

The Historical Development and Current Status of the Higher Agricultural Education System in Japan

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The historical development of Japanese Universities can be divided into the following 5 periods: Period 1 (1868–1918); Period 2 (1918–1945); Period 3 (1945–1991); Period 4 (1991–2004); and Period 5 (2004– Present). The developmental processes of the higher agricultural education system in each period are described in the present manuscript. Furthermore, analysis of the undergraduate curriculum between 1983–2007 has been conducted using Ag-Base, a database created at the Agricultural and Forestry Research Center, University of Tsukuba. The Ag-Base covers all 581,991 lecture courses offered at 53 agricultural universities in Japan between 1983–2007. Results of the analysis using Ag-Base showed clear changes in the curriculum structure at agricultural universities in Japan during the past 15 years.

Key words: Ag-Base, agricultural education, historical development, Japan, university

Introduction

The present condition of the human society is built upon numerous past human activities, and the future of human society is dependent upon the present-day actions of each one of us. A historical viewpoint is important not only for understanding the present situation but also to be able to elucidate the future. A historical point of view is particularly important in the field of education because education has always been the single most important human activity connecting the past, present, and future. This general statement also holds true for the developmental processes of agricultural education in Japan. Since the early days of Japan's history until the 1970s, one of the most important political and economic priorities for the leaders of this country has been to produce as much rice as possible. Accordingly, agricultural education in Japan was originally designed to develop and disseminate practical knowledge and technologies to farmers, with a primary focus on paddy rice production.

The lifestyles of people in Japan started to change drastically in the 1960's as a result of the country's

rapid economic growth. Imports of agricultural products have increased drastically over the past few decades, while the self-sufficiency ratio of food and animal feed produced domestically has decreased sharply. Overproduction of rice became a serious matter of concern during the same period. As a result of recent serious threats to the safety and reliability of imported foods and animal feeds, however, revitalization of Japanese agriculture has become a high priority. Concerns about ecological balance have also risen along with the need for increasing domestic food production. Producing food while maintaining ecological balance requires a holistic approach. Human wisdom must be integrated with the combination of specific knowledge or technology that is obtained by the reductionism approach. In this respect, universities can play a major role as think tanks to create and disseminate new ecologically sound agricultural values by combining wisdom, knowledge, and technology to be truly holistic.

There is no question that Japan's system of higher education was greatly influenced by four historical events in the past 150 years: (1) the Meiji restora-

Received: November 28, 2008, Accepted: December 4, 2008

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tion in 1868, when the Tokugawa government returned political power to Emperor Meiji; (2) the end of the World War II in 1945, after which the speed of westernization increased; (3) the amendment of “University Establishment Standards” in May 1991; and (4) the establishment of the National University Corporation in 2004. The impacts of the last two are not comparable with those of the first two, but they are still regarded as important because major reforms took place without political revolution or war. In 1987 at the Agricultural and Forestry Research Center, University of Tsukuba, a project was launched to compile a list of all the undergraduate agricultural lecture courses offered at agricultural universities in Japan. The “Ag-Base” database was created, and it covers all such courses since 1983. With this database, it is now possible to monitor the temporal changes in university curricula and elucidate the influences of the social reforms. In this report, I first outline the historical development of agricultural education at universities in Japan and then analyze changes in agricultural curricula since 1983 by using data from Ag-Base.

Historical Development of Agricultural Education at Universities in Japan

According to Nagai (1965), the Japanese university system can be divided into three periods. The first period was from the beginning of the Meiji Era (1868) to the early Taisho Era (1918), the second period was from 1918 to the end of World War II (1945), and the third period was from the end of World War II to 1965 (the time of Nagai’s report, but for the purposes of this paper, the third period has been extended to 1991). Although social conditions in Japan varied greatly during these periods, improvements in agricultural production were always seen as a national imperative. Against this social background, the agricultural education system was created and evolved. A fourth period began in 1991, when the Standards for the Establishment of Universities were amended (Tajima, 2003). For the purpose of this analysis, I consider that a fifth period began in 2004 when the National University Corporation was established. The growth in the number of universities offering bachelor’s degree programs and the total student enrollment during these periods are shown in Figure 1.

