training to include obtaining the Doctor of philosophy degree as soon as possible. They would be the nucleus of a staff for organizing a separate department of plant pathology in the near future and would be capable of training additional personnel in Korea for the profession of plant pathology. It is conservatively estimated that in addition to developing a strong teaching and research department of plant pathology at the College of Agriculture, Korea needs in the next ten years at least 50 trained plant pathologists to study and develop controls for the plant diseases that are causing tremendous losses to their major crops. In addition to training professional plant pathologists, the College of Agriculture also has the responsibility of educating the associated fields of agriculture of the importance of plant diseases to crop production, quality, and is also essential in breeding for disease resistance if it is to be on a sound basis.

It was gratifying to find that in addition to their teaching duties many of the staff were doing research and this was especially true of those staff members who had studied at Minnesota. Research should be encouraged wherever possible for besides the personal satisfaction that a staff member achieves, it also enhances his teaching knowledge and in most cases makes him a more stimulating teacher as well as adds to the material wealth of the country.

ACKNOWLEDGEMENTS

I want to take this opportunity to thank the staff of the College of Agriculture for the many courtesies and fine cooperation that they extended to me during my assignment in Korea as Adviser to the College of Agriculture, Seoul National University. Dean Cho was most considerate of giving his time and energies to arranging for conferences with staff, organizing field trips to other agricultural institutions and in general making the assignment a genuine pleasure. It is hoped that I may have the opportunity of continuing to work in the future with the many fine College of Agriculture staff members in solving some of the Korean agricultural problems.

In addition I should like to acknowledge the excellent assistance and guidance of the Chief Adviser in Korea to the Seoul National University Cooperative Project, Dr. Arthur E. Schneider. Without his assistance and that of Miss Gertrude Koll, it would have been virtually impossible to effectively complete the Korea assignment.

Importance of Plant Pathology in Korea

On arrival in Korea May 1, 1957, and through efforts of President Yun of Seoul National University, Dean Cho of the College of Agriculture and Dr. Arthur E. Schneider, Chief Adviser of the Minnesota project, the adviser became acquainted with the organization and administration of the University; the Korean colleagues and leaders in the technical area concerned; the details of curricula, courses, teaching methods and research of the staff members in the area concerned, and attempted to become acquainted with the problem of teaching and research. Every opportunity was taken to gain first-hand knowledge of the country, its people and their aspirations, potentialities and limitations. In addition, an effort was made to learn as much as possible in a short time about Korean agriculture; the crops grown; methods of planting, cultivation and harvesting; fertilization and rotations and especially to determine the occurrence, distribution and severity of plant diseases effecting the essential food and oil crops.

Approximately 35 field trips were taken to observe crops growing within a radius of 35 miles of Suwon as well as survey trips to Pusan, Taegu, Kyungju and Chunchon. More than 100 diseases were identified and found to be causing severe losses in yield on many of the crops. In addition many diseases were found which the adviser did not have time or facilities to identify. Every major crop grown in Korea was found to be affected with one or more well known destructive diseases. The types of diseases ranged from soil borne root rots, stem rots, leaf spots, to fruit and seed rots. Many of the most serious diseases are air-disseminated or insect transmitted. Work in other parts of the

world has shown that to develop control methods through the use of resistant varieties, certified seed, or by application of chemicals, many years of research are necessary. For instance, it takes about ten years to develop a rust resistant variety of wheat or barley. It will take even longer if prior research has not indicated the prevalence of the parasitic races of the organism that are present in the area and something of the nature of the resistance of the various varieties that are used for parents.

In all the areas surveyed, the same types of diseases were found and varied only in their prevalence and severity. The rusts and smuts of wheat and barley, blast of rice, viruses and downy mildews of chinese cabbage, cucumbers, squash, and blights of tomato are all widespread in occurence in Korea. One of the Minnesota advisers surveyed the Kwangju, Iri and Taejon areas and found the same types of diseases as this adviser had found in the Suwon, Taegu, Pusan and Kyungju areas.

In addition to the prevalence and distribution of the diseases, an attempt was made to estimate the amount of damage to the plant or the reduction in yield that occurred to some of the more important crops.

The Loose and Covered smuts, stripe, scab, leaf spots and head blights were conservatively estimated to be reducing the annual yield of barley and wheat 30 percent. Black stem rust and leaf rust developed late in the growing season and although they affected nearly 100 percent of the plants, only minor damage was caused in the late maturing fields. It was common to find 70-80 percent of the plant affected from the lower part of the stem to the glumes and awns of the head. On the basis of information obtained from the College authorities, a devastating epidemic that would have destroyed the majority of the wheat and barley

crop would have developed if the rainy season had started at the normal time. The rusts are present in Korea, the varieties grown are very susceptible, and as soon as all of the environmental conditions occur at a critical time that favor the disease, destruction of the crops will occur resulting in a severe food shortage in Korea. Research should be started immediately to develop rust resistant varieties.

A hundred or more small fields of Irish potatoes were examined and found to be severely affected with the virus diseases. It was not unusual to find 40-50 percent of the plants affected, and when the crop was harvested most of the tubers were the size of chicken eggs. There are also many fungus diseases such as scab and early blight that were causing serious losses. If a workable potato seed certification system could be developed and fungicides applied at the critical times for the control of many of the fungus diseases, it is the opinion of the adviser that potato production could be increased 300 percent.

The Chinese cabbage, radish, cucumber, squash and melons were also found to be severely affected with virus and fungus diseases. A number of Korean farmers said that 30 percent of their crops had been destroyed before harvest and from the appearance of the product, considerably more probably rotted before they could be sold on the market or used by the Korean housewife. These are essential foods in the Korean diet and methods of controlling the viruses, downy mildews and bacterial diseases must be developed as rapidly as possible.

Many tomato fields were found that were yielding less than 50 percent of their potential, because the early blight disease had defoliated 70 to 80 percent of the plants.

Even the oil crops such as sesame were affected with bacterial blights, stem and root rots. One of the highest yielding varieties grown

by the Suwon Experiment Station was 80 percent destroyed by the above diseases.

Although it is still early in the growing season for such crops as cotton and rice, the plants are already heavily affected with a large number of fungus diseases such as rice blast and cotton anthracnose. On the basis of the present weather conditions, disease will probably destroy between 15 and 25 percent of these crops. The Ministry of Agriculture and Forestry has just reported a severe outbreak of rice blast in Southern Korea.

Even though tobacco is not a major crop, three major diseases are causing considerable damage to the crop. They are wild-fire, angular leaf spot and viruses.

The Adviser estimated that he probably found less than 20 percent of the diseases that occur and are economically important in Korea. Although the disease survey covered only a small portion of Korea and the crops were only observed growing during the middle of the season, the results indicate that a severe problem of controlling plant diseases confronts agricultural administrators in Korea.

On the basis of the occurrence, distribution and severity of the diseases of the crops in Korea this year, it is the adviser's opinion that the development of methods of control is one of the most important and urgent problems of Korean agriculture and is probably one of the most important factors limiting the increase of food production.

However, before control methods can be developed, plant pathologists must be trained for this highly specialized and technical field. This is the responsibility of Seoul National University and the College of Agriculture at Suwon.

Present control practices

Many people in Korea are aware of some of the losses caused by plant disease and are attempting control by the application of various chemicals, cultivation practices and sometimes through the use of resistant varieties imported from other countries. It was found however, that in many cases where chemicals had been applied, they either had not been timed correctly to control the disease, had been applied with inadequate spray or dust applicators, or happened to be a fungicide that was not effective against that particular disease. In some cases, fungicides such as Bordeaux mixture had been applied and the chemical had caused more damage to the host than the disease they were attempting to control. Korea needs to train plant pathologists as rapidly as possible and to disseminate the results of their researches immediately to the farmers.

Chemical availability

Fungicides are being imported into Korea and in addition there are a number of agricultural chemical companies formulating fungicidal sprays and dusts. Although the imported fungicides are not much higher in price delivered to Korea, than in the U.S., they probably are quite expensive by the time they become available to the user. Sulphur, Ceresan M., Captan (Orthocide 75) and Arasan 75 are now available thru the Bank of Korea. Calcium ceresan for control of Rice Blast, Liquid Lime Sulphur for control of fruit diseases and Bordeaux mixture are formulated in Korea. With the chemicals now available, many of the diseases that are causing serious losses could be controlled, if there were trained plant pathologists to provide the technical information necessary.

