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Journal of Korean Studies, Volume 15, Number 1, Fall 2010, pp. 1-40
(Article)

Published by Center for Korea Studies, University of Washington
DOI: [10.1353/jks.2010.0007](https://doi.org/10.1353/jks.2010.0007)



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Decline of a Confucian Mecca: Development of Rice Farming and Regional Development in Chosŏn Korea

Sung Woo Kim

The object of the analysis of this article is Sŏnsan County, the most advanced agricultural region of the Chosŏn Dynasty during the fifteenth and sixteenth centuries. This advanced region, however, started to go downhill from the sixteenth century and declined further in the seventeenth century. The rise and fall of Sŏnsan was closely tied with its geographical and irrigation conditions. The region, located around the Naktong River, the greatest river in Kyŏngsang Province, had favorable conditions for development in the fourteenth and fifteenth centuries with the spread of the farming method of broadcast seeding to wet rice fields (水耕直播法) and the active development of both plains and hilly areas. But, this area faced adverse conditions in the sixteenth and seventeenth centuries when the new farming method of transplanting rice seedlings (移秧法) was widely introduced, shifting development to more mountainous regions.

There is a general consensus among the scholars of Korean history that the introduction of the agricultural method of China's Yangzi Delta (江南農法) is the key to understanding and evaluating early Chosŏn agricultural development. This understanding is that the method of continuous annual cropping (常耕農法) was adopted from China from the late thirteenth century and was followed by remarkable growth in agricultural productivity. Economic progress led to the rise of the new political force of local young literati officials (新興士大夫) among the landlords from the fourteenth century. The reform movement of this new stratum led to the inauguration of the Chosŏn Dynasty, implementation of Confucianization policies, and finally a long reign of peace. Yi T'aejin pioneered

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this kind of historical view. He emphasized that the low-lying plains were subject to intensive development during the period from the late thirteenth century until the fifteenth century as the state introduced a new agricultural method from China and expanded rice agriculture.¹

However, many have raised objections to this view. Yi Hoch'ŏl has argued that dry-field farming was the dominant farming method until the fifteenth century, and that the mountainous regions as well as low-lying areas underwent development. Yi Sugŏn confirmed this after studying the migration route of local elites—yangban. He found that the local elite group migrated from townships in hilly regions to the outskirts of towns, and wet rice farming developed mostly in small river valleys and could be irrigated by diverting river flow with weirs, or small-scale dams (川防).²

It is this type of irrigation facility that draws the most attention in the development of rice farming during this period. Many scholars of Korean history share the view that the Korean agricultural economy in the pre-modern era shifted its earlier reliance on large-scale irrigation reservoirs (堤堰) to diversion weirs. These two irrigation types, however, are not situated in the same terrain. Yi T'aejin regarded irrigation reservoirs as those facilities established in valleys or hilly areas, and diversion weirs as those located in low-lying areas. In contrast, Yi Sugŏn emphasized that diversion weirs were located in valley areas. The present author meanwhile has confirmed through his study on the case of the Taegu region that reservoirs were located in hilly regions in the fifteenth and sixteenth centuries, while diversion weirs were located in mountain valleys in the eighteenth and nineteenth centuries.³

As seen above, Korean academics have had diverse views about the development of the agricultural economy and regional development, as well as heated debates about such issues. During the course of debates, the historians reached a consensus that the continuous annual cropping system began in the late thirteenth century and that rice farming became the most significant farming method in the fifteenth century. They also concluded that diversion weirs started to replace reservoirs as the major irrigation facilities from the sixteenth century, thus stimulating development.

It is notable that the theoretical basis of such views was the “theory of agricultural revolution in Yangzi Delta during the Song Dynasty (960–1279).” As is well known, Chinese in the Yangzi Delta could grow two crops of rice in a year and developed the low-lying areas after introducing the early ripening glutinous rice, *zhanxing-dao* (占性稻) from Champa (now Vietnam) to the rice fields around the Yangzi River in the eleventh century. The development of agriculture stimulated the growth of a commercial economy and the urbanization of China. The rise of the literati, *shidafu* (士大夫), as the new ruling class distinct from the old aristocrats of the earlier Sui and Tang dynasties also emerged amid the new socio-economic trend, which had resulted from these agricultural changes.⁴

However, recently there are a growing number of researchers who hold the view that the agricultural revolution in China did not start until the Qing Dynasty.

According to them the changes started in the region below the Yangzi River during the Song Dynasty were meaningful, but failed to have the full-scale impact necessary to transform every sector of Chinese society. The population in southern China remained small, and rice farming there was still far from the intensive agriculture of the earlier Song Dynasty. Thus it was only in the late Ming and Qing dynasties (in the late sixteenth and seventeenth centuries) that the region below the Yangzi River developed intensive farming methods. The population growth in the region is cited as the main reason for the development of the new farming method.⁵

As this theory of agricultural revolution in the Yangzi Delta during the Qing Dynasty emerged, it posed a crucial challenge to the historical viewpoint the scholars of Korean history had about the period from the late thirteenth to the fifteenth century. In the face of the new theory on the Chinese agricultural revolution, Korean scholars who used to hold the view that the Korean agricultural economy lagged two to three centuries behind its Chinese counterpart were now faced with the prospect that Chosŏn was two to three centuries ahead of the Chinese agricultural sector. To settle the confusion and map out the real development phases of the agricultural economy during the Chosŏn Dynasty requires a drastic review of the development of rice farming in the pre-modern era. With this in mind, this article will re-examine the trend in the development of rice farming and regional development in pre-modern Chosŏn.

NOTE ON SOURCES

Major historical references for this article can be categorized into two kinds. One comprises agricultural manuals of the fifteenth to the seventeenth centuries such as *Nongsŏ chibyŏ* (1417), (The essentials of agricultural methods), *Nongsa chiksŏl* (1429), (Straight talk on farming), and *Nongga wŏllyŏng*, (Farmer's work and days) (published in the 1630s). Through close study of these agricultural manuals, I confirmed that the agricultural technology of the Chosŏn Dynasty progressed from the extensive farming in dry fields and rice fields in the fourteenth and fifteenth centuries to intensive farming in rice paddies from the late sixteenth century.

Other major references are gazetteers published in the context of the Chosŏn government's farming promotion policy in the fifteenth century. They include *Kyŏngsangdo chiriji* (1424) (The geography of Kyŏngsang Province), *Sejong sillok, chiriji* (1432), (The veritable records of King Sejong, geography), and *Kyŏngsangdo sokch'an chiriji* (1469), (The revised geography of Kyŏngsang Province). The sixteenth century saw active publication of gazetteers by local elite groups. Ch'oe Hyŏn's *Ilson chi* (in the 1630s) is cited as one of the representative local gazetteers at that time.

CHINESE AND JAPANESE PATTERNS OF DEVELOPMENT

As is well known, the regional development of the Yangzi Delta showed a trend of movement from mountainous regions into low-lying regions during the Song to the late Ming and Qing dynasties.⁶ Given this fact, the agricultural method of the Yangzi Delta is deemed to have been established in the seventeenth century when peasants, forced by population pressure to migrate into low-lying regions, developed the intensive farming method. In Japan, “the industrious revolution” started with the inauguration of *Tokugawa Bakufu* (徳川幕府), which also saw market-driven development of the agricultural economy. With the industrious revolution spreading from castle towns (城下町) into other areas, the regional development in Japan revealed a pattern of spreading from fields to mountainous regions along the outskirts of towns.⁷

Although China and Japan both witnessed a full-fledged agricultural revolution in the seventeenth century, the commencement of an agricultural revolution in the same time period does not mean that the geographic pattern of development was the same in the two countries, for China and Japan differed in climatic and geographical conditions. The Yangzi Delta had favorable conditions for developing lowland agriculture thanks to rich precipitation and a mild climate, while the agriculturally advanced *Kansai* (關西) region of Japan saw more active development of mountainous areas in accordance with its more mountainous terrain.

Under the strong influence of the discourse on the “Song Dynasty agricultural revolution in southern China,” Korean academic circles have stuck to the view of linking the growth of rice agriculture to the development of agriculture in low-lying regions. As seen in the cases of China and Japan, however, regional development took different shapes depending upon the climatic and geographical conditions. Kyōngsang Province was cited as the most advanced region when it comes to rice farming since the late thirteenth century. Kyōngsang had quite different climatic and geographical conditions from southern China. Below is a comparison of the current annual average temperature and precipitation of Taegu, the capital of Kyōngsang, and Shanghai (see figures 1 and 2).

Shanghai and Taegu show little difference in their average temperatures (16.6 and 14.1°C, respectively), but in Shanghai the days when temperatures stay over 5°C total nine months (March–November), while they amount to just seven months (April–October) in Taegu. In Shanghai, where seeding could start in March, it was possible to plant two crops of rice a year, while Taegu permitted growing rice followed by a winter crop of barley, as the weather permitted rice seeding only from April. Annual precipitation in Taegu (1,027.9 mm) almost emulated that of Shanghai (1,164.7 mm), accounting for 88.3 percent of the latter. However, Shanghai’s precipitation was evenly distributed over a year (24.9 percent in spring, 41.5 percent in summer, 21.2 percent in autumn, and 12.4 percent in winter) while that of Taegu was concentrated to the summer season (19.7 percent in spring, 53.8 percent in summer, 20.3 percent in autumn and 6.2 percent in winter).