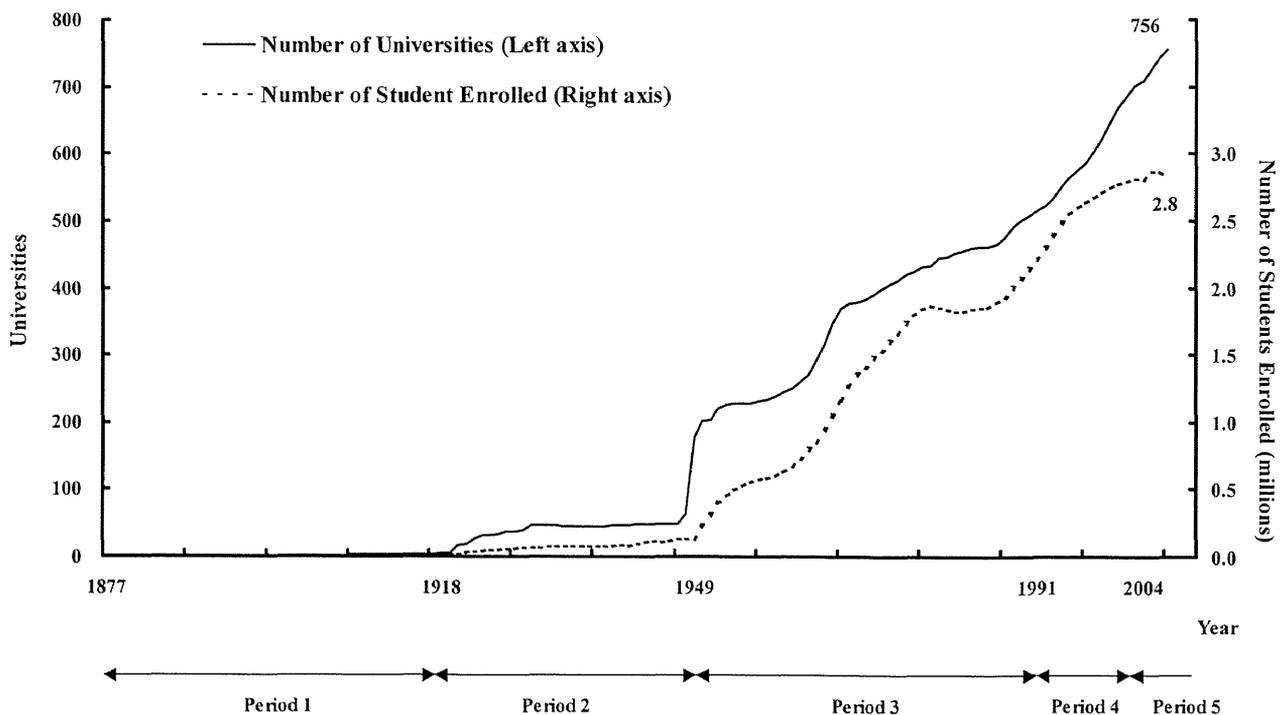


Fig. 1. Number of universities and student enrollment in Japan, 1880–2007.

First Period (1868 to 1918)

The first period began with the Meiji Restoration in 1868. The Meiji Government recognized that Japan's scientific and technological development lagged behind that of the United States and Europe and implemented measures for turning Japan into a major industrial nation. Naturally, this had a significant effect on the educational system. From the outset (1886), Tokyo Imperial University, the first university in Japan, offered traditional academic programs in its colleges of law, liberal arts, and sciences, as well as programs in applied fields such as engineering. During this period, the Japanese government invited numerous foreign professors to teach at Japanese universities; in 1873, for example, the government allocated 14% of its educational budget to pay foreign professors and 18% of the budget to pay Japanese nationals to study at foreign universities. During the 34 years from 1875 to 1908, the Japanese government clearly stressed the importance of natural sciences, sponsoring 259 Japanese nationals to study natural sciences at foreign universities, in contrast to the 114 social science students, 42 humanities students, and 15 art students. Of these 259 natural science students, 87 studied engineering, 85 studied medicine, and 17 studied agricultural science. In contrast, only 53 students studied basic sciences, clearly indicating the emphasis on applied fields.

It should also be mentioned that the major role of all the campuses of Tokyo Imperial University (i.e., the colleges of law, humanities, and science) was to translate and introduce technical papers originally written in English or other European languages into Japanese. Japanese universities did not begin as institutions pursuing purely academic interests but as institutions that sought to acquire and diffuse practical knowledge from foreign countries. Although more than 100 years have elapsed since then, this fundamental trend toward emphasizing applied knowledge over purely academic pursuits has remained strong in Japanese academia.

During this period, two basic schools of thought in agricultural education developed in Japan; one originating in the Sapporo Agricultural College (SAC) (presently the Department of Agriculture and the Department of Veterinary Medicine of Hokkaido University) and the other in Komaba Agricultural College (presently the Department of Agriculture of the University of Tokyo).

Sapporo Agricultural College

During the early 1870s, most of Hokkaido, with the exception of the coastal areas and southern districts, was undeveloped. The development and settlement of this island therefore became a major concern of the government, particularly since in the late Edo Period trouble often occurred with Russia, which sought to expand southward and wanted the return of Sakhalin Island. Therefore, the clearing of land and settlement of Japanese nationals in Hokkaido was done not merely to promote agricultural development, but it was also a key diplomatic issue. Given this situation, the Hokkaido Development Commission (*Hokkaido Kaitakushi*) was organized in 1869 to intensively pursue the development of Hokkaido.

Kiyotaka Kuroda, a vice-chairman of the Hokkaido Development Commission visited the United States and met with Horace Capron, then Commissioner for the U.S. Department of Agriculture, under the recommendation of Arinori Mori, *chargé d'affaires* at the Japanese Embassy in the United States. Kuroda asked Capron to become a special advisor to the Hokkaido Development Commission. Capron resigned from his position to become a special advisor to the development commission. The Japanese government paid him \$10,000 plus expenses to undertake this mission (Capron, 1884), a tremendous sum for the time. Capron was accompanied by a staff, including Dr. Thomas Antisell (chemist), A.G. Warfield (geologist and mineralogist), Benjamin H. Latrobe (topographical and civil engineer), and Dr. Stewart Eldridge (secretary). They were also employed by the Hokkaido Development Commission, which sought to draw on U.S. technical know-how and experiences for this endeavor.

To foster the development of talented individuals in Japan, the Hokkaido Development Commission established the *Kaitakushi-kari-gakko* (Provisional School of the Hokkaido Development Commission) and *Kaitakushi-nyogakko* (Provisional Women's School of the Hokkaido Development Commission) in Shiba, Tokyo in 1872. Simultaneously, *Kaitakushi Ainu School* was established in the same place and 36 Ainu youths were forced to study Japanese language and agriculture. *Kaitakushi-kari-gakko* moved to Sapporo, Hokkaido in 1875, and was reorganized to become Sapporo Agricultural College (SAC) in

1976.