Trained plant pathologists now in Korea

As far as the adviser could determine, there are no trained Korean plant pathologists. There are a few graduates of the Biology Department

of the College of Agriculture of Seoul National University who are teaching elementary courses in plant pathology at some of the provincial agricultural colleges. The same is true in regard to the personnel who have charge of the plant pathology sections of the Experiment Stations. As far as could be determined, these workers have a Bachelor of Science degree in Biology and probably have not had more than one or two elementary courses in general plant pathology. Up to the present time, it appears that there has been little realization on the part of the agricultural administrators of the importance of plant diseases, and as a result the existing plant pathology sections are staffed with inadequately trained, as well as poorly paid personnel.

Therefore, it seems that one of the greatest services that the College of Agriculture could render to Korean agriculture, would be to develop an outstanding department of plant pathology for training additional Korean plant pathologists and to disseminate technical pathological information for use by the farmers of Korea.

Plant pathological training in Korea

Seoul National University was formally founded August 22, 1946, and is now composed of twelve colleges and one Graduate School. The College of Agriculture at Suwon (formerly Suwon Agricultural College) was one of the original nine colleges constituting Seoul National University.

Administrative Officers - College of Agriculture

Il Sun Yun, President of the University

Baik Hyun Cho, Dean, College of Agriculture

Chong Supp Shim, Charge of Registration

Sung Chi Cho, Charge of Student Affairs

In Kwon Kim, Charge of Library

Kyung Cho Chung, Charge of General Affairs

Departments - College of Agriculture

In 1950 the College of Agriculture was organized on a four-year basis and is now composed of the following nine departments:

Agronomy - Prof. Young Lin Chi (Chairman)

Forestry - Prof. Sin Kyu Hyun (Chairman)

Livestock (Animal Husbandry) - Prof. Sang Won Yun (Chairman)

Agricultural Chemistry - Prof. Ho Sik Kim (Chairman)

Agricultural Economics - Asso. Prof. Chun Po Kim (Chairman)

Biology - Prof. Tai Tun Ahn (Chairman)

Sericulture - Prof. Moon Hyup Kim (Chairman)

General Subjects - Assoc. Prof. Sung Chi Cho (Chairman)

See appendix No. 4 for a listing of the complete teaching and administrative staff of the College of Agriculture.

Student Enrollment

In the spring semester, 1957, 991 students were enrolled in the College of Agriculture and 103 in the attached Junior College level teacher training school for a total of 1,094. The Teacher Training School is a two-year course in which the students receive training in Agriculture, Livestock and Home Economics. At the successful completion of the two-year course, the students receive a teachers certificate and are qualified to teach in Agricultural high schools.

The students are rather evenly distributed in the various departments of the College of Agriculture. The Departments of Agriculture and Agricultural Economics have the most students and the newest department of the College, Sericulture, the fewest. As indicated in the following table, there are very few female students and the majority of these major in the Department of Biology.

Table I. Student Enrollment (Spring 1957)

Department		Freshman	Sophomore	Junior	Senior	Total
Agriculture	Male	37	35	50	28	152
	Female	1	2	0	0	3
Forestry	Male	27	26	31	27	110
	Female	0	0	0	0	0
Livestock	Male	34	23	31	28	116
	Female	0	2	0	1	3
Ag. Engineering	Male	37	32	45	27	141
	Female	0	0	0	0	0
Ag. Chemistry	Male	32	27	32	39	130
	Female	2	1	1	1	5
Ag. Economics	Male	37	25	43	49	154
	Female	0	0	0	0	0
Ag. Biology	Male	27	19	29	25	100
	Female	2	4	1	2	9
Sericulture	Male	20	13	23	10	66
	Female	0	0	0	0	0
Total		256	209	288	238	991

Department of Biology

This Adviser was primarily concerned with Biology, since Plant Pathology was taught in this Department. Botany, Zoology, Entomology, Genetics, Biostatistics and Microbiology were also part of the department.

Table II. Biology Staff (1957)

Name	Rank	Fields of Responsibility
Chai Joon Ahn (Chairman)	Professor	Pl. Physiology, P. Ecology
Woon Hah Paik	Assoc. Professor	Entomology
Chai Yung Cho	Assoc. Professor	Genetics
Hyung Bin Im	Instructor	General Botany
Chai Sun Hyun	Instructor	Animal Physiology, Animal Ecology
Soo Won Kahng	Instructor	General Zoology
Hoo Sup Chung	Assistant	Plant Pathology (at Minnesota)
No Toon Jung	Assistant	Botany Laboratory
Byung Rin Seo	Assistant	Zoology Laboratory
Tchang Bok Lee*	Assoc. Professor	Botany (temporary)
Yung Chul Chang	Lecturer (From Central Agricultural Experiment Station)	Bio-Statistics
Chong Sung Park	Lecturer (from Taejon Agricultural College)	Plant Pathology, Microbiology

*Borrowed from the Department of Forestry to teach in Botany for the 1957 School year.

Biology Curriculum

All freshmen entering the College of Agriculture take the same subjects during the first year but beginning in the sophomore year the student starts to specialize in his major department. In

the junior and senior years departmental majors rarely attend the same classes with majors in other departments. The undergraduate curriculum is highly departmentalized and nearly completely filled with required courses. Most departments require 160 credit hours for graduation. The present biology curriculum has 156 credit hours of required courses, thus allowing a student major only four hours of elective courses. The languages, humanities and basic science courses seem to be adequate. However, it appears to the Adviser that some of the courses could be consolidated and others made elective rather than required. For example, the course in Agricultural Chemicals might be more applicable if included in the courses in Plant Pathology, Entomology, Weed Control, etc., rather than taught in the department of Agricultural Chemistry. Latin is of limited use in science today and it seems advisable for the course to be made an elective so that a student could take it if he felt it was necessary. The same is true of Sericulture courses S309 to S314. The curriculum as organized does not provide for an undergraduate major in Plant Pathology. With the organization of some new courses in Plant Pathology when additional qualified teaching staff are available, by changing a number of the required courses to elective courses in the junior and senior years, the biology department would be able to offer an adequate curriculum for a major in plant pathology. It doesn't seem that Courses B207, B208 (Animal Morphology), B309, B310 (Animal Physiology), B403, B404 (Animal Ecology), B413, B414 (Cultural Biology), B417, B418 (Latin), S309, S310 (Silk Worm Anatomy), S311, S312 (Silk Worm Physiology) and S313, S314 (Silk Worm Pathology) would be nearly as valuable to a Plant Pathology Major as additional courses in agronomy, horticulture, entomology, soils, and more advanced courses in plant pathology. If an undergraduate expects to continue his studies in

plant pathology, it is essential that he learn more about the crops he will be working with than is required in the present biology curriculum.

Table III. The courses required for all undergraduate students Majoring in the Department of Biology, College of Agriculture, Seoul National University.

Freshman Year**

Course No.	Subject	Semester Credits 1st	2nd
101, 102	Korean	2	2
103, 104	English	4	4
105, 106	German	2	2
107, 108	Outline of Philosophy	2	2
109, 110	History of Civilization	2	2
111, 112	Philosophy of Science	2	2
113, 114	Physical Training	1	1
Ec. 101, Ec. 102	Principles of Economics	1	1
En. 101, En. 102	Mathematics	1	1
En. 103, En. 104	General Physics	1	1
C. 101, C. 102	General Chemistry	1	1
B. 101, B. 102	General Botany	1	1
B. 103, B. 104	General Zoology	1	1

**All students entering the College of Agriculture take the same courses during the freshman year, regardless of the department in which they major.