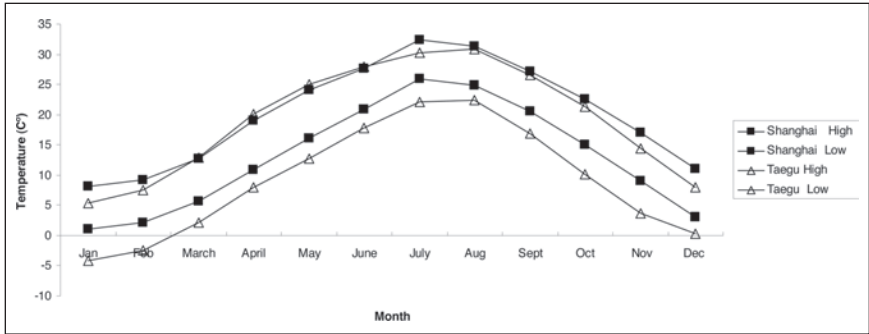


Figure 1. Average Monthly Temperature of Shanghai and Taegu
 Source: www://en.wikipedia.org/wiki/Shanghai~Taegu

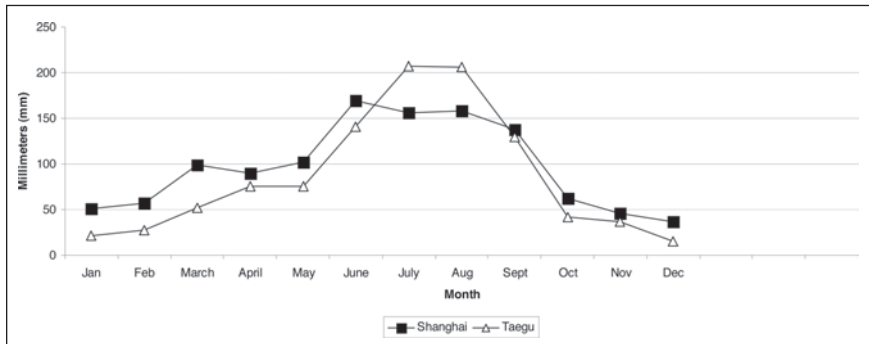


Figure 2. Monthly Precipitation in Shanghai and Taegu
 Source: www://en.wikipedia.org/wiki/Shanghai~Taegu

For this reason, water sources were easily secured in Shanghai, as there was as much as 100 mm of precipitation already by March, while Taegu had only 75 mm by May, making water management more difficult. In Korea, the dry spell in spring served as the greatest obstacle for the development of rice farming. Therefore rice farmers in pre-modern Korea put greater emphasis on early seeding of rice (早播) which could endure dry weather and the small-scale diversion of water from streams in mountainous regions. It was for this reason that agricultural development expanded into mountainous regions in Korea.

The Pattern in Korea's Sönsan County

The object of analysis of this article is Kyöngsang Province, and more specifically, Sönsan (善山) County within the province, which was popularly called the “Confucian Mecca (鄒魯之鄉)”⁸ during the fifteenth and sixteenth centuries. Sönsan,

forty kilometers northwest from Taegu, was so famous during the fifteenth and sixteenth centuries for its talented people that a popular saying went, “Half of the distinguished persons of the Chosŏn Dynasty were from Kyŏngsang, and half of the number of the distinguished persons of Kyŏngsang were from Sŏnsan.”⁹ Many distinguished Neo-Confucian scholars (Kil Chae, Kim Sukcha, Kim Chongjik, and Kim Koengp’il) and high ranking bureaucrats (Chŏng Ch’o, Pak Sŏsaeng, and Ha Wiji), who formulated farming promotion policies during the reign of King Sejong, were natives of Sŏnsan. However, the fame of Sŏnsan started to wane during the sixteenth century and was completely lost after the seventeenth century.

There are three key features of the development of Sŏnsan in early Chosŏn. First, rice agriculture in the fifteenth century centered on lowland plains and hills. Development of the peasant economy in those areas was indebted to state-driven farming promotion policies, including construction of large-scale reservoirs. Second, as the peasant economy developed, the population grew and expanded into the mountainous and valley areas. The introduction of transplanting rice seedlings accelerated as mountainous regions developed. On the other hand, lowland plains and hills, which had been subject to intensive development in the fifteenth century, suffered stagnation from the sixteenth century as most areas reverted to unirrigated fields. Third, Sŏnsan, which had been the most advanced agricultural county in the fifteenth century, began to stagnate in the early sixteenth century due to its failure to overcome its geographical condition as a “county of rainfall fields.” It is government exploitation of peasants in the county in the sixteenth century that precipitated Sŏnsan’s decline. With these complicated factors affecting each other, Sŏnsan started to see its fame as the “Confucian Mecca” drastically wane from the seventeenth century.

This article is aimed at mapping out, through the case of Sŏnsan, the concrete features of rice farming development and sites of irrigation projects in pre-modern Korea, to show Korea’s distinctness from the Chinese and Japanese cases.

Farming Promotion Policy in the Fifteenth Century

It is well known that the Chosŏn Dynasty made its best efforts in its early days to stabilize the socio-economic life of its agricultural population as a means to stabilize the fledgling state. The farming promotion policy, implemented to a greater scale at the start of the reign of King T’aejong (r. 1400–1418), was the representative economic policy of the period. A key project of King T’aejong, to promote the agricultural economy, was the construction of large-scale reservoirs across the entire country. This project was implemented in 1415, the fifteenth year of his reign. The irrigation work resulted in the construction of forty-three reservoirs across the country as listed in the *Sejong sillok, chiriji* (The veritable records of King Sejong, geography).¹⁰

The state-driven irrigation projects in the early period of the Chosŏn Dynasty had a close relationship with rice agriculture, which required a significant amount

of financial support and effort to mobilize the labor force to build reservoirs. Rainfall fields, on the other hand, need no special agricultural facilities. For this reason, when it came to rainfall farming in the early fifteenth century, there was little difference in the agricultural productivity of Korea's eight provinces,¹¹ but from the late thirteenth through the early fourteenth century Korea saw the full-scale development of irrigated rice agriculture. It was also during this period that Korea initiated continuous cultivation of fields and introduced the method of transplanting rice seedlings in several areas.¹² Such facts are confirmed by the Chosŏn edition of *Fundamentals of Agriculture and Sericulture* (農桑輯要), entitled, *Standard Edition of the Yüan Dynasty Fundamentals of Agriculture and Sericulture* (元朝正本 農桑輯要), published in Kyŏngsang Province in 1372. *Fundamentals of Agriculture and Sericulture* (1273), which compiled the agricultural technologies of northern China in the Yüan Dynasty, was a representative Chinese agricultural guidebook, taking the example of *Essential Skills for Common People* (齊民要術) published in the early sixth century. Since its publication the agricultural technologies of the *Nongsang chibyŏ* had been experimented with in some regions of Kyŏngsang Province.¹³

People started to reevaluate the *Nongsang chibyŏ* in 1414, forty years after its publication, and *Essentials of Agricultural Methods* (農書輯要), was produced in 1417 as a result of the reevaluation work. As many researchers have noted, it was Korea's first government-published agricultural manual, which adapted the *Nongsang chibyŏ* to Korean agricultural conditions and methods.¹⁴ The *Nongsŏ chibyŏ* is regarded as a work of great significance, in that it extensively compiled the agricultural technologies developed for more than 100 years from the late thirteenth century till the early fifteenth century in Korea. It was largely about agricultural techniques for dry fields, judging by the order of the crop entries which put barley and wheat in the first section, with rice, millet, red and mung beans, Indian millet, buckwheat, and sesame presented in later sections.

Due to the absolute lack of irrigation facilities rice agriculture was quite different from now.¹⁵ Rice was cultivated at that time by the "alternate year," or *hoehwan* method (回換), which refers to the practice of broadcasting rice seeds on rice fields every other year, with other crops cultivated between.¹⁶ The crop rotation method emerged in the course of transition from dry field farming to irrigated rice farming amid the lack of irrigation facilities.¹⁷

When the *Nongsŏ chibyŏ* was published in the early fifteenth century, Koreans were employing two rice cultivation methods: broadcasting rice seeds into irrigated rice fields (水耕直播) and into dry fields (乾耕直播). However, there were few irrigated rice fields, because of the lack of irrigation facilities in most regions of the state in the early fifteenth century. Where there was no irrigation facility, they resorted to broadcasting rice seeds into dry fields. But this had many disadvantages: farmers were destined to lose much of the rice to birds, dry fields required a greater workforce for weeding, and the fields yielded smaller harvests than broadcasting rice into irrigated fields.¹⁸ Because of these reasons, where they

had effective irrigation facilities, farmers preferred broadcasting into irrigated fields. The expansion of irrigation facilities popularized this method. Among the reservoirs listed in the *Veritable Records of King Sejong, Geography* that were built in the Three Kingdom's Period and persisted until the late Koryŏ Period, only three were in normal operation at that time (Pyŏkkol Reservoir in Chŏlla, Chungbang Reservoir in Hwanghae, and Konggŏm Reservoir in Kyŏngsang). Given the irrigation conditions, farmers must have had no other method than broadcasting rice seed into dry fields.

Nongsŏ chibyo presented the transplanting of rice seedlings as a third agricultural method. It listed the farmlands adequate for the transplanting of rice seedlings as follows: (1) farmlands in valleys without reservoirs or other irrigation facilities, (2) smaller-sized fallow lands, and (3) fields which can be transformed into rice fields with adequate water year round.¹⁹ According to the manual, transplanting was an adequate method for smaller farmlands in valley areas which should remain fallow for a year. The greatest advantage of transplanting on farmlands in valley areas was that it required fewer farmhands for weeding. Transplanting was nothing more than just a supplementary method to the extensive farming practices at that time.²⁰ The transplanting at that time did not cause the same effects as intensive farming nor produce an increase in productivity which could be found in the agricultural methods in later periods. As is commonly known, the transplanting method in the early fifteenth century was employed in the mountainous regions in Kyŏngsang and Kangwŏn. This historical fact is deemed compatible with the instructions given by *Nongsŏ chibyo* on transplanting. The royal edict of 1414 to ban transplanting in Kyŏngsang and Kangwŏn can be understood only against the background of such historical context.

The project to transform the state's agriculture into a rice cultivation-oriented one required the establishment of an irrigation system in advance. The state-driven irrigation projects pushed forward by King T'aejong and his bureaucrats (Yi Ũn and U Hŭiyŏl) for six years (1414–1420) were a part of a consorted effort to expand rice farming across the nation. The farming promotion policy continued to be pursued by King Sejong, successor of King T'aejong. King Sejong made strenuous efforts to secure a stable source of tax revenue from the early period of his reign. To establish a taxation system, which was later formulated in the name of *kongpŏp* (貢法), or the Tribute Tax Law, required a measure to raise agricultural productivity. This could be accomplished by encouraging the expansion of rice farming, which had higher productivity than dry field farming. The revenues from the tax collected on rice farmland doubled that of dry fields.²¹

Compared to dry fields, however, rice farming showed much bigger regional differences in productivity. Whereas the three southern provinces implemented crop rotation, or the *hoehwan* method, amid the trend of annual rice farming, dry field farming was still the major agricultural practice in the provinces north of Kyŏnggi. For this reason, rice agricultural productivity along the seaside regions in Kyŏngsang and Chŏlla doubled that of the mountainous regions in Kyŏnggi

and Kangwŏn.²² As the extreme regional gap in agricultural productivity stood in the way of enacting the Tribute Tax Law, King Sejong made a concerted systematic effort to spread the advanced agricultural technologies and expand other irrigation facilities such as water mills across the state.

Nongsa chiksŏl (Straight talk on farming), published in 1429, was an agricultural manual. *Nongsa chiksŏl* showed a marked difference from *Nongsŏ chibyŏ*, even if its publication lagged just thirteen years behind the latter. As opposed to *Nongsŏ chibyŏ* which listed dry field crops such as barley and wheat as major crops, *Nongsa chiksŏl* made it clear that the government would push rice farming as a major agricultural policy by putting rice at the beginning of the crop entries in the manual, with dry field crops listed in the later part of the manual.