Under the strong leadership of the Kiyotaka Kuroda, the Japanese government signed a one-year contract with William Smith Clark (1826–1886), then president of Massachusetts Agricultural College (MAC), in Washington, D.C., on 3 March 1876. Under the terms of the contract, the Japanese government was to employ Clark as a vice chancellor, as well as an instructor in agriculture, chemistry, and English. The MAC curricula were holistic and included not only technical education in agriculture but also in areas such as ethics and physical education. Clark incorporated concepts from MAC's curricula while formulating the SAC curricula, and it was extremely different from the traditional Japanese educational style. Specifically, the relative importance of English as a language increased, and subjects related to speech-making and debate were offered, as were multi-disciplinary liberal arts courses in the humanities and social sciences. Together with MAC alumni William Wheeler, David Pearce Penhallow, and William Penn Brooks, Clark put all his effort into the establishment and development of the SAC.

Although Clark actually spent only a short 9 months at Sapporo, he was, with the tremendous support of Director Kuroda, able to establish the basic systems required by the new school. Among the early graduates of the SAC were numerous men who would later influence political, academic, and educational circles in Japan. The college was reorganized as the College of Agriculture at Tohoku Imperial University in 1907 and once again in 1918 as the College of Agriculture at Hokkaido Imperial University. It was reorganized one more time in 1949 and became what is presently the Department of Agriculture at Hokkaido University.

Komaba Agricultural College

In 1874, the *Noji-shugakujo* (Farming Education Institute) employed five instructors from Britain who lectured on farming, veterinary medicine, and chemistry in English. However, then-current British theory was not useful for the actual conditions in Japan. Therefore, the British instructors were released when their contracts expired, and German instructors were invited to Japan in 1880. As a result, instruction at Komaba Agricultural College was quickly converted from the British style to the

German style, in part because academia in Japan began to take a decidedly German slant during this period. German instructors such as J.L. Yanson (veterinary medicine, arrived 1880), Osker Kellner (horticultural chemistry, arrived 1881), and M. Fesca (agriculture, arrived 1882) began to lecture on farming practices of their home country. Kellner introduced Liebig's research method to Japan, which was widely acclaimed in Germany owing to its superior results, and he explained the chemical nature of farming, particularly with respect to soil, fertilizer, and plant nutrients. He was keenly aware of the farming conditions in Japan and focused his attention on paddy field cultivation. For example, using hydroponics to investigate fertilizer consumption by rice plants, he sought to formulate the most rational standard for fertilization. He lectured at school in the mornings and had students experiment with analytical methods in the afternoons. Written records from the time show that, because superior results were being reported to German academia and published in German-language journals, students zealously pursued their studies. In 1890, Komaba Agricultural College was reorganized as the College of Agriculture at Tokyo Imperial University, and in 1949, the name was changed to the present-day Department of Agriculture of the University of Tokyo.

Regional Agricultural Schools

At the beginning of the 1900s, there were strong demands to establish regional advanced educational institutions in various fields, including agriculture. This resulted in the issuance of the College Order in 1903, which helped to establish many agricultural schools. As is discussed in more detail in the next section, these schools played a major role in fostering agricultural specialists within Japan. After World War II, many of these agricultural schools became four year universities.

Second Period (1918 to 1945)

In 1918 the University Order proclamation was issued, and many private schools, including Waseda, Keio, Meiji, Hosei, Chuo, Kokugakuin, and Doshisha, were officially sanctioned as universities. At the same time, a large number of new national universities were established, and the number of students at institutes of higher education increased 2.5-fold

from 1915 to 1925. Underlying this growth was the fact that, from 1915 to 1925, Japanese mine and manufacturing production quadrupled, and the demand for college-educated white-collar workers was steadily increasing. On a discipline-by-discipline basis, the role of humanities and social sciences departments was especially noteworthy in the nurturing of future white-collar workers. Demand for medical practitioners and engineers also increased, and universities began to emphasize professional education.

At the close of World War II, there were 48 universities in Japan with a total of about 100,000 students. Nagai (1965) called this "the period of the tremendous expansion of university system." Under the College Order in 1903, Sapporo Agricultural College and the *Morioka Koto-norin-gakko* (Morioka Higher School of Agriculture and Forestry) were designated as agricultural colleges. By 1914, agricultural schools in Kagoshima (agriculture and forestry), Chiba (horticulture), Ueda (sericulture), and Tokyo (agriculture) had also joined the ranks of colleges. From 1920 to 1924, a new agricultural school was established each year: Tottori and Mie in 1921, Utsunomiya in 1922, Gifu in 1923, and Miyazaki in 1924. Among the distinguishing features during this period were the development and improvement of agricultural education at the secondary level, as well as the advance of farming instruction for women and the expansion of facilities for advanced agricultural training.

In 1914, agriculture alone accounted for 45.4% of the total output of agriculture, fisheries, mining, and manufacturing. By 1919, however, agriculture's share had fallen to 35.1%, whereas manufacturing's share had risen to 56.8% (Nagai 1965). During this period, Japan's primary production clearly had shifted from agriculture to manufacturing. Beginning in 1927, most farmers were destitute, and controversy increased over rights of and rents paid by tenant farmers. During this period, the government was forced to confront the necessity of nurturing leaders to ameliorate the situation in farming communities (Nagai 1965).