Sophomore Year

Course No.	Subject	Semester Credits 1st	2nd
A. 201, A. 202	Principles of Plant Cultivation	2	
C. 201, C. 202	Soil Science	3	
C. 203, C. 204	Fertilizers		3

Sophomore Year

Course No.	Subject	Semester Credits 1st	2nd
C. 205, C. 206	Organic Chemistry	2	2
C. 213, C. 214	Qualitative Analysis Lab.	1	
B. 201, B. 202	Plant Physiology I	2	2
B. 203, B. 204	Plant Morphology	2	2
B. 205, B. 206	Entomology	2	2
B. 207, B. 208	Animal Morphology	2	2
B. 209, B. 210	Systematic Botany		2
B. 211, B. 212	Systematic Zoology		2
En. 201, En. 202	Meterology		2
En. 203, En. 204	Geology I	2	
En. 205, En. 206	Statistics	2	

Junior Year

Course No.	Subject	Semester Credits 1st	2nd
C. 301, C. 302	Biochemistry	4	
B. 301, B. 302	Plant Physiology II	2	2
B. 303, B. 304	Genetics II	3	3
B. 305, B. 306	Microbiology	3	3
B. 309, B. 310	Animal Physiology	2	2
B. 311, B. 312	Plant Pathology I	3	
B. 313, B. 314	Plant Pathology II		3
B. 317, B. 318	Entomology II	3	3
B. 319, B. 320	Seminar	1	1

Senior Year

Course No.	Subject	Semester Credits 1st	2nd
A. 311, A. 312	Plant Breeding	2	2
B. 401, B. 402	Biometry	2	2
B. 403, B. 404	Animal Ecology	2	
B. 411, B. 412	Seminar	1	1
B. 413, B. 414	Cultural Biology	2	2
B. 415, B. 416	Plant Ecology	2	2
B. 417, B. 418	Latin	2	1
S. 309, S. 310	Silk Worm Anatomy	2	2
S. 311, S. 312	Silk Worm Physiology	2	2
S. 313, S. 314	Silk Worm Pathology	2	2
C. 409, C. 410	Agricultural Chemicals	2	

Present Status of Undergraduate Teaching in Plant Pathology

Plant Pathology as included in curricula of the Department of Biology consists of two semesters of Plant Pathology. Plant Pathology 1, taught in the fall semester is for biology majors as well as for majors in other departments such as Agronomy, Forestry or Livestock. Plant Pathology 2, which is taught in the spring semester is primarily for biology majors. Both courses are brief introductions to Plant Pathology, stressing the history of Plant Pathology, symptoms, general morphology, classification of the fungi and examples of a few diseases caused by each of the classes of fungi as well as examples of diseases caused by bacteria and the viruses.

Staff in Plant Pathology

The present staff consists of one part-time instructor, Mr. Chong Sung Park, who is a member of the staff at the Taejon Agricultural College. Mr. Park journeys seventy-five miles by train each Sunday to Suwon where he

teaches the class in Plant Pathology on Monday of each week and returns to Taejon Agricultural College Tuesday. In addition to Mr. Park, Mr. Hoo Sup Chung is an Assistant in the Department of Biology and is now at the University of Minnesota in the Department of Plant Pathology. Mr. Chung will be graduated from the University of Minnesota with a Master of Science degree in Plant Pathology in August of this year and returns to Suwon in September, 1957 to assume his duties as an instructor in Plant Pathology in the Department of Biology.

Courses recommended to be added to the Biology Curriculum as Electives

1. A course titled, "An Introduction to the Study of the Fungi," to be a beginning course in Mycology and a pre-requisite to the Mycology course in the Graduate curriculum. (3 credits)
2. A course in, "Methods in Plant Pathology," to teach the student the theoretical and practical techniques used in Mycological, Pathological and Physiological research. This could be the same course recommended for the graduate curriculum but the instructor could use his judgment in regard to class requirements for undergraduate students. (3 credits)
3. A course in "Diseases of Field Crops". A detailed study of diseases of field crops including Symptomatology, etiology and practical methods of control. (3 credits)

It is impractical to make available to undergraduates more courses in Plant Pathology until additional staff are trained in this specialized field. In exceptional cases, seniors could be permitted to take some of the graduate courses recommended for the Master's curriculum. Again the judgment of the professor establishes the class requirements for the undergraduate student in a graduate class. This would be the case with the courses

in Methods and Diseases of Field Crops listed above. However, as soon as additional trained staff are available, the undergraduate and graduate curricula should gradually be broadened.

Present Status of Graduate Teaching Plant Pathology

There are 42 students taking graduate training at the College of Agriculture. Four of the 42 are in the Biology Department and one of these, was taking plant pathology until recently called into the Korean Army.

Curricula have been developed by most of the departments of the College, so that the Masters Degree can be granted; however, limited staff makes it nearly impossible to develop curricula for a Doctor's Degree. This is in the long range plans and will be developed as soon as possible.

Requirements for Master of Science Degree

A candidate for a Master's Degree in Plant Pathology must meet the following requirements:

1. Must complete at least 24 semester credits of graduate study as approved by the faculty (note biology curricula as presently constituted)
2. Must be a resident of the College of Agriculture for a minimum of three semesters.
3. Must present a certificate of proficiency in the foreign language of English.
4. Must prepare a thesis that is approved by the Department of Biology.
5. Must pass an oral examination on his thesis and major field.

Curriculum for Master's Degree Candidates in Biology

Table IV. 1st Semester

Required Courses

Course No.	Subject	Semester credit
B101	Plant Physiology	2
B103	Microbiology	2
B105	Agricultural Entomology	2
B107	Biochemistry	2
B301	Special Research	1

Elective Courses

B109	Experimental Embryology	2
B111	Parasitology	1
B113	Coccidology	1
B115	Ichthyology	1
B117**	Mycology	2
B119	Flora of Suwon	1
B121	Research problems in plant Taxonomy	1
B123	Science of Soil Insects	1
B125	Cytology	1
B127	Advanced Inorganic Chemistry Lab. Methods	1
B129	Research methods in plant Histology	1
B131	Research Methods in Silk Worm Anatomy	1

2nd Semester

Required Courses

B102	Plant Pathology	2
B104	Research Methods in Plant Physiology	1
B106	Research Methods in Agricultural Entomology	1
B302	Special Research	1

Elective Courses

B108	Medical Entomology	1
B110	Advanced General Physiology	2
B112	Insect Pathology	1
B114	Lepidopterology	1
B116	Coleopterology	1
B118	Principles of Infectious Disease	2
B120	Immunology	2
B122**	Principles of Plant Disease Control	2
B124	Research Methods in Plant Ecology	1
B126	Plant Microtechnique	1
B128	Physiology of Seeds	2
B130	Applied Statistics	1
B132	Organic Qualitative Analysis	1
B134	Research Methods in Silk Worm Physiology	1

3rd Semester

Course No.	Subject	Semester Credit
Required Courses		
B201	Advanced Genetics	2
B203	Research Methods in Advanced Genetics	1
B205	Science in Farm Chemicals	2
B207	Research Methods in Plant Pathology	1
B301	Special Research	1
Elective Courses		
B209**	Insects in Relation to plant Disease	2
B211	Aphidology	1
B213	Animal Ecology	2
B215**	Virus Diseases of plants	1
B217**	Bacterial Diseases of plants	1
B219	Cytogenetics	1
B221	Methods in plant Breeding	2
B223	Limnology	1
B225	Weed Control	1
B227	Organic Quantitative Analysis	1
B229	Research methods in Silk Work pathology	1
B231	Apiculture	1

4th Semester

Thesis

*The elective courses exist in title only because of the shortage of staff.

**Courses for Plant Pathology majors if staff were available.

As shown in the above curriculum (Table IV.) for biology majors wishing to earn a master's degree, 21 of the 24 required credits result from taking required courses. A student specializing in plant pathology could meet the requirements for a master's degree by having as little as 6 credits in plant pathology and as few as four very elementary courses in the field in addition to a thesis. It is even possible for a student to have a masters degree in plant pathology without ever having had a course

in mycology (a study of the fungi).

The curriculum as now constituted requires a student to take the same wide range of subjects that he took in his undergraduate studies. The acceptance of a student for graduate study generally indicates that the applicant had a satisfactory undergraduate scholastic record and has satisfactory character and professional qualifications. The acceptance of a candidate for a Master's Degree implies technical study in a chosen field. It would seem advisable that the candidate for the Master's Degree at the College of Agriculture should specialize more in his chosen field. This is probably applicable to all fields, but would be especially preferable for those students specializing in plant pathology since they are exposed to only one course in the field in their undergraduate studies. Inasmuch as most areas of agricultural research are closely related, a system of major and minor courses could be specified in the requirements for both the Master's and Doctor's Degree.

Increasing Course Credit

The College of Agriculture was nearly completely destroyed during the Korean war and because of the totally inadequate equipment, classroom and laboratory space, many of the courses developed into primarily lecture courses. However, as a result of the cooperative project between the Seoul National University and the University of Minnesota, there is now or will be in the future adequate teaching and research equipment and a new classroom and office building will soon be under construction. With reorganization in progress, it is suggested that the graduate courses be broadened in scope to give the student a more detailed and specialized training in the major and minor fields of his choosing. Courses with one and two credits as they are listed could be increased to three or five credits and more specialized laboratory training included.