The two agricultural manuals also differed on the method of cultivating rice on rice fields. *Nongsa chiksŏl* recommended annual cropping (常耕農法) and direct broadcasting of rice seeds into irrigated rice fields (水耕直播法) as two major methods. Direct broadcasting of rice seeds on irrigated fields refers to the method of casting water-soaked rice seeds on plowed fields near a water source. It was a more advanced method than the agricultural technology of the *Nongsŏ chibyŏ*, which went no further than crop rotation.

Nongsa chiksŏl also detailed the classification of rice paddies and categorized them into five grades: grades one, two, and three (good, average, and low quality) irrigated fields for direct seeding of early-ripening rice (早稻), grade four irrigated fields for late-ripening rice (晚稻), and the worst grade, grade five, fields that required transplanting of rice seedlings.²³

In the *Nongsŏ chibyŏ* (1417), rice fields were classified into just three grades: irrigated fields for crop rotation (grade one), dry fields for crop rotation (grade two), and fields for transplanting of rice seedlings (grade three). The best rice paddy fields as listed in the *Nongsŏ chibyŏ* were equivalent to the first grade of irrigated fields for direct seeding of early-ripening rice according to the standards of the *Nongsa chiksŏl* (1429). Rice paddies listed as second and third grades by *Nongsŏ chibyŏ* were equivalent to the third and fifth grades of rice fields, respectively, according to the standard of the *Nongsa chiksŏl*. Based on this classification, table 1 presents the differences between the agricultural technologies of the *Nongsŏ chibyŏ* and *Nongsa chiksŏl*.

There arises a question on the relevance of the agricultural methods of the *Nongsa chiksŏl* and the realities of the farming sector at that time. The changes in agricultural technology must have been “revolutionary” if the remarkable progress (as testified to by the 1429 *Nongsa chiksŏl*) had been made just thirteen years after the 1417 publication of the *Nongsŏ chibyŏ*. However, there were no such drastic changes in the period from the publication of *Nongsŏ chibyŏ* to that of *Nongsa chiksŏl*. The irrigation projects, pivotal to the spread of irrigated rice farming, remained stagnant. Among the reservoirs built from 1414 to 1420 (later part of King Taejong’s reign), those which maintained normal operation until 1432 numbered just forty-three. Of them, twenty were constructed in Kyŏngsang and

Table 1. Comparison of Agricultural Technology in the *Nongsŏ chibyŏ* and *Nongsŏ chiksŏl*

	<i>Nongsŏ chibyŏ</i> (1417)	<i>Nongsŏ chiksŏl</i> (1429)
<i>Major Crops</i>	Barley, wheat	Rice
<i>Rice Farming</i>	Hoehwan (crop rotation)	Annual cropping
<i>Grades of Rice Fields</i>		
1st	Irrigated rice paddies for crop rotation	Higher grade of paddies for direct seeding of early-ripening rice
2nd		Average grade of paddies for direct seeding of early-ripening rice
3rd	Dry fields for crop rotation	Lower grade of paddies for direct seeding of early-ripening rice
4th		Paddies for direct seeding of late-ripening rice
5th	Fields for rice transplanting	Fields for rice transplanting

Sources: *Nongsŏ chibyŏ* and *Nongsŏ chiksŏl*.

fourteen in Ch'ungch'ŏng, with Chŏlla, Kyŏnggi, Hwanghae, and Kangwŏn having far fewer new reservoirs—four, three, two and one reservoir, respectively. It seems, then that the irrigation projects during King T'aejong's reign were deemed far from being successful.

King Sejong tried to improve the irrigation condition with production and distribution of water mills, but his efforts ended with failure as his predecessor did. In the absolute lack of irrigation facilities, most farmlands had to rely on rainfall as a water source. In fields that lacked irrigation, crop rotation of rice and other dry field crops every other year (as suggested by the *Nongsŏ chibyŏ*), or the direct broadcasting of rice seeds on dry fields, might prove more reliable methods than direct seeding to irrigated fields (as suggested by the *Nongsŏ chiksŏl*).

Kyŏngsang Province and Sŏnsan Country as an Advanced Region

In the late fourteenth to early fifteenth centuries when major agricultural manuals such as *Nongsang chibyŏ* (1372), *Nongsŏ chibyŏ* (1417), and *Nongsŏ chiksŏl* (1429) were published, Kyŏngsang Province was recognized, when it comes to irrigated rice farming, as the most advanced region of the country. Kyŏngsang Province was a region with a concentration of reservoirs, with 46.5 percent of the reservoirs in Korea—twenty reservoirs of forty-three—located in the province. It was against that background that Sŏnsan came to have a reservoir during King T'aejong's reign. One example is the giant reservoir, Hoji Reservoir (located in P'yŏngsŏng, Southern Township) which supplied water to 240 *kyŏl* (about 24 km²). The only reservoir larger than the Hoji Reservoir in Kyŏngsang was the Konggŏm Reservoir in Sangju (irrigation area of 88 km²). Reclamation of the Yŏnhwaji and P'algyewŏn fields are presumed to have followed the construction

of the Hoji Reservoir, turning the vast countryside around Yŏnhwaji into rice paddies at that time.²⁴

The bureaucrats from this region also delivered illustrious achievements in the course of pushing for the farming promotion policy during the reigns of King T'aejong (1400–1418) and King Sejong (1418–1450). Chŏng Ch'o was in charge of the publication of *Nongsa chiksŏl* (1429), Pak Sŏsaeng pushed for the production and distribution of water mills (1431), and Ha Wiji drafted *Kwŏnnong kyosŏ* (1444) (The farming promotion decree).

Those who served as local magistrates in Sŏnsan at that time also earnestly implemented the farming promotion policy. Sŏnsan was one of the most agriculturally advanced counties in Kyŏngsang. Sŏnsan was developing robustly thanks to a favorable natural and geographical environment for rice farming, crop rotation, direct broadcasting of rice seeds on dry fields, active engagement of the Sŏnsan bureaucrats in the farming promotion policy, local officials' dedication to their duties, and the voluntary participation of people in the government campaign.

The reclaimed land amounting to 9,170 *kyŏl* (994 km²) in Sŏnsan, listed in the *Veritable Records of King Sejong, Geography*, was one of the concrete results of the farming promotion policy. Some 5,500 *kyŏl*, about 60 percent, were rice fields.²⁵ The proportion of rice fields among the reclaimed land in Sŏnsan was one of the highest among the sixty-six counties of Kyŏngsang Province. The counties



Figure 3. Hoji Reservoir and Pyŏngsŏng Village, 2009

whose rice fields accounted for 60 percent of total reclaimed land numbered just five: Tongnae, Hadong, Chinsŏng, Ŭiryŏng, and Sŏnsan.

Active Construction of Reservoirs and Development of Sŏnsan

The irrigation project underwent a change during the reign of King Sejong (1418–1450) before being reactivated during the reigns of King Munjong (1450–1452) and King Sejo (1455–1468). The irrigation work, restarted after the mid-fifteenth century, produced remarkable results, thanks to the continued and energetic support from King Sejo. The *Kyŏngsang-do sokch'an chiriji* (Revised geography of Kyŏngsang Province), published in 1469 (the first year of King Yejong), is an apt historical reference, which shows reservoir construction at that time. Reservoirs in Kyŏngsang numbered just twenty in the 1410s with the irrigation area amounting to just 1,512.2 *kyŏl* (155 km²), but the number of reservoirs rose sharply to 720, with the irrigation area increasing to 20,227 *kyŏl* (about 2,083 km²) by the 1460s.²⁶ Over the next fifty years, reservoirs increased by 3,500 percent and irrigation areas by 1,238 percent. Thanks to the phenomenal success of the irrigation policy, lots of reservoirs were constructed in Sŏnsan. Table 2 shows the locations of reservoirs constructed during the reign of King Munjong and King Sejo (1450–1468).

As seen in table 2, thirty-seven reservoirs were constructed in Sŏnsan during the 1460s: five in Sŏnsan Town, another five in Western Township, seven in Eastern Township, another seven in Southern Township, and thirteen in Haep'yŏng Township. For the fifty years after the reign of King T'aejong (1400–1418), the number of reservoirs increased by 3,600 percent (from one reservoir to thirty-seven), and the irrigation area grew by 964.8 percent (from 240 to 2,555.6 *kyŏl*). As is the case in the development of Taegu during the early period of Chosŏn,²⁷ most development projects started with the construction of reservoirs, as it helped reclaim wasteland below the reservoir and turned rainfall fields into irrigated rice paddies. However, a closer survey on the smaller administrative units, based on *Hogu chongsŏ* (1789) (The total census), shows a marked difference between the developed areas and underdeveloped ones. Map 1, based on table 2, shows the location of reservoirs in sub-townships of Sŏnsan.

According to map 1, five areas saw the most active construction of reservoirs. They were Sŏnsan, Haep'yŏng (Haep'yŏng Township), and Sin'gok (Eastern Township) with five reservoirs each and Mongdae (Haep'yŏng Township) and Pugunggok with four reservoirs each. Sindangp'o and Murae in the Western Township each had two reservoirs. While Chua and Togae (Eastern Township), Muil (Western Township), and Sanggumi (Southern Township) had a single reservoir each. In contrast, no reservoirs were constructed in Toktong and Sannae (Eastern Township), Mangjang (Southern Township), or Sanoe (Haep'yŏng Township).