Third Period (1945 to 1991)

At the end of World War II, Japan was governed by General Headquarters (GHQ) under the command of General Douglas MacArthur. As part of

the democratization of Japan, GHQ made many proposals; central among these was educational reform. To achieve this, the U.S. government sent an education mission to Japan under the leadership of Dr. George D. Stoddard. A month later, the mission submitted its report to General MacArthur on 31 March 1946. The Report of the United States Education Mission to Japan (1946) highlighted two problems with curricula at Japanese institutions of higher education. The first was that specialization started too early, was too narrowly focused, and put too much emphasis on occupational education, so there were too few opportunities for liberal arts education. The second was the need to foster more humanistic attitudes to provide a background for freedom of thought and a better foundation for occupational training. In addition, the report suggested that "free thinking, adventurous research and action to inspire the people" were needed at Japanese universities and advocated liberal research at institutions of higher education. Specifically, the report stressed that the most pressing concerns were establishing universities, ensuring sexual equality, offering financial assistance for students, and stressing the importance of a liberal arts education.

In June 1948, the Ministry of Education announced its "Eleven Principles for the Establishment of National Universities," and with the exceptions of Hokkaido, Tokyo, Aichi, Osaka, Kyoto, and Fukuoka prefectures, all of the national postsecondary schools within a prefecture were consolidated into one university. Following the 11 principles, agricultural schools everywhere became agricultural departments of new universities. By 1949, there were 24 national universities with 26 departments, 7 private universities, and 8 prefectural universities (6 of which eventually moved to the national system) concerned with agriculture.

The Ministry of Education issued the "Standards for the Establishment of Universities" on 22 October 1956 (Ordinance No. 28) and the "Standards for the Establishment of Agriculture-related Departments" on 31 March 1958. These set the minimum standards necessary for the establishment of departments and faculties related to agriculture. Section 1 of Article 2 of the 1958 agricultural standards delineated primary areas that should be included in any agriculture-related department. In addition, Article 3 stipulated the subjects and courses

to be included. These ordinances established the framework of agricultural education in Japanese universities until the Standards for the Establishment of Universities were amended in 1991.

Fourth Period (1991 to 2004)

Japan achieved remarkable economic growth during the 1970s and 1980s. One factor cited as a driving force behind this growth is the large highly trained workforce that the education system provided. However, with the uniformity brought to education, there have been calls for “less-pressured education” and for “education that fosters individuality” (The Japanese Ad Hoc Council on Education 1987). As a result, the number of class hours has been reduced and curricula have been changed in primary and secondary schools.

In May 1991, the Standards for the Establishment of Universities were amended. Included in this amendment was a stipulation that “every effort must be made by applicable universities to monitor and evaluate the current state of their instruction and research activities” (University Council, 1991). Thus, universities throughout the country began self-monitoring and self-evaluation programs of their educational curricula and research activities. Most universities have since reorganized or are currently looking into such restructuring. As a result, the agricultural departments of many universities have revised their educational and research structures. The Ministry of Education must review the proposals for change submitted by each university as part of the budget allocation process. This means that universities, which had previously been compelled to comply with numerous regulations, now have the freedom to create their own curricula. However, as was true with previous educational reforms, this reform of the university system was conducted under significant influence of the Ministry of Education.

Debate over the reorganization of agricultural departments has revolved around two main points. The first is the decline of the agriculture industry in Japan. During the early 1990s, food imports became cheaper as a result of rapidly rising exchange rates for the yen. This reduction in prices led to criticism from manufacturing industries and from people in urban regions about the relatively expensive farm products produced in Japan, casting

doubts over the need for agricultural departments. The second point is diversification in careers available to agriculture majors. The available career choices have diversified for agriculture majors, and it is now not unusual for them to find employment in areas unrelated to their field. This, in turn, has led to criticism that there are too many agricultural departments in universities in Japan.

Moreover, after a period of steady advancement, the building of agricultural infrastructure is now almost completed, and improvements in farm productivity may have reached their limits. With national agriculture policies having achieved their goals, there have even been reductions in production levels (e.g., rice). Agriculture’s potential for growth as an industry has decreased, and the numbers of new agricultural workers has dropped drastically. Agricultural education has lost its clear objective of cultivating self-employed farmers. These changes suggest that agriculture-related university departments have needed to move away from teaching and research to promote agriculture and have had to establish new educational goals. In this context, it is extremely interesting to look at how each university has reformed their curricula and with what objectives since 1991. However, the measures taken by individual universities have varied greatly, which is why I later present a quantitative analysis of recent changes to the curricula of Japanese agricultural universities as a whole.

Fifth Period (since 2004)

The fifth period began in 2004 when the “National University Corporation Law,” a new law governing national universities, came into force. It has long been known that the administration of national universities in Japan is substantially influenced by the central government. Under the new law, however, major emphasis is placed on the autonomy of each national university corporation, and the president of each university corporation is expected to show independent leadership. In this context, the relationship between national universities and the central government has fundamentally changed. Another important factor during this period is the rapid decrease in the number of high school graduates, which reflects the sharp decrease in the birth rate. These two factors will continue to have enormous impact on the overall university system. Uni-

versities in Japan now need to work to attract high school graduates to maintain enrollment, a factor that may also contribute to revising curricula.

Development and Analysis of the Database on Agricultural Curricula at Universities in Japan

To investigate agricultural education curricula, it is first necessary to collect data about all of the undergraduate agricultural lecture courses offered at universities in Japan that have agriculture programs (Fig. 2). These data have been collected since 1983 at the Agricultural and Forestry Research Center, University of Tsukuba. The data have been compiled into the Database of Agricultural Education Curriculums at Universities in Japan (Ag-Base). All agricultural fields other than those related to fisheries are included (Hiki *et al.*,

2003). To date, 581,991 records have been registered into the database covering data from 1983 to 2007. After collecting the bulletin from the universities that have agricultural program, the following 9 items are entered into the database for each course offered: 1) year, 2) university name, 3) department name, 4) major (areas within the department for which degrees are offered), 5) title of the lecture course, 6) class attributes (i.e. in class lecture, laboratory, practice etc), 7) standard year of study (i.e. freshman, sophomore, etc.), 8) number of credits, and 9) whether the course is compulsory or elective. Microsoft Access was used to create and manage the database, and Visual Basic was used to analyze the data.