Suggested Graduate Courses for Students in Plant Pathology
(With present staff)*

Subject	Hours per week Lecture	Lab.	Semester Credit
Diseases of Field Crops (Rice, Wheat, Barley, Cotton, Potatoes, etc.)	2	3	3
Mycology	2	3	3
Principles of Plant Disease Control	2	3	3
Insects in Relation to Plant Disease (Cooperative between plant pathologist and entomologist)	2	3	3
Fruit and vegetable diseases	2	3	3
Research methods in plant pathology	2	3	3

*Mr. Chong Sung Park - Lecturer from Taejon Agricultural College and Mr. Hoo Sup Chung are adequately trained to teach the above courses and if given in alternate years they would not have a too heavy teaching load.

Suggested Graduate Courses for Students in Plant Pathology
(With recommended size staff)

Subject	Hours per week Lecture	Lab.	Semester Credit
Bacterial diseases of plants	2	3	3
Diseases of Field Crops	2	3	3
Diseases of fruit and vegetable crops	2	3	3
Diseases of oil and fiber crops	2	3	3
Ecology of plant pathogens	2	3	3
Forest pathology	2	3	3
Insects in relation to plant disease	2	3	3
Methods in plant pathology	2	3	3
Mycology	2	3	3
Nematode Diseases of plants	2	3	3
Physiology of plant pathogens	2	3	3
Plant pathology seminar	1		1
Principles of plant disease control	2	3	3
Principles of plant pathology	2	3	3
Research methods in plant pathology	2	3	3
Virus Diseases of plants	2	3	3
Genetics of plant pathology	2	3	3

The development of the above curriculum must of necessity be gradual and cannot be fully realized for at least ten years. As indicated in another section of this report, plant diseases are causing severe losses in all of the crops under cultivation in Korea. In addition to the fact that there is urgent necessity for controlling these diseases if crop yields are to be increased sufficiently to feed the growing population, Korea is

ideally located for the development of an outstanding department of plant pathology. The climate is especially favorable for the growth and development of plant diseases; there is intensive cultivation of a wide variety of crops on a minimum acreage of cultivated land; a wide range of subtropical and temperate zone crops are grown from south to north Korea; the College of Agriculture at Suwon is developing excellent facilities for teaching and research and above all the young people of Korea are eager to learn and capable of becoming outstanding agricultural scientists. One cannot help but be impressed with the students' industry, their inherent abilities, their philosophy and their dedication to developing a free and independent country. With ambitious and far-sighted leadership, the College of Agriculture could develop the outstanding center of teaching and research in plant pathology in Asia. It is not beyond the realm of imagination that in twenty years students from all over the Pacific area could be coming to Korea for graduate training in plant pathology. All of the necessary ingredients are present in Korea and need only to be synthesized.

Additional Staff recommended for Plant Pathology

The prevalence and severity of the plant diseases that occur on the crops cultivated in Korea indicate the urgent necessity for immediately training at least five more students in the field of plant pathology. These students would eventually be the nucleus of a staff for a Department of Plant Pathology which would be capable of training additional personnel in Korea for the task of controlling plant disease. It is recommended that these five students be trained in the following special fields of Plant Pathology.

	Major Interest	Degree
1	Genetics of plant pathogens and field crops diseases	Ph.D.

	Major Interest	Degree
1	Virus diseases, insects in relation to plant disease and bacterial diseases	Ph.D.
1	Physiology of fungi and chemical control of diseases	Ph.D.
1	Ecology of plant pathogens and vegetable and fruit diseases	Ph.D.
1	Forest pathology and mycology	Ph.D.

It is emphasized that there is no shortcut to education and training in such a specialized field as plant pathology. It will take at least four years for the students recommended above to become adequately trained in the subject matter and techniques used in plant pathology in the United States. Ability to learn and perform varies with the individual student and the department in which a studsnt is studying is in the best position to determine when a student is capable of being a professional plant pathologist. Therefore it seems advisable for the department in the U.S. to determine how long it will take a student to complete his advanced training.

It is anticipated that a staff with the above recommended training would eventually develop graduate curricula suitable for granting the Master of Science and Doctor of Philosophy Degrees in Plant Pathology. Students graduating from this department at the College of Agriculture at Suwon would be available to do the essential teaching, research and extension in Plant Pathology at the following types of institutions:

Agricultural Colleges

Agricultural Experiment Stations, Institute of Agriculture, Ministry of Agriculture and Forestry

Extension Division, " "

Forest Experiment Stations " "

There are 8 provincial Agriculture Colleges, and about 20 Agricultural and Forestry Experiment Stations at present in Korea as well as the newly

developed Extension Division. It is conservatively estimated that in addition to the development of a strong teaching and research department in Plant Pathology at the College of Agriculture at Suwon, Korea needs in the next ten years at least 50 trained plant pathologists to study and develop controls for the plant diseases that are causing serious losses to just their major crops—crops such as rice, barley, wheat, potatoes, sweet potatoes, soybeans, Chinese cabbage, radish, cucumber, etc. This estimate does not include personnel who would be necessary to work on the many diseases of the minor crops that are grown in Korea and which are also a necessary part of the Korean diet. Certainly the industrial, oil, and fiber crops such as sesame, perilla, castor bean, hemp, cotton and flax are also important to the Korean economy.

Developing the science of Plant Pathology can best be accomplished by establishing a separate department, charged with the responsibility of learning how to control diseases and teaching others how to control them. The most rapid progress in this field in the past has been by separate departments of plant pathology rather than where plant pathology was part of a botany department or biology department, etc.

This does not imply that plant pathologist work alone in solving problems; quite the contrary, they must work in close cooperation with the horticulturist, the agronomist, the forester, the entomologist and others. However, it is true that by associating together, discussing mutual problems and the development of "esprit de corps" for their profession, generally is productive of more rapid and lasting results.

Teaching Methods

In many of the courses one lecture a week, of two hours duration, is given. It is the feeling of the adviser that unless the instructor has his material well organized and is an unusually stimulating lecturer that

two consecutive hours is too long for students to be receptive. It is recommended the lecture period be of fifty minutes duration, with ten minutes between classes and, where applicable, have two lectures a week. Of course this is predicated on the assumption that classes will start on time and end on time so that there is economical use of the students and staff members' time.

Although there are still inadequate classroom and laboratory facilities, as well as up-to-date equipment for teaching, many members of the staff were preparing demonstration materials for use in their classes. It is hoped that the staff will be encouraged to increase the use of various visual aids in their teaching. In many of the biology classes there is a lack of material for laboratory use such as fresh material, dried specimens, and preserved specimens that the student can examine and study. There appears to be too much time spent making field trips when actually it would be more advantageous for the student to be studying fresh specimens under the microscope.

There continues to be a shortage of textbooks but the library is gradually acquiring many of the needed reference texts. However, a functional system of making the reference texts available to more students needs to be perfected.

Mimeograph machines are now available and the staff should be encouraged to prepare lecture and laboratory outlines for distribution to the students in their classes.

Projection equipment is also now available but so far the staff has not exploited the use of colored slides. This should be encouraged.

The adviser felt that there is a definite need for the construction of permanent exhibit cases in the hallways and laboratories where the staff

and graduate students could show the results of their research. The design of the present buildings is such that exhibits and pictures of world famous agricultural scientists and results of their works would go far to create the feeling that the College is an institution of higher learning. Every method should be used by the departments to stimulate an interest in agricultural science. In fact, the administrators and staff have an obligation to demonstrate to government, agriculturists, students and farmers that agriculture is a very exacting science and that Korea needs to have its ablest men in agriculture.

Many of the above recommendations can be accomplished by the use of graduate assistants as laboratory instructors, to prepare class demonstrations, collect specimens for preservation, prepare exhibits and in general to be an assistant to the instructor.

Staff Research

It was gratifying to find that in addition to their teaching duties many of the staff were doing research. Most of the projects were on problems that were vitally important to Korean agriculture and with the ultimate increase in the college staff, results should become rapidly available to agriculture. In some cases the projects were being studied cooperatively by staff from different departments. The cooperative approach should be encouraged and projects organized between departments with project leaders indicated, objectives clearly defined and at the end of each year, brief reports submitted indicating the progress on the project. For instance, it would be essential for the plant pathologist to work cooperatively with the plant breeder in developing disease resistant varieties especially wheat or barley. The same would be true on a problem of controlling the virus diseases of Chinese cabbage where it also would be preferable for the entomologist and plant pathologist to work together.