Towns or post towns such as Sŏnsan town which had five reservoirs, Haep'yŏng sub-prefecture (with five reservoirs), and Pugunggok near Sangnim Station (with four reservoirs) showed the most intensive degree of development, followed by

the plain and hilly areas such as Sin'gok with five reservoirs, Mongdae with four, and P'yöngsöng and Hagumi with three reservoirs each. The advancement of the Sönsan region in the mid-fifteenth century is seen in the comparison of its reservoirs and irrigation areas with other prefectures. The average number of reservoirs and amount of irrigation per prefecture in Kyöngsang were 10.9 and 306.5 *kyöl*, with the watering area of a reservoir averaging at 20.1 *kyöl*. The number of reservoirs (thirty-seven) and the average irrigation area (69.07 *kyöl*) of a reservoir

Table 2. Locations of Reservoirs in Sönsan in the 1410s and 1460s

Locations		1410s Reservoirs	1460s Reservoirs (<i>kyöl</i>)	Number of Reservoirs (%)	Watering Area (%)	Average Watering Area/ Reservoir
Sönsan-üp (Sönsan Town)			Nammun (79.55) Sun (79.50) Taejodong (96.30) Chök (64.40) Kugok (75.30)	5 (13.5)	395.05 (15.5)	79.01
Sömyön (West Township)	Sindangp'ö		Tahang (60.25) Soböpkogwön (52.25)	5 (13.5)	306.02 (12.0)	62.20
	Murae		Ch'öndünp'yöng (83.30) Kop'yöng (45.12) Kümümsan (65.10)			
	Muül					
Tongmyön (East Township)	Toktong			7 (18.9)	411.40 (16.1)	58.77
	Chua		Yonghüng (44.20) Kadök (76.30) Wönhüng (98.40) Yong (9.05) Sin'gok (65.15) Pöphwa (63.10) Sungsan (55.20)			
	Sin'gok					
	Togae					
	Sannae					
Nammyön (Southern Township)	Mangjang			7 (18.9)	606.15 (23.7)	85.59
	P'yöngsöng	Hoji (240)	Hoje (280.45) Kugogae (84.30) Tasik (59.40)			
	Sanggumi		Kosop'yöng (5.10) Songni (58.25) Pusan (53.30) Tasong (65.35)			
	Hagumi					

(continued)

Table 2. Locations of Reservoirs in Sönsan in the 1410s and 1460s (continued)

Locations		1410s Reservoirs	1460s Reservoirs (<i>kyöl</i>)	Number of Reservoirs (%)	Watering Area (%)	Average Watering Area/ Reservoir	
Haep'yöng Township	Haep'yöng		Yönhwa (65.30)	13 (35.1)	837.00 (32.8)	64.38	
			Chap'o (63.05)				
			Kahang (74.10)				
			Hükjöng (57.20)				
			Torisan (59.60)				
		Mongdae					Chinja (69.60)
							Kudŭng (65.30)
							Hobaedong (62.40)
							Kamma (51.15)
		Pugunggok					Pugok (100.55)
							Kakpuk (63.25)
							Sin (45.55)
							Chaesöng (59.95)
		Total	Sanoe				
	1		37				

Sources: *Sejong sillok, chiriji*, "Sönsan Regional Military Command"; *Kyöngsang-do sokch'an chiriji*.

in the Sönsan region were 239.5 percent and 243.6 percent higher, respectively, than the average of other prefectures of Kyöngsang Province. Until the mid-fifteenth century, Sönsan officials energetically pushed for regional development and in so doing had the most advanced agricultural economy, when it came to rice farming, in Kyöngsang, itself the most advanced province of Chosön. It was the key administrative units such as Sönsan town, Haep'yöng sub-prefecture, and Sangnim Station area (Pugunggok), as well as the plain and hilly areas such as P'yöngsöng, Sin'gok, and Mongdae that assumed leading roles in the regional development of Sönsan. Regional development was driven by reservoir construction at that time. Given that reservoirs were constructed mostly in level plains and gentle hilly areas²⁸ and that counties and prefectures were located for the most part in such areas, the regional development of the early and mid-fifteenth century was also centered on such areas.

Construction of Diversion Weirs and the Expansion of Rice Farming

Around the mid- and late fifteenth century, Kyöngsang started to see changes in agricultural technology. One of them was the transplanting of rice seedlings, which was replacing broadcast seeding into irrigated rice fields or dry fields.²⁹ Remarkable improvement of irrigation facilities served as a key condition for the



Map 1. Locations of Reservoirs within Sönsan County.

Source: Chosŏn Ch'ongdokpu. *Kŭnse Han'guk omanbun chi il chihyŏngdo*. Vol. 1 (Original edition, 1915). Reprint, Söul: Kyöngin Munhwasa, 1982. Map revised by author.

development of the rice transplanting method. Transplanting of rice seedlings required far more water than the direct seeding of rice, for paddies needed to be flooded twice: once when seeding and again when transplanting. It was the diversion weirs, rather than reservoirs, that were linked with the spread of the transplanting method. Diversion weirs (川防) were used in small-scale valley streams, unlike the reservoirs that were established in level plains or gentle hills.³⁰

Nongsŏ chibyŏ confirms that the rice transplanting method had been developed in valley areas. In the 1410s when *Nongsŏ chibyŏ* was published, the plains and hilly areas around villages had been subject to development. With irrigation projects these areas developed into populous and growing regions while valley areas remained underdeveloped and less densely populated. The general perception that

the fields and mountain valley areas used for transplanting rice were inferior to the plain and hilly fields used for crop rotation or the *hoehwan* method had something to do with the trend of regional development at that time. Regional development during the 1420s was still confined to plain and hilly areas. For this reason, the rice transplanting fields must have been classified as the lowest, fifth grade, when the *Nongsachiksöl* (1429) was used as the agricultural manual. This method of transplanting had high risks including the loss of crops in the case of extremely long droughts, even if the fields could remain wet during brief dry spells. For this reason, rice transplanting was recognized as “too risky a method” to recommend to peasants at that time.

On the other hand, the long period of political and economic stability from the inauguration of Chosŏn Dynasty until the reigns of Kings Taejo and Sejong (1392–1450) allowed remarkable population growth.³¹ The growth of the population was a result of state-driven farming promotion policies pursued during the first fifty years of the dynasty. Accompanied by the growth in population, the development projects spread from the plains and gentle hills into the mountain valleys.³² The mountainous areas were the optimal places for the development of the rice transplanting method, in that they were the birthplace of the method and had favorable conditions to establish diversion weirs. As the mountainous regions began to be subject to development, and the values of the fields for rice transplanting rose greatly, even more diversion weirs were established.

Some people raised the issue of establishing diversion weirs as early as from the 1450s. Diversion weir projects became one of the two major types of irrigation projects, along with reservoir construction, during the reign of King Sejo (1455–1468). The irrigation projects gained further momentum during King Sŏngjong’s reign (1469–1494). Kim Chongjik, a noted bureaucrat-scholar from Sŏnsan, played a key role in promoting the project to build diversion weirs during King Sŏngjong’s reign. Kim called for more attention to the diversion weir projects during the royal lecture session in 1485 (the sixteenth year of King Sŏngjong), which he attended in his capacity as assistant director, by emphasizing that diversion weirs had greater advantages than reservoirs in effectiveness and convenience. After this occasion, King Sŏngjong started to pay greater attention to diversion weirs.³³

In Sŏnsan too, the construction of diversion weirs began in the mid- to late fifteenth century. Records on weir construction are found in *Ilŏn chi*, the gazetteer of Sŏnsan, published by Ch’oe Hyŏn (1563–1640) in the 1630s. Table 3 shows the state of diversion weirs constructed in the region.

According to table 3, Suhang Dam, built by Sŏnsan Magistrate Chŏng Kyŏngdal in P’yŏngsŏng, Southern Township in 1591, is the only weir whose construction year was confirmed. The other six weirs, whose construction years are not available, are presumed to have been built before the 1580s, a period about which Ch’oe Hyŏn and other figures close to him had little knowledge. Therefore, the six weirs, excluding Suhang Dam, were probably built in the 1450s to 1580s.

Of the six weirs built in the fifteenth and sixteenth centuries, two were located in Mongdae, Haep’yŏng Township, with the remaining four being located in Sŏnsan



Figure 4. Ugok Diversion Weir at Togae Township, 2010

town, Murae, and Muül in the Western Township, and Mangjang in the Southern Township. All of them were located in hilly areas along the Kamch’ön, Changch’ön, and Chukch’ön branch streams feeding into the Naktong River running through Sönsan (see map 2). The Tongsö, Murae, and Yenüng weirs were established at the point where the Kamch’ön River, which runs through Sönsan’s Western Township, and Sönsan Town where it joins the Naktong River. The Chukch’ön Weir was created at the point where the Chukch’ön Stream, originating from Sangju in the north, joins the Kamch’ön River. While the Yuwön and Sach’ang weirs were constructed at the point where the Changch’ön Stream, originating in Indong south of Haep’yöng in the southeastern region, joins the Naktong River. Of them, the gigantic Murae Dam at Murae village in the Western Township provided so much to residents that Ch’oe Hyön noted, “the residents got great benefits from the weir,” in his description of it. In contrast, the Tongsö Weir established in Sönsan Town was a smaller weir, which used to dry up during severe drought, because it tapped small Tongsö streams.³⁴ The remaining four are presumed to be medium-sized weirs.

The rice farming in Sönsan made further developments as new dams were established in addition to the existing reservoirs around the sixteenth century. The growth of rice agriculture in Sönsan in the sixteenth century can be obtained from the *Ilson chi* (1630s) which had records on representative farmlands of Sönsan. Table 4 details a list of farmlands in Sönsan.

Table 3. Diversion Weirs Constructed in Sönsan during the Late Fifteenth to Sixteenth Centuries

<i>Location</i>		<i>Weir</i>	<i>Irrigated Areas</i>	<i>Explanatory Notes</i>
Sönsan-ūp (Sönsan Town)	Yöngbong	Tongsö	Paddies and fields in town irrigated by eastern and western streams	It dries up when severe drought sets in.
Sömyön (West Township)	Murae	Murae	About four square kilometers of paddies and fields in Murae village irrigated by the Kamch'ön River	It benefits the residents of the prefecture.
	Muül	Chukch'ön	Muül area irrigated by Chukch'ön Stream	
Tongmyön (East Township)				
Nammyön (Southern Township)	Mangjang	Yenüng	Paddies and fields in Yenüng village irrigated by Kamch'ön River	The weir was built by Magistrate Chöng Kyöngdal in 1591, but ceased to exist after the Japanese Invasion of 1592.
	P'yöngsöng	Suhang	Kwansim field irrigated by Kamch'on River	
Haep'yöng Township	Mongdae	Yuwön	Yuwön and Chech'i field areas irrigated by Changch'ön Stream of Indong	
		Sach'ang	Paddies and fields in Puram, Mongdo, and Sach'ang irrigated by Changch'ön Stream	
Total		7		

Source: Ch'oe Hyön, *Ilson chi*, "Forest and Swamp Land," 7–8.