The number of universities offering a bachelor's degree program increased from 47 in 1983 to 53 in 2007 (Fig. 3). The major reason for this increase is

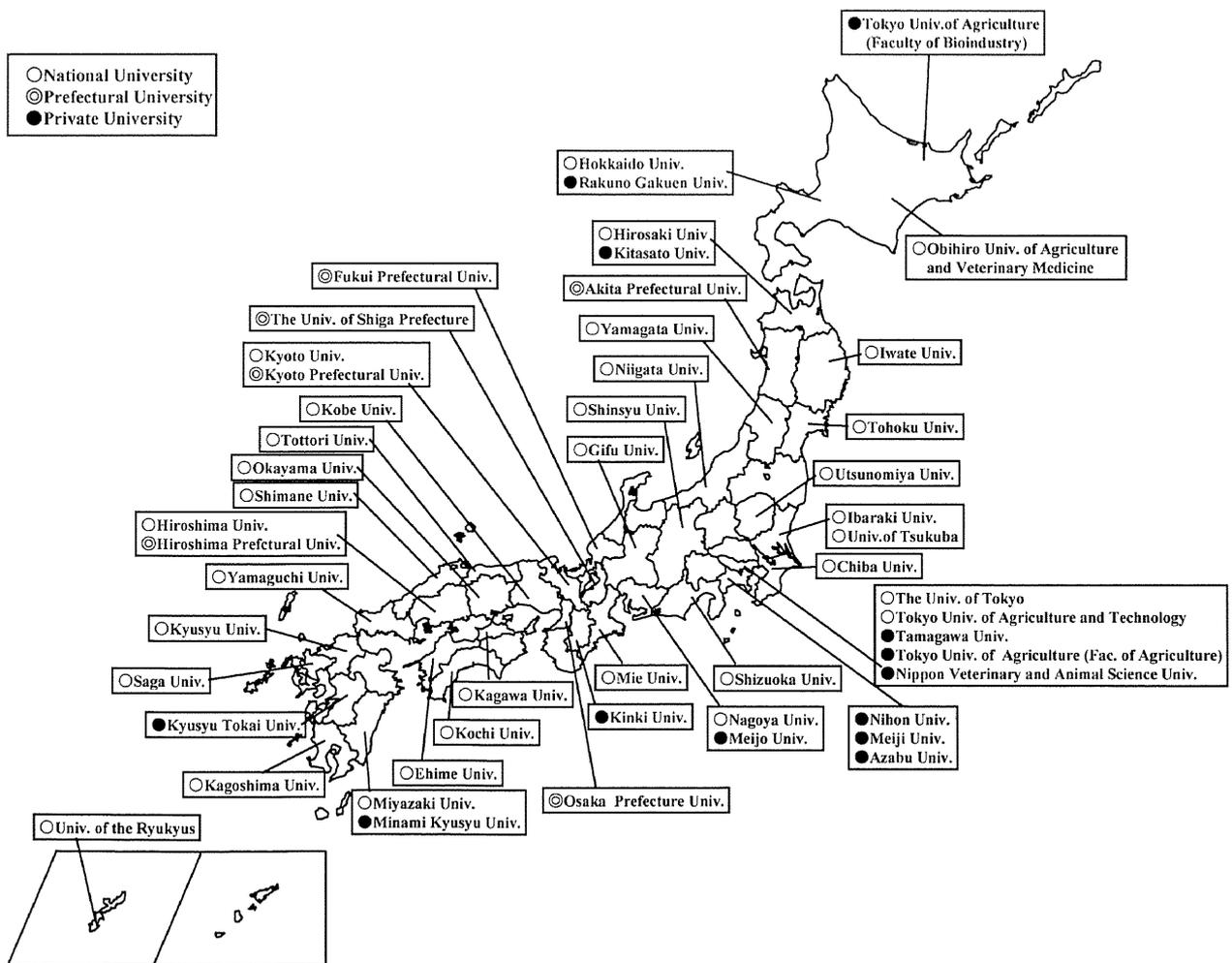


Fig. 2. Location of universities having a College of Agriculture in Japan (as of 2008).

the conversion of regional junior colleges to bachelor's degree programs, primarily because bachelor's degree programs are considered to be advantageous for student recruitment. The increase in the number of departments can be attributed to the expansion of the area of study from traditional agricultural production to biotechnology, environmental protection, and other similar areas.