At some of the other agricultural institutions in Korea, it was noticed that most of the research problems were departmentalized and the College of Agriculture could open the way for a broader approach to solving the agricultural problem in Korea by sponsoring cooperative research. In fact with the reorganization and establishment of the Institute of Agriculture at Suwon, there would be an opportunity for establishing cooperative research between staff and departments of the college and staff of the Institute.

In addition to the personal satisfaction that a staff member achieves from doing productive research, it also enhances his teaching knowledge and in most cases makes him a more stimulating teacher in addition to adding to the material wealth of the nation.

Recommended areas for research in plant pathology

Although there is no staff in plant pathology at the present time there will be one full time instructor and possibly one part time lecturer by the time the fall semester starts in September. There is an urgent need for information regarding the diseases in Korea and methods developed for their control. It is urged by the adviser that the contemplated staff not be over-loaded with teaching and that at least fifty percent of their time be devoted to practical pathological research. It is also hoped that as rapidly as possible five or six outstanding undergraduates will be encouraged to take graduate work in plant pathology and that they are assigned thesis problems that will yield information of practical importance. The following suggestions are made as areas for future staff and graduate student research:

1. To establish a systematic plan for a disease survey to determine the diseases that occur on the economic crops grown in Korea, their distribution, prevalence and severity or percent loss caused by the disease. This has been started by the adviser (see **Appendix III** in this report).

2. To develop a mycological herbarium as soon as possible (this has also been started by the adviser and Professor Ahn has purchased and made available a fine cabinet for use in starting this herbarium).

3. To investigate the feasibility of establishing a system of Irish potato seed certification in an attempt to partially control the fungus and virus diseases by distributing to the farmers disease free seed. (It is essential that this program be under the guidance of the plant pathologist).

4. Rice

   To determine the relation of storage conditions to the deterioration of rice seed by microorganisms as related to viability of seed and vigor of seedlings.

   To determine the effect of various fungicidal seed treatments on the stand and vigor of rice seedlings in the plant bed.

   To determine the fungi causing pre-emergence and post emergence "damping off" of rice seedlings in the plant bed and their control.

To determine the timing of application and effectiveness of various fungicides on the control of the blast and bakanae diseases of rice.

To determine varietal reaction, and develop varieties of rice resistant to the various pathogenic races of the blast fungus.

5. Barley

To determine the pathogenic races of the three smuts (U. hordei, U. nuda and U. nigra) and select varieties or lines for use in a program of breeding disease resistant varieties.

To develop simple and economical treating machines for applying chemicals and using hot water for treating barley and wheat seed for the control of the various smut diseases.

To determine the relative resistance or susceptibility of the various barley varieties to the barley stripe, spot blotch and scab diseases, and develop resistant varieties.

To develop varieties resistant to the leaf and stem rust diseases.

To determine the causes and control of barley seed discoloration and deterioration.

6. Wheat

To develop varieties of wheat resistant to loose smut and to establish immediately a method of hot water treatment of seed for the control of loose smut, so that disease-free seed can be distributed to the farmers.

Develop chemical control of the covered smuts of wheat and breed varieties resistant to these diseases.

Develop methods of chemical seed treatment of wheat and other cereal grains for the control of seed and seedling diseases.

Determine the pathogenic races of stem rust that occur in Korea and select breeding lines of wheat for use in a program of breeding disease resistant varieties.

7. Potato

Determine the feasibility of establishing a potato seed certification program for the control of potato diseases. Ascertain the viruses that cause severe damage to potatoes in Korea and develop methods of control.

Develop a fungicidal control program for early blight and late blight of potatoes.

8. Vegetables

To determine the nature, method of distribution, and control of the viruses that affect Chinese cabbage, cucumbers, radishes, tomatoes, peppers and onions. Many of these studies must be in cooperation with the entomologists since most of the viruses concerned are insect transmitted. Considerable emphasis should be placed on the relation of weed hosts to the incidence of disease and also the use of various cultural cropping systems as methods of controlling the spread of the virus diseases.

Determine the effectiveness and timing of applications of various fungicides for the control of the downy and powdery mildew diseases of such vegetables as Chinese cabbage, cucumbers, melons, etc.

Determine the effectiveness and timing of applications of various fungicides for the control of early blight and other fungus diseases of tomatoes.

9. Fruits

Determine effectiveness and timing of applications of fungicides for the control of the rusts, leaf spots and fruit rot diseases of apples, pears, peaches, plums, and strawberries.

10. Oil and fiber crops

To develop disease resistant varieties in crops such as cotton, sesame, hemp, perilla, castor bean, etc., to the leaf spot and stem rot diseases and where possible develop chemical controls for many of the diseases.

11. Ornamentals

Determine the nature of the virus diseases that are affecting most of the ornamental plants and develop methods of control.

12. Miscellaneous

In the case of nearly all crops produced, little effort is made to control diseases after the crop is produced and before it is consumed by the user. There is considerable research necessary for the control of market and storage diseases. It is estimated that 30 percent of the fresh vegetable produced rots before it is used for food.

It is fully realized by the adviser that it will take many years of research before there will be usable results from the above suggested projects. However, it is emphasized that plant diseases are causing serious losses at all stages of crop production and marketing, and Korea can ill afford these losses.

Publication of research

There appears to be limited opportunities for staff to publish the results of their researches at the present time in Korea. Therefore it is suggested that the College of Agriculture establish its own Research Journal Series and Miscellaneous Journal Series. The rapid development of scientific agriculture makes it necessary for research results to be made available as soon as possible to the new Extension Division so that it can be disseminated to the farmer.

Additional equipment needed for research in plant pathology

1. A Micromanipulator for use in studying the genetics and variability of pathogenic fungi.
2. A soil autoclave. (This can be constructed by the engineering department of the college from plans of one designed and in use at the University of Minnesota.)
3. A 50 and 100 gallon high pressure mobile sprayer for use in studying the effectiveness of fungicides for the control of plant diseases.
4. Additional herbarium cases for maintaining an adequate collection of fungi for use in teaching.

Colleges and Experiment Stations Visited While in Korea

Anyang Forest Experiment Station, Anyang, Kyonggido, Korea
Mr. Chai Sang Shin, Director

Institute of Forest Genetics, Suwon, Kyunggido, Korea
Dr. Shin Kyu Hyun, Director
Mr. Kap Sung Kim, Superintendent

National Institute of Horticulture, Tongnae, Kyungsang-namdo, Korea
Dr. Chang Choon Woo, Director

Taegu Agricultural Experiment Station, Taegu, Kyungsang-namdo, Korea
Director

Central Agricultural Experiment Station, Suwon, Kyonggido, Korea
Mr. Byong Suh Chai, Director

Whasan Livestock Sub-station, Suwon, Kyunggido, Korea
Mr. Ju Ryong Young, Director

Provincial Agricultural College, Chunchon, Kangwon-do, Korea
Sup Hahn, President

Provincial Agricultural Experiment Station, Chunchon, Kangwon-do, Korea
Director

Diseases Collected and Identified while on assignment in Korea

Alfalfa	
Black stem	*Ascochyta imperfecta*
Leaf spot	*Stagonospora melilcti*
Apple	
Black rot	*Physalospora malorum*
Rust	*Gymnosporangium sp.*
Apricot	
Shot-hole	*Bacterium pruni*
Scab	Unknown
Barley	
Scab	*Gibberella saubinettii*
Covered Smut	*Ustilago hordei*
Loose smut	*Ustilago nuda*
Intermediate smut	*Ustilago nigra*
Stripe	*Helminthosporium gramineum*
Spot blotch	" *sativum*
Stem Rust	*Puccinia graminis tritici*
Castor bean	
Leaf-spot	Unknown
Cherry	
Witches-broom	*Taphrina cerasi*
Chinese cabbage	
Mosaic	Virus
Downy mildew	*Peronospora brassicae*
Corn	
Smut	*Ustilago maydis*

Cotton	
Angular leaf spot	Bacterium malvacearum
Leaf-spot	Alternaria macrospora
Authracnosa	Glomerella gossypii
Cucumber	
Mosaic	Virus
Downy mildew	Pseudoperonospora cubense
Angular leaf spot	Bacterium lachrymans
Egg-plant	
Leaf spot	Cercospora melongenae
Leaf Blight	Phomopsis vexans
Mosaic	Virus
Grape	
Black rot	
Downy Mildew	Plasmopara viticola
Anthracnose	Elsinoe ampelina
Melons	
Mosaic	Virus
Anthracnose	
Okra	
Leaf-spot	Unknown
Onions - Garlic	
Yellow	Virus
Downy mildew	Peronospora destructor
Purple Blotch	Alternaria porri

Ornamental Flowers and Shrubs

Zinnia Mosaic	Virus
Petunia Mosaic	Virus
Dahlia Mosaic	Virus
Dahlia Yellows	Virus
Rose Black spot	Unknown
Lotus Wilt	*Phythium* sp.
Locust Mosaic	Virus
Willow Rust	Unknown
Bamboo Rust	Unknown

Peach

Scab	*Cladosporium carpophilum*
Leaf-curl	*Taphrina deformans*
Shot-hole	*Bacterium pruni*
Shot-hole	*Phyllosticta prunicola*
Gummosis	Undetermined
Brown rot	*Sclerotinia laxa*

Pear

Rust	*Gymnosporangium haradanum*
Fireblight	*Bacillus amylovorus*
Black spot	*Alternaria Kikuchiana*

Pepper

Mosaic	Virus

Perilla

Mosaic	Virus?