According to table 4, representative farmlands of Sönsan in the sixteenth century totaled twenty-one. Six farmlands—Konam, Tabang, Wönhüng, Sin'gok, Togae, and Wölp'a fields—were located in the Eastern Township and another six were located in Haep'yöng Township—Yönhwaje, Chin'gye-Amdong-Yidong, Hanae-Ryup'o-Süpp'o-Taegu, Chilgok, Ryuwön-Chech'i, and Puram-Mongdo-Sach'ang fields. Five were located in the Southern Township—Suhang, Ponggye, Yönhwaji, P'algyewön, and Kumi fields. Sönsan Town and the Western Township comprised two fields each, the Nugyo and Kongnyup'o fields and the Sagap

Table 4. Representative Farmlands of Sönsan in the Sixteenth Century

<i>Region</i>	<i>Farmland</i>	<i>Crops</i>	<i>Location</i>	<i>Explanatory Note</i>
Sönsan-üp (Sönsan Town)	Nugyo	Rice	In lower Nugyo region outside South Gate	Irrigated by Kamch'ön River and established on vast fertile field.
	Kongnyup'o	Barley, wheat	Located 3.9 km from South Gate	7.8 square km field from Kamch'ön River (south) to Naktong River (east); major farmland of townspeople.
Sömyön (West Township)	Sindangp'o	Rice, cotton	Hasong	
	Murae	rice, cotton	Murae	Murae Weir, using Kamch'ön River, irrigated four square km of paddies; major farmland of townspeople.
Tongmyön (East Township)	Muül	rice		
	Toktong	barley, wheat, foxtail millet, and millet	West of Wölp'ajin	
	Tabang	barley, wheat foxtail millet and millet		Located between Kongnyu to the south and Namsan to the north
	Chua Sin'gok	Barley, wheat	In front of Wönhüng village	
	Togae	Rice, barley and foxtail millet	Sin'gok village	It covered four square km from Sin'gok to the Naktong River in the west.
Sannae	Barley, wheat, and cotton	Togae village		
	Wölp'a	Rice, foxtail millet, barley, and cotton	Wölp'a village	

(continued)

Table 4. Representative Farmlands of Sŏnsan in the Sixteenth Century (continued)

<i>Region</i>	<i>Farmland</i>	<i>Crops</i>	<i>Location</i>	<i>Explanatory Note</i>
Nammyŏn (Southern Township)	Mangjang	Rice		The farmland of townspeople was irrigated by Kamch'ŏn River; the field turned into rice paddies after construction of Suhang Weir in 1591.
	P'yŏngsŏng	Rice	Kwansim	
	Suhang (Kwansim)			
	Ponggye	Barley, wheat	Ponggye	Kamch'ŏn River was in its north and Naktong River was in its east.
	Yŏnhwaji	Rice	P'yŏngsŏng	It was irrigated by the Hoji Reservoir and produced good harvests for residents.
	P'algyewŏn	Barley, wheat	South of P'yŏngsŏng	The vast field stretching scores of square kilometers under Yŏnhwaji field was major farmland of residents there.
	Sanggumi	Millet, cotton	In front of Kumi village	Dry land.
	Hagumi	Barley, wheat		
Haep'yŏng Township	Haep'yŏng	Rice	Haep'yŏng village	It covered about two–three square km of fields; it was watered by four reservoirs, but used to dry up during dry spells due to limited irrigation facilities.
	Chin'gye-		East of Haep'yŏng	
	Amdong- Yidong			

Hanae- Yup'ŏ- Sūpp'ŏ- Taegu Chilgok	Barley, wheat Rice	South of Haep'yōng Chilgok	A field of about six square km near Naktong River; it served as major farmland for the residents. Residents in the region under Munsu Reservoir took benefits from the irrigation.
Mongdae Chech'i	Rice	Yuwŏn	
Puram- Mongdo- Sach'ang	Rice	Puram-Sach'ang	
Pungngok Sanoc			
Total			21

Source: Ch'oe Hyŏn, *Isŏn ch'i*, "Farmland," 11-12.

Note: Names in bold refer to the representative farmlands of Sŏnsan.



Map 2. Farmland and Irrigation Facilities in Sönsan in the Sixteenth Century

Source: Chosön Ch'ongdokpu. *Künse Han'guk omanbun chi il chihyöngdo*. Vol. 1 (Original edition, 1915). Reprint, Söul: Kyöngin Munhwasa, 1982. Map revised by author.

and Murae fields, respectively. The Sönsan region had other smaller farmlands, but Ch'oe Hyön intentionally excluded them.³⁵ Map 2 indicates the locations of representative farmlands and irrigation facilities in Sönsan.

Of the twenty-one representative farmlands of Sönsan, Ch'oe Hyön put nine, which directly affected the livelihood of the residents there, in the category of major fields. They were Nugyo field and Kongnyup'o in Sönsan Town; Murae field in Murae in Western Township; Suhang field, Yönhwaji field and P'alg'yewön field in P'yöngsöng in Southern Township; Sin'gok field in Sin'gok in Eastern Township; and the Hanae-Ryup'o-Süpp'o-Taegu and Ch'ilgok fields in Haep'yöng Township. Of the nine, five were irrigated rice fields: Nugyo in Sönsan Town, Murae in the Western Township, Suhang and Yönhwaji in the Southern Town-

ship, and Chilgok in Haep'yŏng Township. Three were dry fields: Kongnyup'o in Sŏnsan town, P'algyewŏn in P'yŏngsŏng in the Southern Township, and Hanae-Taegu in Haep'yŏng Township, with the remaining Sin'gok field categorized as a rice-dry mixed field. The proportion of irrigated rice fields in the major farmlands differed little from that of dry fields.

The twelve mid-sized fields had similar proportions to that of irrigated rice fields. Five were rice fields: Sagap field in Sindangp'o (Western Township), Yŏnhwaje and Chin'gye-Amdong-Yidong fields in Haep'yŏng (Haep'yŏng Township), and Ryuwŏn-Chech'i and Puram-Mongdo-Sach'ang fields in Mongdae. Dry fields included the Tabang and Konam fields in Toktong in the Eastern Township, Wŏnhŭng field in Sin'gok, Togae field in Togae, Ponggye field in P'yŏngsŏng in Southern Township, and Kumi field in Sanggumi. One area where irrigated rice fields and dry fields coexisted was Wŏlp'a field in Sannae in the Eastern Township.

The proportion of irrigated riceland was similar to that of dry fields in Sŏnsan; with riceland occupying slightly greater areas. In the early fifteenth century, rice farming area amounted almost to 60 percent of the total arable land (9,170 *kyŏl*) in Sŏnsan.³⁶ However, rice cultivation in Sŏnsan had yet to gain absolute dominance over dry field farming in the late sixteenth century. Seemingly, the sudden decline of the agricultural economy of Sŏnsan in the sixteenth century after the remarkable growth in the fifteenth century is hard to understand. For a reasonable explanation, the following part of this article will more closely examine the stagnation of Sŏnsan's agricultural economy in the sixteenth century.

STAGNATION OF RICE FARMING AND THE DECLINE OF SŌNSAN IN THE SIXTEENTH AND SEVENTEENTH CENTURIES

Irrigation Factors

For proper operation as irrigation facilities, reservoir embankments and gates required constant dredging and repair. With the suspension of the farming promotion policy and worsened government exploitation of peasants in the sixteenth century, reservoirs across the state came to be abandoned. It was the same in the Sŏnsan region. The *Ilŏn chi* contains records from about thirty-eight reservoirs, which means that only one additional reservoir was built in 160 years. However, these reservoirs were mere "paper reservoirs" existing only in the documents of local governments. By the early seventeenth century, those reservoirs which were operating normally numbered just seventeen. The other twenty-one reservoirs, 55.6 percent of the total, halted their operations due to the suspension of the water supply and their reclamation as rainfall farmland.

In the absence of a central government farming promotion policy, the local government and people in the provincial region had to bear the whole burden of

establishing irrigation facilities, which led to poor irrigation project results. In Sönsan, which was one of the most advanced agricultural regions in the fifteenth century, only six diversion weirs were built, too few to make up for the lack of reservoirs. Table 5 shows the locations and functions of the reservoirs and diversion weirs which were in operation until the late sixteenth century. Map 3 shows the locations of the reservoirs and diversion weirs in each Sönsan Township during the sixteenth century in accordance with table 5.

As seen in map 3, among the seventeen sites in Sönsan, reservoirs were in normal operation only in eight towns and villages (Sönsan Town, Sindang, Muül, Sin'gok, P'yöngsöng, Haep'yöng, Mongdae, and Pugunggok). Diversion weirs were also established in only five locations (Sönsan Town, Murae, Muül, Mangjang, and Mongdae). While some locations such as Sönsan Town, Sin'gok, Haep'yöng, and Mongdae had three to four reservoirs or diversion weirs, the locations which had no irrigation facility numbered seven (Toktong, Chua, Togae, Sannae, Mangjang, Sanggumi, Hagumi, and Sanoe) indicating the extreme regional gap in irrigation infrastructure.

The five locations with several irrigation facilities (Sönsan Town, Murae, Muül, Mangjang, and Mongdae) are presumed to have had irrigated rice fields. The areas with greater irrigation facilities such as Hoji Reservoir (in P'yöngsöng), Sin'gok Reservoir (in Sin'gok, Eastern Township), Munsu Reservoir (in Mongdae, Haep'yöng Township), and Murae Dam (in Murae, Western Township) are also presumed to have had irrigated rice fields. About the irrigation facilities in the four regions, Ch'oe Hyön notes, "The people around the reservoir were living in affluence with the benefits from irrigation" (referring to Hoji Reservoir), "The people below the reservoir received great benefits from irrigation" (referring to Sin'gok Reservoir and Munsu Reservoir), "Townsppeople heavily relied upon diversion weirs" (Murae Dam).³⁷ Given the fact that diversion weirs were the irrigation facilities used for rice transplanting, Muül, which had a diversion weir, Chukch'ön Dam, and Mangjang, which had Yenüng Dam, are presumed to have been irrigated rice fields.

Judging by the existence of irrigation facilities, irrigated rice fields were probably in eight locations: five in the area with reservoirs and diversion weirs (Sönsan Town, Sin'gok, Muül, Mongdae, and Haep'yöng), and three in the areas with a larger reservoir (P'yöngsöng) or with diversion weirs (Murae and Mangjang). The other seven locations did not have any irrigation facilities (Toktong, Chua, Togae, Sannae, Mangjang, Sanggumi, Hagumi, and Sanoe) and must have had dry fields only. Sindangp'o and Pugunggok locations are presumed to have the farmlands where irrigated rice fields and dry fields coexisted, due to the lesser capacity for irrigation there. Given the number of irrigation facilities, rice fields are estimated to have slightly outnumbered dry fields in Sönsan.