A search of key words found in department names, where the department was defined as the largest

subdivision by discipline within a college of agriculture, indicated that the use of traditional words had decreased markedly (Fig. 4). Names such as agriculture, animal production, agricultural chemistry, forestry, and engineering have shown the largest decreases during this period. Conversely, the frequency of use of some words found in department names increased noticeably (Fig. 5). A rapid increase in department names including the word "biology" was observed between 1988 and 2001,

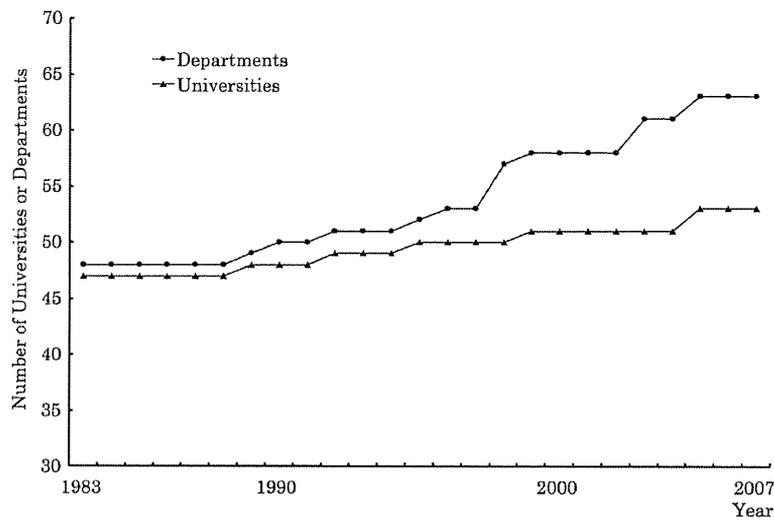


Fig. 3. Number of universities offering a bachelor's degree program and number of agriculture departments in Japan, 1983-2007.

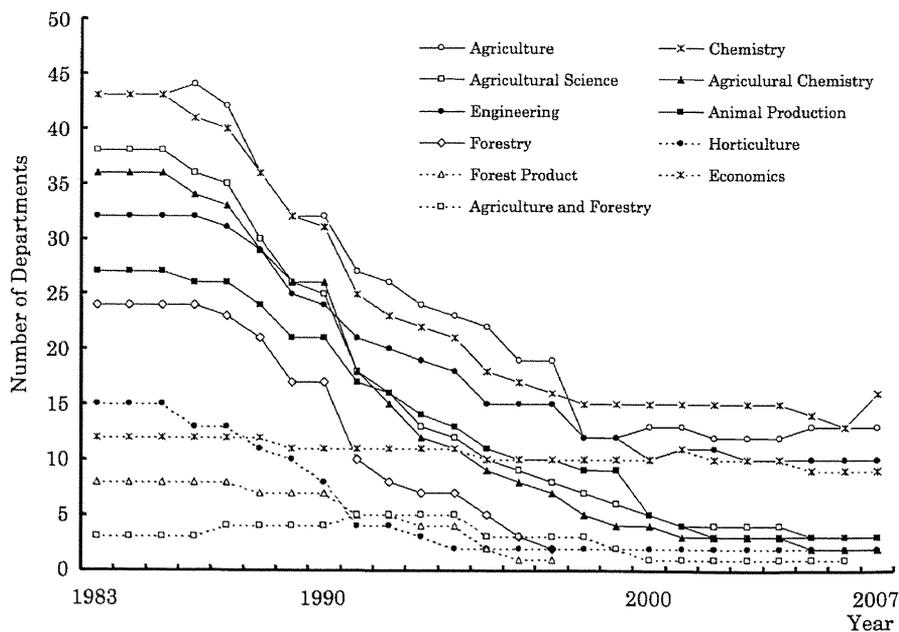


Fig. 4. Key words from university department names that have decreased, 1983-2007.

but the frequency of use decreased after that. Other key words that increased in frequency include environment, resource, production, life, regional, biotechnology, food, animal, and function. Included in this analysis are all in-class lectures, laboratory classes, field surveys, and similar classes for which credit will be given upon completion of

assignments. Changes in the number of courses offered ranged from 18,300 to 18,600 from 1983 to 1987, but the number of courses exceeded 20,000 for the first time in 1991 and reached 30,137 in 2007 (Fig. 6). A similar tendency was observed for the total number of credits during the same period. The average number of credits per course, however,

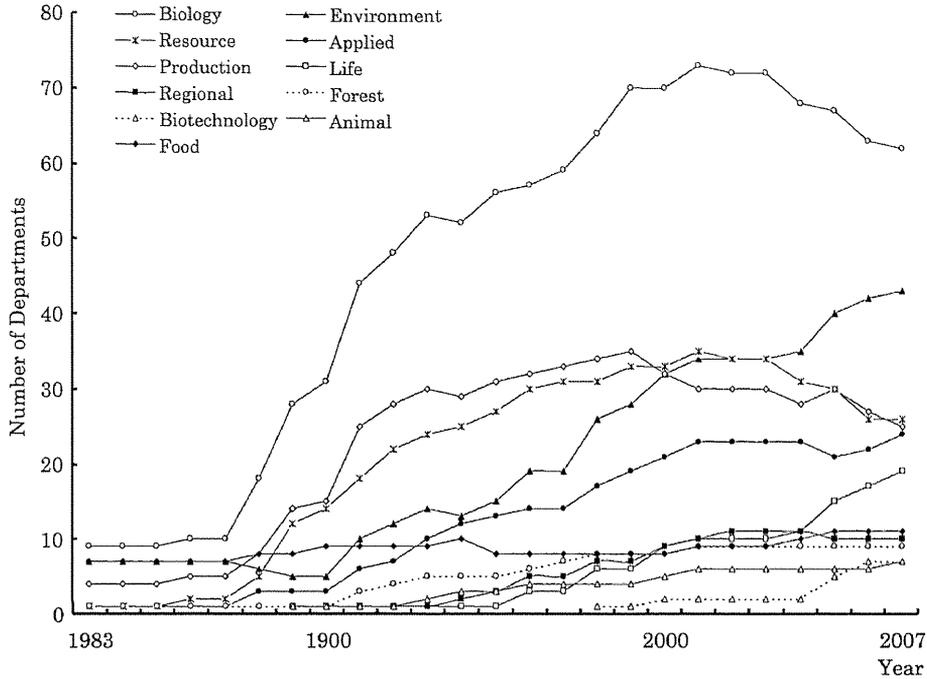


Fig. 5. Key words from university department names that have increased, 1983-2007.