Plum

Black spot	*Bacterium pruni*
Fruit rot (Bitter rot?)	*Glomerella cingulata*

Plum - continued	
Leaf-spot	Phyllosticta prunicola
Brown rot	Sclerotinia laxa
Potato (Irish)	
Fusarium Wilt	Fusarium oxysporum vear solani
Common Scab	Actinomyces scabies
Early blight	Alternaria solani
Rugose mosaic	Virus
Leaf-roll	Virus
Crinkle-mosaic	Virus
Spindle tuber	Virus
Yellow dwarf	Virus ?
Stem rot	Phizoctonia solani
Late Blight	Phytophthora infestans
Radish	
Mosaic	Virus
Red clover	
Leaf-spot	Stagonospora compta
Mosaic	Virus
Black stem	Ascochyta imperfecta
Leaf spot	Stemphyllium botryosum
Rice	
Blast	Piricularis Oryzae
Damping off	Fusarium sp. and pythium sp.
Bakanae disease	Gibberella Fujikuroi
Sheath spot	Corticium sasakii
Stripe disease	Virus

Rye	
Leaf Rust	*Puccinia rubigo-vera secalis*
Stam Rust	*Puccinia graminis secalis*
Sesame	
Wilt	*Fusarium vasinfectum*
Stem rot	*Phoma sesami*
Leaf blight	*Helminthosporium sesamum*
Leaf-spot	*Cerospora sesami* ?
Soybean	
Mosaic	Virus
Yellow mosaic	Virus
Bacterial blight	*Bacterium glycineum*
Bacterial pustule	*Bacterium phaseoli*
Downy mildew	*Peronospora manshurica*
Squash	
Mosaic	Virus
Downy mildew	*Pseudoperonospora cubensis*
Leaf spot	Unknown
Stawberry	
Leaf-spot	*Mycospharella fragariae*
Yellows	Virus
Leaf blight	*Dendrophoma obscurans*
Fruit rot	*Botrytis sp.*
Sugar beet	
Leaf spot	*Cercospora beticola*
Mosaic	Virus
Curly top ?	Virus

Sweet potato

Mosaic	Virus
Mottle necrosis	Pythium spinosum ?

Tobacco

Angular leaf spot	Bacterium angulatum
Mosaic	Virus
Ringspot	Virus

Tomato

Early blight	Alternaria solani
Leaf Spot	Septoria Lycopersici
Blossom-end rot	Physiological

Wheat

Scab	Gibberella Saubinetti
Leaf Rust	Puccinia triticina
Stem Rust	Puccinia graminis tritici
Bunt	Tilletia sp.
Loose smut	Ustilago tritici
Glume blotch	Septoria nodorum

Appendix No. 4

The Teaching Staff
of

The College of Agriculture

Seoul National University

Suwon, Korea

___ August, 1957 ___

Dean; Baik Hyun Cho (57);
B.S. at the Suwon Agri. & For. College Suwon, Korea 1920; M.A. at the Kyushu Imperial University Fukuoka, Japan 1925; Took trip over Europe for study on soil conservation 6 months under the auspices of the UNESCO 1952-1953; Studied school administration in University of Minn. for 5 months under the I.C.A. Technical Training Project.

Department of Agriculture:

Young Lin, Chi (57); Professor of Agronomy; Chairman of the Department; B.A. at the Suwon Agri. & Forestry College, Suwon 1920; studied at Inst. of Agriculture, University of Minn. U.S.A. 1956 for 6 months under I.C.A. Sponsorship.

In Kwon, Kim (39); Professor of Plant Genetics; B.A. at the Suwon Agri. & Forestry College 1939; M.A. at the Kyushy Imperial University Fukuoka, Japan, 1942; M.S. at the University of Minn. U.S.A. 1956; studied at the University of Minn. for 15 months 1955-1956; under I.C.A. Sponsorship.

Tal Young, Yu (46); Associate Professor of Floriculture & Vegetable crops; B.A. at the Suwon Agri. & Forestry College, Suwon 1936; studied at the University of Minn. U.S.A. for 6 months 1956, under I.C.A. Sponsorship.

Tae Hyun, Lee (42); Associate Professor of Pomology; B.A. at the Tokyo Imperial University; M.S. at the University of Minn.; studied at the Dept. of Agriculture, Tokyo Imperial Univ. for 3 years and the Institute of Agriculture, University of Minn. U.S.A. 15 months under I.C.A. Sponsorship.

Un Ung, Lee (34); Assistant Professor of Agronomy; B.A. at the Suwon Agri. & For. College Suwon, Korea, 1945; Specialized in Crop-science.

Hyun Ku, Pyo (38); Assistant Professor of Vegetable crop; B.A. at the Suwon Agri. & For. College Suwon, Korea 1943; Specialized in Vegetable crops; studying at the Institute of Agriculture, University of Minnesota U.S.A. under I.C.A. Sponsorship.

Kn Hwan, Yun (30); Assistant of Agronomy; B.A. at the College of Agriculture Seoul Nat. Univ. 1953; M.S. at the Graduate School, Seoul National University; Hasn't studied Abroad.

Heung Sub, Park (27); Assistant of Pomology; B.A. at the College of Agri., Seoul Nat. University, 1955; Hasn't studied abroad.

Department of Forestry

Sin Kyum Hyun (46); Professor of Silviculture and Forestry Genetics; Chairman of the Dept. B.A. at the Suwon Agri. & For. College 1934; M.A. at the Kyushu Imperial University, Fukuoka, Japan 1937; Ph. D. Genetics, California Forest Range Experiment Station in Cooperation with the University of California; under U.S. Dept. of State Exchange of Persons Program.

Sun Hi, Bang (47); Professor of Wood chemistry and Forest Products; B.S. at the Suwon Agri. & For. College 1932.

Chong Supp, Shim (40); Associate Professor of Wood Technology and Utilization; B.A. at the Suwon Agri. and For. College 1941; M.A. at the Kyushu Imperial University Fukuoka, Japan 1945; M.F. at the School of Forestry Yale University U.S.A. 1951; Ph. D. in Wood Technology at the Seoul National University 1954; studied at the School of Forestry, Yale University for two years and the School of Natural Resources, University of Michigan for one year, under Korean Government Sponsorship.

Tchang Bok, Lee (38); Assistant Professor of Dendrology & Tazonomy; B.F. at the Suwon Agri. & Forestry College 1943; A.M. at the Harvard University 1957; studied at the Graduate School of Arts & Science, to Republic de Cuba for two months to study Tropical Botany & Economic Botany.

Kyong Bin, Rim (36); Instructor of Forest Management; B.F. at the College of Agri. & Forestry, Suwon, 1944; Specialized in tree breeding (Grafting and Cutting of Tree).

Tal Sik, Park (35); Instructor of Forest Management; B.F. at the College of Agriculture, Seoul National University 1950; M.S. at the College of Forestry, New York State University 1956; studied at the College of Forestry, New York State University for 2 years under UNKRA Sponsorship.

Kap Duk, Kim (30); Assistant of Forest Engineering; B.A. at the College of Agriculture, Seoul National University 1950; studying at the School of Forestry, University of Minnesota under I.C.A. Sponsorship.