Farming methods at the twenty-one representative farmlands of Sönsan, recorded in the *Ilson chi*, are presented in table 4. Table 4 shows the close relationship between rice farming methods and irrigation facilities, with 60 percent

Table 5. Locations and Functions of Reservoirs and Diversion Weirs in the Mid- and Late Sixteenth Century

<i>Locations</i>	<i>Reservoirs</i>	<i>Diversion Weirs</i>	<i>Total</i>	<i>Explanatory Notes</i>	
Sŏnsan-ŭp (Sŏnsan Town)		Sun, Chŏk, Kugok	Tongsŏ	4	
	Sindangp'o Murae	Tahang	Murae	1	Murae Weir: As the major irrigation facility in Murae village, it supplied water to fields of about four square km.
Tongmyŏn (East Township)	Murae			1	
	Muŭl	Uggok	Chukch'ŏn	2	
	Toktong Chua				
Sin'gok		Wŏnhŭng, Sin'gok , Tae		3	Sin'gok Reservoir: Located in Sin'gok village, it supplied water to about one square km of farmland below the irrigation facility.
	Togae				
	Sannae				
	Mangjang		Yenŭng	1	
Namyŏn (Southern Township)		Hoji		1	Hoji Reservoir: Located in the east P'yŏngsŏng village, it supplied water to 1.1 square km of farmland, benefiting the residents in the precinct.
	P'yŏngsŏng				
Haep'yŏng Township	Sanggumi				
	Hagumi				
	Haep'yŏng	Yŏnhwa, Kamang, Pingmŭng		3	
	Mongdae	Chinjak, Mongdo, Munsu	Yuwŏn Sach'ang	5	Munsu Reservoir: Located in the east of Chilgok, it supplied water to the residents in the lower region of the irrigation facility.
	Pugunggok Sanoc	Pugok, Sangnim		2	
Total	17	6	23		

Source: Ch'oe Hyŏn, *Ilson chi*, "Forest and Swamp Land," 7-8.

Note: Names in bold indicate the largest irrigation facilities in Sŏnsan.



Map 3. Locations of Reservoirs and Diversion Weirs within Each Township in Sönsan in the Sixteenth Century

Source: Chosön Ch'ongdokpu. *Künse Han'guk omanbun chi il chihyöngdo*. Vol. 1 (Original edition, 1915). Reprint, Söul: Kyöngin Munhwasa, 1982. Map revised by author.

(six farmlands out of ten sub-townships) revealing connections between rice farming methods and irrigation facilities (Sönsan Town, Muül, P'yöngsöng, Sin'gok, Haep'yöng, and Mongdae). This fact indicates that the lesser capacity of irrigation facilities stood in the way of the expansion of rice farming in Sönsan. The state-driven farming promotion policy in the fifteenth century came to an end in the reign of Söngjong. In addition, reservoirs built previously remained abandoned in most regions during the sixteenth century. The dismal farming conditions in Sönsan are well documented by the decrease in reservoirs there—from thirty-seven in the fifteenth century to seventeen in the early seventeenth century, a reduction of 54 percent. Diversion weirs, the alternative to reservoirs, numbered just six in Sönsan during this period. These facts explain the reason why Sönsan's rice farming began to stagnate after the remarkable growth during the early Chosön period.

Geographical Factors

Except for several mountains in Sönsan over 600 meters above the sea level, such as Mt. Kūmo (south of Sönsan, 977 meters), Mt. Ch'öngghwa (east of Sönsan, 701 meters), Mt. Naengsan (east of Sönsan, 692 meters), and Mt. Susön (west of Sönsan, 684 meters), most regions of Sönsan consist of plains, crisscrossed by the Naktong River and its tributaries (Kamch'ön, Changch'ön, Chukch'ön, and Ulchuch'ön). The geographic characteristics of Sönsan strike a contrast with its nearby basin region, Taegu, which is surrounded by tall mountains towering 1,000 meters above sea level. In Taegu, which is divided into riverside valleys around streams, mountainous regions, and a third region with both characteristics, farmland and villages took different shapes in accordance with their location in the three regions.³⁸

The prefectures and counties on plains around the larger rivers were called *yaüp* (野邑) or field county, meaning that they were located in field areas. In contrast, the prefectures and counties in mountainous areas were called *sanüp* (山邑), mountain county.³⁹ A region which had both fields and mountains, such as Taegu, might have been called a "mountain and field mixed region." According to this kind of geographical characterization, Sönsan was a typical field county, whose territory was comprised of flat areas around rivers and streams, gentle hilly regions in the lower areas, mountains, and mountain valley regions. The bottomland near streams suffered chronic inundation; the land above the bottomlands, and that skirting the mountains consisted of rolling hills; the mountains were pierced by small-scale river valleys. A closer look into the twenty-one major fields of Sönsan shows that irrigated rice fields were located mostly in rolling hills or mountain valleys, while dry fields were found, for the most part, in bottomlands as well as rolling hills adjacent to bottomlands. Farming methods differed in accordance with the locations of the farmlands. Irrigated rice fields in the hilly regions included: Nugyo field (Sönsan Town), Sagap field (Sindangp'o), Murae field (Murae), Sin'gok field (Sin'gok), Suhang field (P'yöngsöng), Yönhwaje field (Haep'yöng), and Chilgok field (Chilgok). Irrigated rice fields in mountain valley areas included: Yönhwaji (P'yöngsöng), Chin'gye-Yidong field (Haep'yöng), and Ryuwön-Chech'i and Puram-Sach'ang fields (Mongdae). The hilly and mountain valley areas had an advantage in establishing diversion weirs: Tongsö Weir (Nugyo field), Suhang Weir (Suhang field), Ryuwön Weir (Ryuwön-Chech'i field), and Sach'ang Weir (Puram-Sach'ang field) are a few examples.

The rice fields lacking diversion weirs were Sagap field (Sindangp'o), Sin'gok field (Sin'gok), Yönhwaji field (P'yöngsöng), Yönhwaje field (Haep'yöng), Chin'gye-Yidong field (Haep'yöng), and Chilgok field (Mongdae). However, some of these fields had reservoirs: Sin'gok field (Sin'gok Reservoir), Yönhwaji field (Hoji Reservoir), and Chilgok field (Munsu Reservoir). These larger reservoirs served more as diversion weirs than reservoirs, in that they were using the water brought down from valley streams. The development of rice farming in

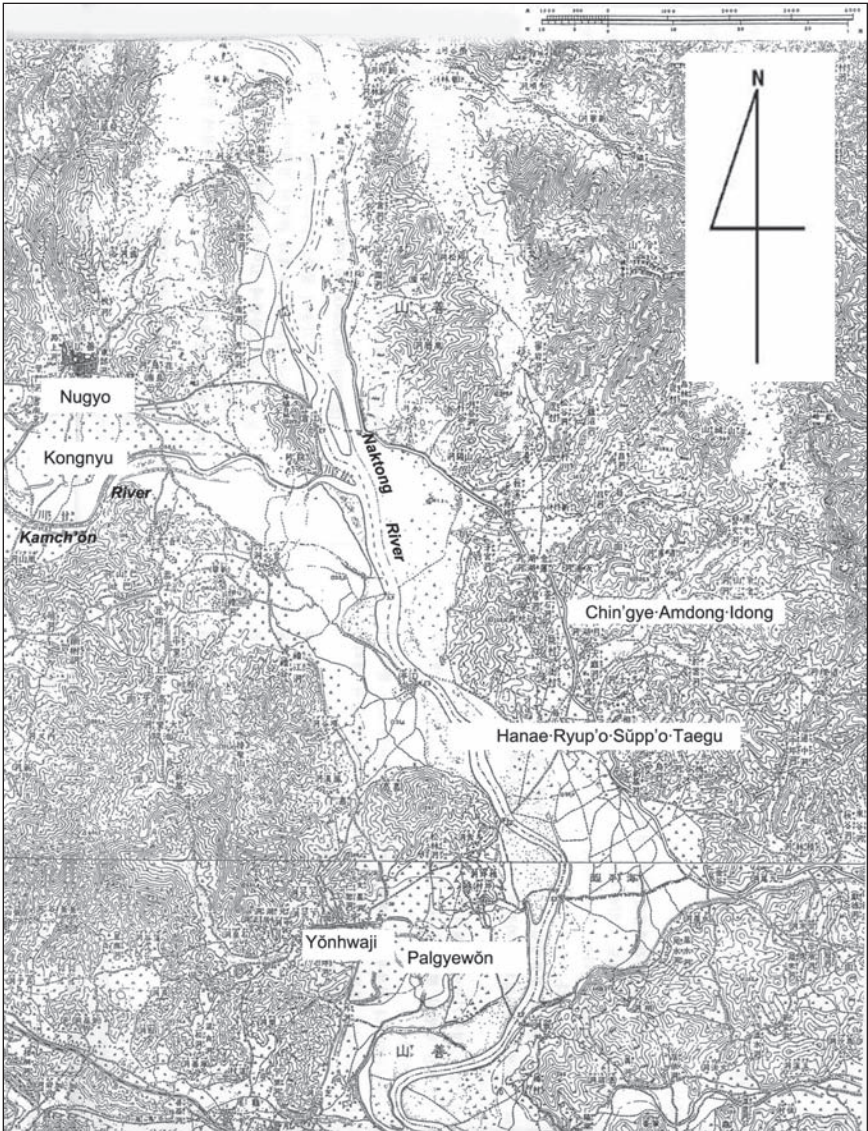
hilly regions around mountains or mountain valley areas is due to the fact that it is easier to establish larger reservoirs and diversion weirs in those areas.

In contrast, dry fields were mostly located in flatland regions around streams: Kongnyup'o (Sönsan Town), Tabang and Konam fields (Toktong), Wönhüŋ field (Sin'gok), Togae field (Togae), Ponggye and P'algyewöŋ fields (P'yöngsöŋ), Kumi field (Sanggumi), and Hanae-Taegu field (Haep'yöŋ). The six farmlands in Kongnyup'o, the Tabang, Konam, Ponggye, P'algyewöŋ, and Hanae-Taegu fields, were located in the low-lying region around the shores of the Naktong River. Wönhüŋ field (Sin'gok), Togae field (Togae), and Kumi field (Sanggumi) were located in the lower regions of hilly areas. These fields had the common feature of having no irrigation facilities. Most of the farmlands in bottomlands had no irrigation facilities, and even if they did, these facilities became obsolete later (i.e., Togae, Ponggye, and Hanae-Taegu fields). The only exception was the Wönhüŋ field which had two reservoirs.