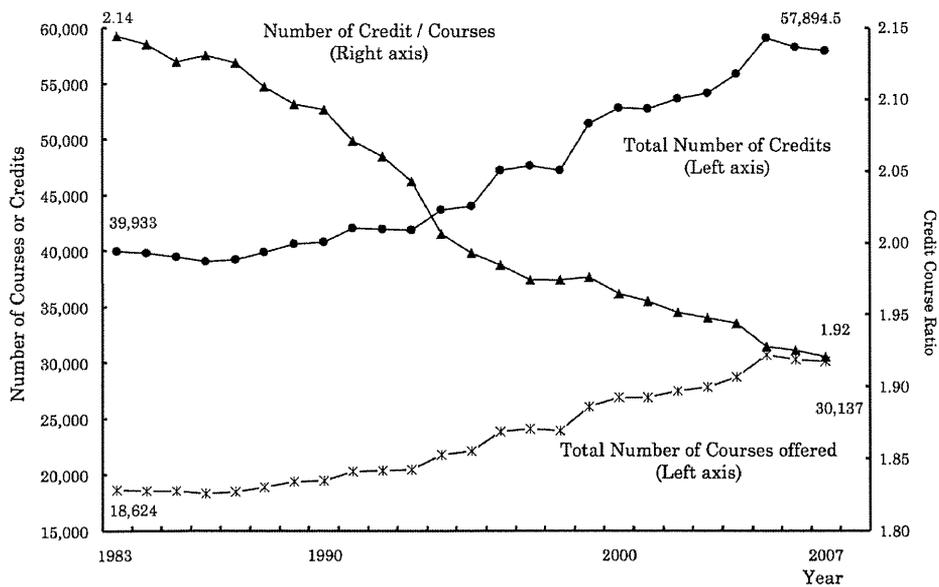


Fig. 6. Number of total courses and total credits offered at agricultural universities in Japan as well as the ratio of credits to courses, 1983-2007.

was 2.14 in 1983, but it consistently decreased thereafter and reached 1.92 in 2007 (Fig. 6). In many cases, a course with a larger number of credits was split into two or more courses each having a smaller number of credits.

Next, a key word frequency analysis was done for course titles (Fig. 7). First, I looked for the most common key words in course titles in 1983 and 2007. Then, I conducted a key word analysis similar to that done for department names. Among major key words, the most popular key word in 1983 was chemistry (2,078), followed by biology (1,097), and plant (708). In 2007, the most popular key word was biology (3,535), followed by chemistry (2,874), environment (2,754), plant (1,562), and animal (1,368). The major characteristic within this period is the remarkable increase in course titles including the term biology, which increased by almost 3.2 times between 1983 and 2007 (Fig. 7). Other key words that showed a marked increase were environment (10.6-fold increase), resource (23.3-fold increase), and production (12.5-fold increase). The percentage of the decrease in the frequency of the use of the key words for forestry, machinery, livestock, civil engineering, animal production, agriculture, and crop production were 27.2, 76.2, 72.4, 70.1, 62.8, 62.0, 37.0, and 27.2, respectively. Most of these are words that have traditionally been associated with a college of

agriculture (Fig. 8). These changes indicate a clear shift from an emphasis on chemistry to one on biology. In 1983, there were just 260 courses with the word “environment” (or a related word) in the class title, and most of these were related to general environmental or pollution concerns, such as environmental surveying, environmental biology, and environmental pollution problems. In contrast, environment-related class titles in 2007 included environmental chemistry, production environment, and environmental engineering, reflecting the various senses of the term and how the concept has changed over time.

Furthermore, there have been marked increases in the number of courses in fields containing the words genetics, genes, information, and environment—all areas in which substantial progress has been made since 1983. Whereas the most frequent course titles in 1983 including the term “biology” were biological chemistry, biological statistics, biology, and microbiology, in 2007 molecular biology and biological engineering had also come to occupy top positions. These changes clearly reflect the fact that remarkable progress has been made in biology and molecular biology during this period. The frequency of use of the term “forest” has also been increasing recently, which may reflect the greater emphasis on global environmental conservation. Within the next few years, we should be able to visualize the impact

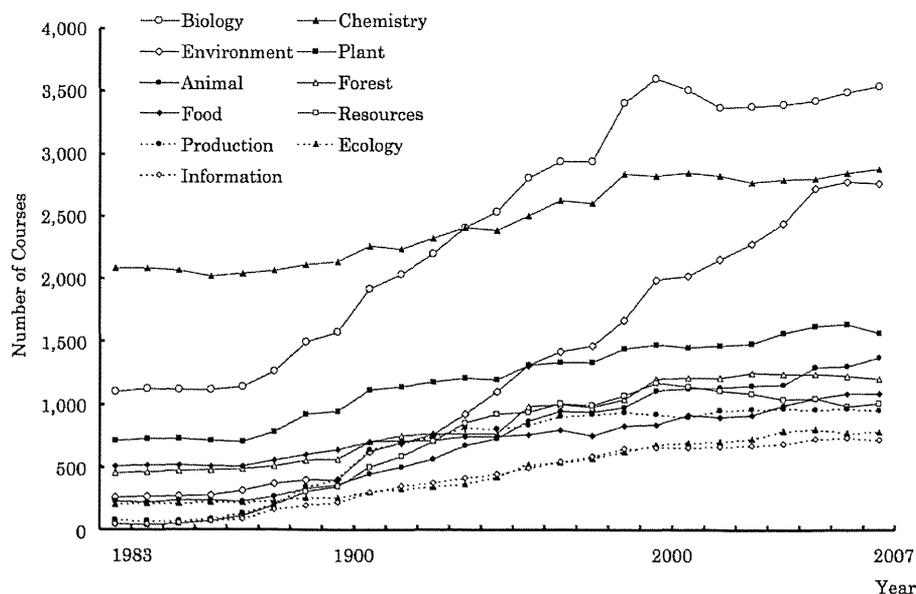


Fig. 7. Key words in course titles that have increased, 1983-2007.