Kon Yong, An (25); Assistant of Forest Genetics; B.A. at the College of Agriculture, Seoul National University 1955; Continuing his further study at the Graduate School, the same University.

Department of Livestock

Sang Won, Yun (58); Professor of Animal Feeding & Animal Husbandry; Chairman of the Dept.; B.S. (1938) M.S. (1934) at the Texas A. and M. College; studied at the Texas A. & M. College for 5 years under private Sponsorship; studied at the Institute of Agri., Univ. of Minnesota U.S.A. 1956 for 6 months.

Yong Bin, Lee (42); Associate Professor of Animal Breeding & Animal Husbandry; B.A. at the Agri. & For. College Tokyo, Japan 1937; studied at the Institute of Agriculture, Univ. of Minn. for 19 months, under Korean Govt. Sponsorship and I.C.A. Sponsorship.

Seung Kyu, Rhee (48); Assistant Professor of Poultry; B.A. at the Suwon Agricultural & Forestry College Suwon 1933.

Chong Yung, Yuk (35); Assistant Professor of Dairy Farming & Animal Husbandry; B.A. at the Suwon Agri. & For. College Suwon 1943; Had got I.C.A. Sponsorship for Abroad.

Kae Won, Song (35); Instructor of Animal Physiology and Animal Anatomy; B.A. at the Suwon Agri. & For. College, 1947.

Bong Kug, Oh (35); Instructor of Animal Breeding; B.A. at the College of Agriculture, Seoul National University 1952; Studying at the Institute of Agriculture, University of Minn. U.S.A. under I.C.A. Sponsorship.

Yong Sang, Lee (31); Assistant of Animal Husbandry; B.A. at the College of Agriculture, Seoul National University, 1953; studying at the Institute of Agriculture, Univ. of Minn. U.S.A. under I.C.A. Sponsorship.

In Kyu, Han (24); Assistant of Animal Feeding and Nutrition; B.S. at the College of Agriculture Seoul National University 1956; studying at the Graduate School, Seoul National University.

Department of Agriculture Engineering

Chang Koo, Rhee (52); Professor of Agricultural Engineering and Chairman of the Dept.; B.A. at the Agricultural and Forestry College Suwon, 1931. Specialized in Soil and Water Utilization.

Sung Uo, Park (39); Assistant Professor of Applied Dynamics; B.A. at the Utznomiya Agri. & For. College Utznomiya, Japan 1940.

Yong Gwan, Park (47); Instructor of Geology and Physics; B.S. at the Pyong-Yang Dai-Dong Engineering College 1941.

Sam Bong, Chung (45); Instructor of Civil Engineering; B.S. at the Osaka Kwan-Sai Engineering College Osaka Japan 1936; Studied Specially at the Dept. of Civil Eng. Kyoto University 1940-1943.

Han Yul, Ryu (31); Assistant of Agri. Engineering; B.A. at the College of Agriculture, Seoul National University 1952; studying at the Institute of Agriculture University of Minn. U.S.A. under I.C.A. Sponsorship.

Choi Chu, Rhee (29); Assistant of Agri. Engineering; B.A. at the College of Agriculture, Seoul National University 1954; studying at the Institute of Agriculture University of Minn. U.S.A. under I.C.A. Sponsorship.

Jai Gun, Ko (27); Assistant of Agricultural Physics, B.A. at the College of Agriculture, Seoul National Univ. 1955; studying at the Institute of Agriculture, University of Minnesota, U.S.A. under I.C.A. Sponsorship.

Yea Mook, Kang (25); Assistant of Agricultural Engineering; B.A. at the College of Agriculture, Seoul National University 1957.

Chang Joo, Chung (26); Assistant of Agri. Engineering; B.A. at the College of Agriculture, Seoul National University 1957.

Department of Agriculture Chemistry

Ho Sik, Kim (52); Professor of Agri. Bio-Chemistry; Chairman of the Dept.; B.A. at the Suwon Agri. & For. College 1925; M.S. at the Kyushu Imperial University, Fukuoka, Japan 1929, studied at the Institute of Agriculture, University of Minn. U.S.A. for 6 months under I.C.A. Sponsorship.

Chun Yung, Lee (40); Professor of Biochemistry & Organic Synthesis; B.A. at the Suwon Agri. & For. College 1939; M.A. at the Kyushu Imperial University, Fukuoka, Japan 1942; Ph.D. at the Georgetown University Wash., D.C. U.S.A. 1952; studied at the Hawaii Univ. for one year and Maryland Univ. Wash. D.C. for 2 years and Georgetown University for 3 years under private sponsorship.

Do Won, Maing (40); Associate Professor of Fermentology; M.S. at the Hokkaido University, Saporo, Hokkaido Japan 1942; studied in Japan for 6 years.

Song Whan, Lee (38); Assistant Professor of Agricultural Chemistry and Organic chemistry; B.S. at the Seoul Pharmacy College 1943; studied at the Medical College Sinkyong, Manchuria for 18 months.

Ze Uook, Kim (32); Instructor of Food and Nutrition; B.A. at the College of Agriculture Seoul National University, 1950; M.S. at the Graduate School, of the same University 1956.

Duck Hiyon, Cho (30); Assistant of Biochemistry; B.A. at the College of Agriculture, Seoul National University 1950; M.S. at the Graduate School, of the same University 1957.

Jai Moo, Cho (28); Assistant of Soil Chemistry; B.A. at the College of Agriculture, Seoul National University 1954; studying at the Institute of Agriculture, University of Minnesota under I.C.A. Sponsorship.

Chi Myun, Chang (30); Assistant of Agri. Chemistry; B.A. at the College of Agriculture, Seoul National University, Suwon 1955.

Sam Sun, Hong (26); Assistant of Agri. Chemistry; B.A. at the College of Agriculture, Seoul National University 1955.

Su Rai Lee (28); Assistant of Agri. Chemistry; B.A. at the College of Agriculture, Seoul National University 1955; studying at the Institute of Agri. University of Minn. U.S.A. under I.C.A. Sponsorship.

Department of Agricultural Economics

Jun Po, Kim (42); Associate Professor of Agricultural Economics; B.A. at the Suwon Agri. & Forestry College, 1937; M.A. at the Kyushu Imperial University 1940; studied in Japan for 3 years.

Chun Su, Kim (55); Associate Professor of Constitutional Law & Administration Law; B.A. at the College of Dongisha, Kyodo, Japan 1929; studied in Japan for 6 years.

Chin Whan, Park (30); Instructor of Agri. Economics; B.A. at the College of Agriculture, Seoul National University 1952; M.S. at the Graduate School, Seoul Nat. Univ. 1955; studying at the Institute of Agri., University of Minnesota U.S.A. under I.C.A. Sponsorship.

Hong Nai, Park (29); Instructor of Agri. Economics; B.A. at the College of Agriculture, Seoul National University 1953; M.S. at the Graduate School Seoul National University, Seoul 1955; studying Institute of Agriculture, University of Minnesota under I.C.A. Sponsorship.

Young Gun, Shim (30); Assistant of Agri. Economics; B.A. at the College of Agriculture, Seoul National University 1953; M.S. at the Graduate School, Seoul National University 1957.

Bong Ky-Chu (29); Assistant of Agri. Economics; B.A. at the College of Agriculture Seoul National University 1954; M.S. at the Graduate School, Seoul National University 1957.

In Keun, Wang (27); Assistant of Agri. Extension; B.S. at the College of Agriculture, Seoul National University 1955.

Sung Whan, Ban (30); Assistant of Agri. Economics; B.A. at the College of Agriculture, Seoul National University 1955. Specialized in Farm Bookkeeping Accounting.

Department of Agricultural Biology

Jae Joon, Ahn (57); Professor of Plant Physiology; Chairman of the Dept.; B.A. at the Suwon Agri. & For. College, 1952; Specialized in Plant Physiology and Apiculture.

Woon Hah, Park (41); Associate Professor of Entomology; B.A. at the Agri. & For. College Suwon 1937; M.S. at the Institute of Agri. University of Minn. U.S.A. 1956; studied at the Institute of Agriculture, Univ. of Minn. for 15 months under I.C.A. Sponsorship.

Soo Won, Kang (38); Institute of Zoology; B.A. at the College of Agri. Seoul National University 1951; Had got the I.C.A. Sponsorship for abroad and is waiting to go.

Hyung Bin, Lim (36); Instructor of General Botany; B.A. at the Suwon Agri. & For. College, 1943; Had got the I.C.A. Sponsorship for Abroad and has been preparing to go.