Among the farmlands of Sönsan in the sixteenth century, those closer to streams were mostly dry fields, and those in the higher region mostly rice fields. The farmlands around streams were called *p'ojön* (浦田), or "riverside fields." These riverside fields, located around the Naktong River and its streams, stretched about 60–70 *li* (20–30 kilometers), encompassing Kongnyup'o in Sönsan Town, Konam and Togae fields in the Eastern Township, Ponggye field in the Southern Township, and Hanae field in Haep'yöŋ Township. As Ch'oe Hyön mentioned in the seventeenth century, these riverside fields were bottomland vulnerable to inundation⁴⁰ and prone to erosion during flooding, thus they remained barren. These conditions limited bottomland to dry field crops such as barley, wheat, and millet.⁴¹

In contrast, the farmland in higher regions that was free from flooding was turned into riceland that had fertile soil because it was easier to establish diversion weirs or even larger reservoirs in this kind of land. The rice farming in Sönsan could progress thanks to such geographical and irrigation conditions. Even in a single area, farming methods differed, according to land elevation, with "dry field farming settling on the bottomlands and irrigated rice farming on the more elevated lands." Map 4 shows the farming methods used in different regions of Sönsan.

A comparison of table 4 and maps 2 and 4 shows that farming methods in the same region differed by elevation. The farmlands in Sönsan were classified as follows: Nugyo (irrigated rice paddy) and Kongnyup'o (dry field) of Sönsan Town, Yönhwaji (irrigated rice paddy) and P'algyewöŋ (dry field) of P'yöngsöŋ, and the Chin'gye-Yidong (irrigated rice paddy) and Hanae-Taegu fields (dry field) of Haep'yöŋ. The Nugyo, Yönhwaji, and Chin'gye-Yidong fields were located in hilly regions, irrigated by diversion weirs (Tongsö Weir) or larger reservoirs (Hoji Reservoir and Kamang Reservoir) and became wet riceland. In contrast, riverside fields in the low-lying region near Naktong River such as the Kongnyup'o, P'algyewöŋ, and Hanae-Taegu fields remained rainfall fields due to barren soil and lack of irrigation facilities.



Map 4. Regional Differences in Farming Methods

Source: Chosŏn Ch'ongdokpu. *Kŭnse Han'guk omanbun chi il chihyŏngdo*. Vol. 1 (Original edition, 1915). Reprint, Sŏul: Kyŏngin Munhwasa, 1982. Map revised by author.

As mentioned above, Sŏnsan experienced a decline of its irrigation facilities in the sixteenth century. This was due to the geographical traits of Sŏnsan and its being a “field county” located around major rivers and streams such as the Naktong and Kamch'ŏn rivers and Changch'ŏn Stream. Ten of the twenty-one representative



Figure 5. The Views of Yŏnhwaji and P’algewŏn Fields from Hoji Reservoir, 2009

farmlands of Sŏnsan were on waterlogged fields in the bottomland around streams. Of the farmlands on riverside fields, Kongnyup’o, P’algewŏn, and Hanae-Taegu fields were the largest ones; residents relied heavily on these fields for their livelihoods. However, these farmlands suffered flooding and soil erosion during the rainy season. These conditions caused poor soil quality, thus the fields remained barren. Against that background, riverside fields were confined to raising barley, wheat, and millet. The geographical condition of Sŏnsan as a typical “*yaŭp*,” or field county, was the fundamental factor that drove the most advanced agricultural region of the fifteenth century into stagnation after the sixteenth century.⁴²

According to the *Yŏjidosŏ*, (Illustrated geography), published in 1765, the arable land of Sŏnsan totaled 8,898 *kyŏl*, with irrigated rice paddies covering 3,570 *kyŏl* (40.1 percent) and dry fields 5,328 *kyŏl* (59.5 percent).⁴³ The rice field to dry field ratio, which was 60:40 in *Sejong sillok, chiriji* (1432) (The veritable records of King Sejong, geography), showed to an exact reversal of the rice field to dry field ratio in Sŏnsan 230 years later. As opposed to the spread of paddy farming, depending on rice transplanting method, across the country from the seventeenth century, except for a few mountainous regions in Hamgyŏng Province and Kangwŏn Province, Sŏnsan’s rice farming was in utter stagnation at that time. The decline of Sŏnsan’s agricultural economy was inevitable, in spite of its remarkable growth in the fifteenth and sixteenth centuries, considering the county’s geographical and irrigation designation as a *yaŭp*.

Politico-Economic Factors

The sixteenth century was a dismal period of the Chosŏn Dynasty, a time ridden with corrupt politics under the rule of inept and greedy monarchs (Kings Yŏnsan, Chungjong, and Myŏngjong), power abuse of meritorious elites (勳舊派) collaborating with the royal family, paralysis of the state finance system, and a rise in corruption. Almost all regions of the state, except for Seoul, the capital of the Chosŏn Dynasty and the base of the central power group, suffered from extreme socio-economic difficulties. Sŏnsan, agriculturally the most advanced region, in particular suffered crucial setbacks, beginning in the early sixteenth century.⁴⁴ One of the most notable features involving the dissipation of the peasant economy of Sŏnsan is the corruption of its magistrates. Nam Kyŏng served as magistrate of Sŏnsan. Nam was called one of the “three most corrupt magistrates in the Kyŏngsang region” in 1504.⁴⁵ His vicious acts and corruption were so notorious that he was cited after the restoration of King Chungjong (1506) as the worst of King Yŏnsan’s twenty-nine officials.

The scars left by the tyranny of King Yŏnsan had not healed even after the restoration of King Chungjong. King Chungjong’s attitude toward pushing forward reform measures was lukewarm. The bureaucrats praised the merit of bringing Chungjong (r. 1506–1544) to the throne while the royal family amassed wealth by continuing the evil deeds and ill-practices prevalent during the reign of King Yŏnsan.⁴⁶ Amid that political situation, local magistrates appointed after the restoration of King Chungjong were no better than their predecessors. A representative case of corruption at that time was that of Yi Wan, who had been appointed as magistrate of Sŏnsan after the restoration and called the most corrupt official in Kyŏngsang. As corrupt magistrates took turns taking office in Sŏnsan, the region’s economic condition continued to decline and was devastated in the early decades of the sixteenth century. Sŏnsan suffered such great damage under the rule of corrupt officials that Sŏnsan, along with Imbi in Chŏlla Province, Hongch’ŏn in Kangwŏn Province, and Samhwa in P’yŏngan Province, was subject to a government fact-finding inquiry in 1509.

Throughout the sixteenth century, there were only three magistrates of Sŏnsan who were given citations for excellent service: Ŏ Yŏngjin (1542), Song Sun (1555) and Song Kich’ung (1566). Other meritorious officials recorded in *Ilson chi* also only numbered three: Yu Hŭich’ŏl, Pak Ch’an, and Yi Hŭigŏn. For the entire sixteenth century, the number of officials judged to have contributed to Sŏnsan’s economy and social stability totaled six at the very most.

Until the fifteenth century, Sŏnsan was one of the most advanced counties, emulating Sangju and Sŏngju, and led sixty-six counties and prefectures in Kyŏngsang Province.⁴⁷ However, Sŏnsan started to go downhill from the sixteenth century amid the consequences of the entanglements of politico-economic factors with the geographical and irrigation conditions. The regional economic recession and social instability drove people to the extreme. Although the literati faction (士

林派) from Sönsan engaged in various reform movements during the sixteenth century, their reform campaign faced serious obstacles, as the royal family collaboration with meritorious elites after the restoration of King Chungjong stood in the way. Many of those pushing for reforms fell victim to political purges.

During the seventy years comprising the reigns of Yönsan to Myöngjong (1494–1567), the “literati purge period” (士禍期), many from Sönsan were subject to political crackdowns. Several were subject to extreme suffering, with Kim Chongjik, Kim Sik, Kang Paekchin, Kim Koengp’il, and Kang Yusön put to death; Chöng Pung, Song Hüigyu and Kim Chinjong sent into exile; and Pak Yöng and Kim Ch’wimun demoted to local posts. Ironically, Sönsan, which emerged as the most advanced agricultural county and home to the Neo-Confucian literati in the fifteenth century, started to undergo greater ordeals in the sixteenth century, due to its advancement.

There are various explanations for the sudden decline of Sönsan, the “Confucian Mecca of Chöson,” a county which produced four of the eight most respected Neo-Confucian scholars (Kil Chae, Kim Sukcha, Kim Chongjik, and Kim Koengp’il). Yi Chunghwan, who praised Sönsan in his notable book, *T’aengnji* (1751) (Guide to selecting a village), explained in geomantic terms the decline of the region as follows:

In the year of 1592, when the military forces of Ming Dynasty of China passed through the region, a Chinese fortune teller had the Chinese soldiers cut the vein of the mountain of Sönsan and cauterize the region with the purpose of stemming the region from producing outstanding persons. He also had them ram a stake into the ground to clamp down on the energy of the region. After this incident, Sönsan produced no more distinguished persons.⁴⁸

Although Yi’s interpretation of the decline of Sönsan seems far-fetched, the judgment that Sönsan’s decline, starting with the Japanese invasion of 1592, became evident in the seventeenth century deserves attention.

Aside from such explanations, it might be more reasonable to view the decline of Sönsan as starting from the early sixteenth century due to the suspension of the state-driven farming promotion policy, exploitation of peasants by the powers that be, geographical factors unfavorable for rice farming—especially transplanting of rice seedling—abandonment of irrigation facilities, and social instability. Sönsan’s decline came to be irrevocably evident in the mid- and late sixteenth century. As a result, Sönsan began to lose its fame as the “Confucian Mecca” and its engine of economic growth ceased to operate.

CONCLUSION

This article has focused on mapping out Sönsan, a county located in Kyöngsang Province of Korea, and the pattern of its regional development through studying the development of rice farming during the Chosön Dynasty.

Since the reign of King T'aejong (1401–1418) the farming promotion policy was implemented on a full-scale level. The policy continued through the reign of King Sǒngjong (1469–1494) in the late fifteenth century and produced remarkable achievements. They included the expansion of reservoirs, production of water mills, construction of diversion weirs, nationwide distribution of rice farming know-how, and the publication of agricultural guidebooks and statistical records. The state-driven farming promotion policy, which proceeded for over a century, led to socio-economic achievements such as the remarkable growth of the agricultural economy, social stability, and an increase in population.

It was the Sǒnsan region in Kyǒngsang, the object of analysis in this research, which produced the most remarkable achievements during the fifteenth century. The achievements of Sǒnsan are as follows: The ratio of rice fields against the cultivated area stood over 60 percent in the early fifteenth century, the highest level even in the agriculturally advanced Kyǒngsang region. The number of reservoirs built by the late fifteenth century amounted to threefold that of the average in Kyǒngsang Province.

The regional development in Sǒnsan during the fifteenth century was focused on major administrative units such as Sǒnsan Town, Haep'yǒng Township, and Sangnim Station. The regional development campaign spread to Sin'gok, P'yǒngsǒng, Hagumi, and Mongdae where they had been cultivated by the local elites since the late thirteenth century. These villages had the common feature of being located in plain and hilly areas. Major reservoirs established by the late fifteenth century were similarly located in hilly and plain areas. The regional development of Taegu was not that different from that of Sǒnsan, thus indicating that the regional development project in the fifteenth century was focused on the exploration of plain and hilly areas around major towns. These villages were homes to the talented literati of Sǒnsan in the fifteenth century.