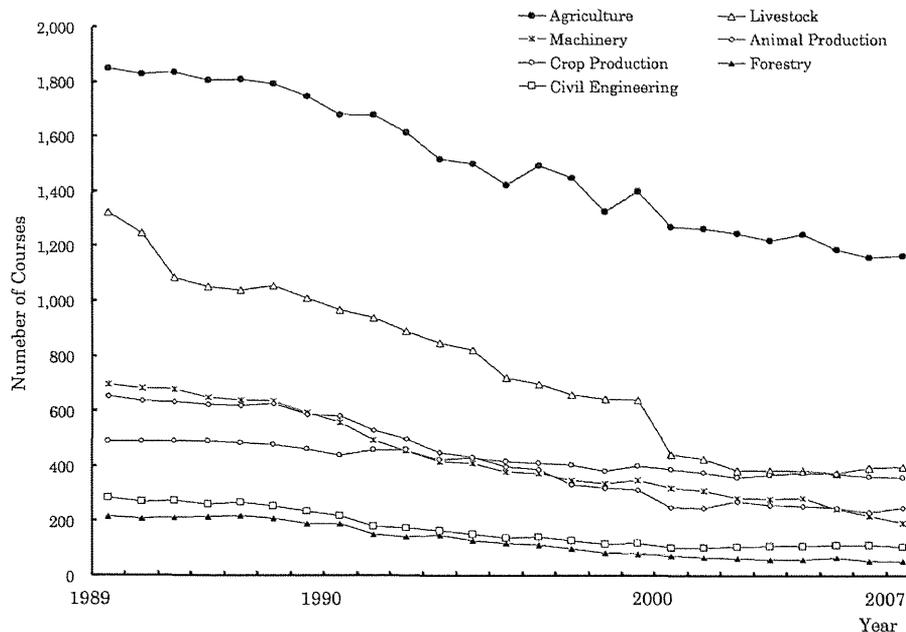


Fig. 8. Key words in course titles that have decreased, 1983-2007.

of this new university management system on the agricultural curriculum by analyzing “Ag-Base”.

Conclusions

Curricula related to agriculture in Japanese universities continue to move from traditional agricultural education to biological resource science, and the trend to position biological resource science courses with a liberal arts education appears to be steadily becoming stronger. As the importance of education in food production technology decreases, the overall objective of agricultural education programs should focus on 3 points: (1) education concerning biological resource production technology, (2) education related to the dissemination of biological resource production technology, and (3) education related to biological resource distribution systems. From a historical perspective, priority has clearly been given to the improvement of biological resource production technology at Japanese universities, but contributions for the other two points have not been sufficient.

Furthermore, Japan relies on imports for the majority of its food and is demanding that agricultural education acknowledge this internationalization of agriculture. However, the measures taken by Japanese universities have not been very successful and have often been at the individual level.

Recently, however, structural arrangements at the graduate level have begun with the aim of fostering specialists in international cooperation. In terms of international cooperation related to agricultural technology, universities need to create curricula that recognize that the international nature of agriculture involves more than simply supporting developing countries. It is also extremely important for Japan’s food security.

Ethics in agriculture is also becoming a critical issue. According to the Food and Agricultural Organization of the United Nations (FAO), the most urgent ethical task in agriculture is “to assess activities relating to food and agriculture in the light of their actual and potential impact on the reduction of poverty, hunger and malnutrition” (FAO 2001a). The FAO has published series of publications on ethics in food agriculture arguing various topics, including genetically modified organisms, sustainable agriculture, and fisheries (FAO 2001b, 2001c, 2004, 2005). The background of the FAO’s argument is based on the recognition that the accessibility to quality food is deeply related to human rights.

Issues related to the accessibility to quality food, however, are diverse and complicated. The coordination of government and public sectors is essential to address this important agenda. Universities also

need to play a central role in conducting research and education on ethical issues in agriculture, and the Japanese higher education system in agriculture has been playing an important role in improving food productivity. Thus, in addition to emphasizing specialization, accumulating technical knowledge, and developing relevant technology, agricultural departments at universities must work to educate people so that they possess the broad social and human perspectives needed to tackle a variety of issues. Looking back at the history of agricultural education at Japanese universities, the former Sapporo Agricultural College clearly combined both of these priorities and produced many extremely talented well-educated individuals who had a major influence on society. The problems that we currently face are extremely complex and difficult, but as the first step to solving them, it is necessary to seriously examine the nature of agricultural education and research at institutions of higher education in Japan.

Acknowledgements

I greatly appreciate all of the people at the agriculture-related universities that provided materials and assistance for this research. The present study was first presented at the International Agricultural ESD Symposium held at the University of Tsukuba from 4 to 12 November 2008. This study was supported in part by a Grant-in-Aid from the International Initiative Program from Ministry Education, Culture, Sports, Science, and Technology, Japan.

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