Jae Sun, Hyun (32); Instructor of Applied Entomology; B.A. at the College of Agriculture, Seoul National University, 1947.

Hoo Sup, Chung (29); Assistant of Plant Pathology; B.A. at the College of Agriculture, Seoul National University 1954; studying at the Institute of Agriculture, University of Minn. U.S.A. under the I.C.A. Sponsorship.

Jai Uk, Shim (24); Assistant of Plant Morphology; B.A. at the College of Agriculture, Seoul National University 1957.

Seung Un, Choi (27); Assistant of Applied Entomology; B.A. at the College of Agriculture, Seoul National University 1957.

Chaun Jehong, Ro (28); Assistant of General Botany; B.A. at the College of Agriculture, Seoul National University 1955.

Department of Sericulture

Moon Hyup, Kim (42); Professor of Silviculture; Chairman of the Dept.; B.S. at the Tokyo Sericultural College Tokyo, Japan 1928; Specialized in the Mulberry-tree Science. Studied in Japan for 9 years.

Nak Jung, Kim (49); Associate Professor of Sericulture; B.S. at the Uedu Sericultural College Tokyo Japan 1933; Specialized in Anatomy of Silk-worm; Studied Japan for 3 years.

Dae Rak, Chun (39); Instructor of Sericulture; B.S. at the Tokyo Sericultural College Tokyo Japan 1953; studied in Japan for 3 years.

Department of Basic Courses

Sung-ji, Cho (45); Associate Professor of English Language and Literature; B.S. at the Kwan-Su College, Kyota, Japan 1936.

Hak Keeun, Choi (37); Assistant Professor of Korean Language; B.A. at the Liberal Arts, Seoul National University, Seoul, Korea 1950; M.A. at the Graduate School, the same University 1957; Specialize Korean Diolectology and Commerotive study Altic Family.

In Kun, Han (32); Assistant of Mathematics; B.A. at the Engineering College Seoul National University 1954.

Lecturers (Coming from the other University of College)

Sing Su, Kim (39); Lecturer of Physical Training, B.S. at the Tokyo Physical Training College, Tokyo, Japan 1940.

Han Myong, Rhee (42); Lect. of Agri. Engineering; B.E. at the Mu Sashi Engineering College, Tokyo, Japan 1941.

Do Sun, Sin (55); Lect. of Civil and Commercial Law; B.L. at the Seoul Law College, Seoul, Korea 1925.

Hyun Su, Rhee (46); Lect. of Animal Bacteriology; B.S. at the Nippon Veterinary College, Tokyo, Japan 1935.

Moon Sik, Kim (38); Lect. of Agri. Economics; B.E. at the Tokyo Rikko University, Tokyo, Japan 1944.

Yong Sung, Kim (36); Lect. of Analytical Chemistry; B.S. at the Seoul Engineering College, Seoul, Korea 1942.

Chong Moo, Kang (52); Lect. of Agri. Engineering; B.S. at the Tokyo Imperial University, Tokyo, Japan 1929.

Chong Hyun, Whang (60); Lect. of Surveying; B.S. at the Suwon Agri. & For. College, Suwon, Korea 1927.

Ki Mon, Rhee (39); Lect. of Livestock; B.S. at the Suwon Agri. & For. College, Suwon, Korea 1943.

Yong Ho, Park (30); Lect. of Philosophy; B.S. at the Liberal Arts, Seoul Nat. Univ. Seoul, Korea 1953.

Sang Kyom, Kim (44); Lect. of Agri. Economics; B.S. at the Tokyo Rikkyo University, Tokyo, Japan 1941.

Il Ro, Kim (39); Lect. of Economics; B.S. at the Kyushu Imperial Univ. Fukuoka, Japan 1942.

Chai Uk Rhee (48); Lect. of Agri. Ext. and Policy; B.S. at the Seoul Univ. Seoul, Korea 1935.

Tai Yong, Cho (55); Lect. of Forest Conservation; B.S. at the Suwon Agri. & For. College, Suwon, Korea 1925.

Byong Hi, Choi (36); Lect. of Sericulture; B.S. at the Ueta Sericultural College, Tokyo, Japan 1942.

Suk, Park (45); Lect. of Animal Disease; B.S. at the Tokyo Veterinary College, Tokyo, Japan 1937.

Byong Ik, Park (36); Lect. of Forest Policy; B.S. at the Suwon Agri. & Forestry College, Suwon, Korea 1946.

Byong Jai, Chung (45); Lect. of Forest Engineering; B.S. at the Suwon Agri. & For. College, Suwon, Korea, 1937.

Yong Choi, Chang (52) Lect. of Statistical Analysis; B.S. at the Tokyo Imperial University, Tokyo, Japan.

Un Bok, Lee (37); Lect. of Foreign Trading; B.S. at the Bosudng College Seoul, Korea, 1944.

Song Kum, Han (37); Lect. of Agricultural Machinery; B.S. at the Daigu Agri. & For. College, Daigu, Korea 1947.

Chung Hiang, Rhee (41); Lect. of Crops; B.S. at the Tokyo Agricultural College, Tokyo, Japan 1939.

Chan Jo, Kim (29); Lect. of Organic Chemistry; B.S. at the College of Agri. Seoul National University, Suwon, Korea 1953.

Chong Song, Park (35); Lect. of Plant Pathology; B.S. at the College of Agri. & For. College, Suwon, Korea 1945.

Hi Sup, Yun (35); Lect. of Foliage Crops; B.S. at the College of Agriculture Seoul National University 1944; M.S. at the Graduate School, the same University, Seoul, 1955.

Jai Yong, Cho (39); Lect. of Genetics; B.A. at the Suwon Agri. & For. College, Suwon 1941; M.A. at the Kyushu Imperial University, Fukuoka, Japan 1944.

Bong Kyu, Kim (39); Lect. of Geology; B.S. at the Pyong-Yang Engineering College, Pyong-Yang, Korea 1940.

Bak Chun, Sung (38); Lect. of Building Structure; B.S. at the Musashi Engineering College, Tokyo, Japan 1942.

Summary of Discussion with Chung, Hoo Bup
at Meetings in San Francisco, California

1. Mr. Chung will develop as soon as possible the three following courses in plant pathology for addition to the Biology Curriculum:

   (a) An Introduction to the Study of the Fungi for both undergraduate and graduate students.
   (b) Methods in plant pathology for both undergraduate and graduate students.
   (c) Diseases of Field Crops for both undergraduate and graduate students.

2. An attempt will be made to provide courses for an undergraduate major in plant pathology in the Biology Department.

3. As soon as feasible the following additional courses will be developed in plant pathology so that a student may specialize in plant pathology for his Master of Science degree:
   (a) Mycology
   (b) Principles of Plant Disease Control
   (c) Insects in Relation to Plant Disease
   (d) Fruit and Vegetable Disease

4. Research in plant pathology is urgently needed in Korea and Mr. Chung should devote fifty percent of his time to practical disease control projects.

5. Mr. Chung will continue the disease survey that was started by the adviser and publish the results as soon as possible.

6. The establishment of a disease herbarium will be continued and be available for use in teaching.

7. Mr. Chung will assemble the pertinent information on the control of the covered and loose smuts of wheat and barley and publish recommendations for their control to be distributed to the Korean farmer.

8. The plans for construction of a cheap apparatus for seed treatment of the cereal grains will be publicized and made available to the Korean farmer.

9. Studies on heat treatment of the cereal grains for the control of the loose smuts will be started in cooperation with the Department of Agriculture and Engineering and disease free seed made available for distribution to the farmer as soon as possible.

10. Studies will be started on determining the feasibility of establishing a potato seed certification program so that disease free potato seed will be available to the Korean farmer.

11. As soon as greenhouse space is available, Mr. Chung will attempt to determine the races of Black Stem Rust that are present in Korea. 40 - 50 collections of rust were made by the Adviser and may be used for the start of these studies. This information is necessary if the plant breeders are to select lines for the breeding program that are resistant.

12. Mr. Chung will make every effort to stimulate outstanding students to enter the field of plant pathology -- and to give them good basic training since it is hoped that in the near future four or five may receive advanced training in the United States.

13. Mr. Chung will attempt to develop cooperative research projects on disease control with members of staff of other departments of the college and if feasible with the Institute of Agriculture.

14. The adviser has contacted a number of chemical companies and it is hoped that a number of the newer fungicides can be made available to Mr. Chung for research purposes.