Farmers in Sǒnsan were already experimenting with transplanting rice seedlings from the mid- to late fifteenth century. With the development of the rice transplanting method, diversion weirs became popular as new irrigation facilities and began replacing reservoirs. Diversion weirs used valley streams in mountainous regions to facilitate irrigation. For this reason, development at that time showed the trend of expanding to the mountains and valleys where it was possible to establish diversion weirs. Sǒnsan, too, started to see construction of diversion weirs amid the trend. The diversion weirs in Sǒnsan were also located in hilly or valley areas such as P'yǒngsǒng, Sin'gok, and Chilgok. These areas had advantageous conditions in common and could easily hold the streams from Kamch'ǒn, Changch'ǒn, and Chukch'ǒn, tributaries of the Naktong River, and use them as agricultural water.

There were twenty-one major farmlands in Sǒnsan around the sixteenth century. These farmlands were divided into irrigated riceland and rainfall fields depending on their geographical location. While irrigated rice fields were in the mountainous and valley areas, dry fields were located in rolling hills or in bottomland. Hill or

valley sites around mountains were the regions where it was possible to engage in rice farming with the aid of larger reservoirs or diversion weirs. The low-lying locations which were near streams without irrigation facilities, or those that had smaller reservoirs with lesser irrigation capacity turned into dry fields to raise barley, wheat, and millet. The riverside fields near streams suffered flood damage during the rainy season and remained barren due to frequent soil erosion.

The socio-economic growth of Sōnsan, a model county in the fifteenth century, could not last long, as the local economy of the region plunged into recession in the sixteenth century. Sōnsan's recession had two causes. The first was the region's geographical characteristic as a *yaŭp* (field county), with the Naktong River running through the plains. Given that dry fields mostly lied in the low-lying areas around streams or hilly areas in the lower region, Sōnsan is presumed to have had a greater proportion of dry fields. For this reason, rice productivity in Sōnsan could not outgrow the yields of dry fields until the early seventeenth century. Sōnsan's falling behind other regions in regional development since the sixteenth century is ascribed to the fact that Sōnsan had to rely on dry field farming due to its geographical characteristics, while rice farming was settling in as the major farming method in other mountainous areas.

Another cause of Sōnsan's recession was the total disarray in the politico-economic system, which began during the sixteenth century. As is known well, it started with the tyranny of King Yōnsan. Throughout the sixteenth century, the tyrant dealt heavy blows to the state by abandoning the farming promotion policy, permitting exploitation of the public sector by the powers that be, dismantling the corvée labor system, and loosening social discipline. Sōnsan, which had the most advanced agricultural economy in the fifteenth century, was no exception and suffered the downfall of its economy amid the political disarray.

However, all of the counties in Kyōngsang did not meet the same fate that Sōnsan did. Though Sōnsan suffered socio-economic decline in its failure to overcome the limitations of its geographical and irrigation conditions, other mountain-field, mixed counties and *sanŭp*, mountain counties, continued to grow even after the seventeenth century. One such example is Yean (禮安) in the north of Kyōngsang Province. Yean was just a small mountain county, surrounded by the steep T'aebaek and Sobaek mountains. It emerged as a literati town after the great Neo-Confucian scholar Yi Hwang (1501–1570) grew up in the county in the mid-sixteenth century. The remarkable growth of Yean was thanks to its geographical and irrigation conditions favorable for establishing diversion weirs and implementing rice transplanting.

Since the seventeenth century, Kyōngsang saw the growth of *sanŭp* and decline of *yaŭp* amid the development of intensive farming methods to implement rice transplanting and to raise two crops, rice and barley, in a year. In this respect, the development of Kyōngsang contrasts with China in the Yangzi Delta, where development extended to include low-lying regions and the Kansai region of Japan, which spread intensive farming from the plains around castle towns (*jōkamachi*)

to mountainous areas. These different patterns of development related to the differences in climatic and geographical conditions of the three East Asian countries. The decline of low-lying fields and the continued growth of mountainous areas in Kyōngsang from the sixteenth century was the result of a unique Kyōngsang pattern of regional development. Meanwhile, the Kyōngsang pattern of development produced such adverse effects as forest denudation, called “red mountains” in the nineteenth century, the rise of riverbeds due to the increase of erosion, frequent flooding, and landslides.⁴⁹

NOTES

This research was made possible by a grant in 2009 from Tongil Changhak Chaedan (Tongil Cultural Scholarship Foundation). My special thanks go to Professor Clark W. Sorensen and two other reviewers of my article, whose detailed and earnest advice played a crucial role in revising and improving the original version. However, I acknowledge that I am solely and entirely accountable for the content of my article.

1. Yi T’aejin, *Chosŏn sahoesa yŏn’gu* [Research on Chosŏn’s social history] (Sŏul: Chisik Sanŏpsa, 1987), 223–33; Yi T’aejin, *Ŭisul kwa in’gu kŭrigo nongŏp kisul* [Medical practices, population and agricultural technologies] (Sŏul: T’aehaksa, 2002), 196–200.

2. Yi Hoch’ŏl, “Chosŏn chŏn’gi nongŏp kisullon ũi chae kŏmt’o” [A re-examination of the views on agricultural technologies in the early Chosŏn period], *Yŏksa pip’yŏng* 61 (2002): 52–58; Yi Sugŏn, “Komunsŏ rŭl t’onghae pon Chosŏnjo sahoesa ũi il yŏn’gu” [A research of social history in Chosŏn Dynasty based on old documents], *Han’guk sahak* 9 (1992): 30–40.

3. Yi T’aejin, *Ŭisul kwa in’gu*, 199–200; Yi Sugŏn, “Chosŏnjo sahoesa ũi il yŏn’gu,” 30–40; Kim Sŏngu, “Chosŏn sidae Kyōngsang-do Taegu ũi chiyŏk kaebal kwa nongŏp kujo ũi chaep’yŏn” [Regional development and agricultural restructuring in Taegu, Kyōngsang Province in the Chosŏn Dynasty], *Taedong munhwa yŏn’gu* 59 (2007): 336–41.

4. Chŏng Ch’ŏrung, trans., *Chungguk ũi in’gu* (Sŏul: Ch’aeksesang, 1994), 207–90; Yi, Ch’un-sik et al., trans., *Chungguk yŏksa ũi palchŏn hyŏngt’ae* (Sŏul: Sinsŏwŏn, 1989), 111–30.

5. Yi Hwasŭng, trans., *Chungguk kyŏngjesa yŏn’gu ũi saeroun mosaek* (Sŏul: Ch’aeksesang, 2006), 158–88.

6. O Kŭmsŏng, “Nongŏp ũi palchŏn kwa Myŏng-Ch’ŏng sahoe” [Agricultural development and Ming-Qing Society], in *Kukka wa sahoe kwanhaeng* [The state and social practices in Ming and Qing dynasties] (Sŏul: Chisik Sanŏpsa, 2007), 94–98.

7. Cho Sŏngwŏn and Chŏng An’gi, trans., *Kŭnse Ilbon ũi kyŏngje palchŏn kwa kŭnmyŏn hyŏngmyŏng* (Sŏul: Hyeon, 2006), 85.

8. This phrase literally means, “The Land of Zhou and Lu.” Zhou was the state in which Mencius was born, and Lu the state in which Confucius was born. Hence, with poetic license, the “Confucian Mecca.”

9. Yi Chunghwan (1690–1756), Yi Iksŏng, trans., *T’aengniji* [Guide to selecting a village], “Paldo chongnon” [Introduction to the eight provinces], “Kyōngsang-do” (Sŏul: Ŭryu Munhwasa, 1993), 65.

10. Kim Yongsöp, “Chosön ch’ogi ūi kwönnong chöngch’aek” [Farming promotion policy in early Chosön period], *Tongbang hakchi* 42 (1984): 108–13; Yi T’aejin, “15-segi ūi suri chöngch’aek kwa suri sisöl” [Irrigation policies and facilities of the fifteenth century], in *Üisul kwa in’gu* (2002), 201–26.

11. *Sejong sillok*, 25/11/2. King Sejong issued an edict that stated in part, “. . . As for rice farming, three southern provinces [Kyöngsang, Chölla, and Ch’ungch’öng] have the most fertile lands, followed by Kyönggi and Hwanghae Provinces, with Kangwön, Hamgyöng, and P’yöngan Provinces having the most barren soil. When it comes to dry fields, the eight provinces have similar fertility. However, dry fields lag far behind rice fields in productivity . . .”

12. Yi T’aejin, “15-segi ūi suri chöngch’aek,” 196–97; Yi Chongbong, “Koryö sigi sujön nongöp ūi paldal kwa iangböp” [Development of rice farming and method of transplanting rice seedling in Koryö Dynasty], *Han’guk munhwa yön’gu* 6 (1993): 182–86.

13. Yi Chong-bong, “Koryö kakpon *Wönjo chöngbon Nongsang chibyö* ūi Han’guk nonghak sasang esö ūi wich’i” [The significance of *Wönjo Chungbon Nongsang chibyö* as a Korean agricultural discourse], *Pusan sahak* 21 (1991): 15.

14. Yi Söngjae, “*Nongsö chibyö* ūi idu” [Idu transcription in *Nongsö chibyö*], *Chindan hakpo* 74 (1992): 177–80; O Int’aek, “*Nongsö chibyö* rül t’onghaesö pon Chosön ch’ogi ūi kyöngjongböp” [Agricultural methods of the early Chosön Dynasty from the perspective of *Nongsö chibyö*], *Chiyök kwa yöksa* 5 (1999): 115–16.

15. The explanations of agricultural technologies in the early Chosön period in the following part were based on Kim Söngu, “15–16 Segi sujön nongöp ūi paldal kwa Kyöngsang-do ūi wisang” [Development of rice farming in the fifteenth to sixteenth centuries and the status of Kyöngsang Province], *Taegu sahak* 89 (2007): 129–48.

16. Yi Söngjae, “*Nongsö chibyö* ūi idu,” *Chindan hakpo* 74 (1992): 189–90. “The farmland adjacent to a water source should be used as a wet field and a dry field every other year. If the soil maintains constant quality, rice should be raised every other year by the *hoehwan* method.”

17. Kim Yongsöp, “*Nongsö chibyö* ūi nongöp kisol” [Agricultural technologies in *Nongsö chibyö*], in *Chosön hugi nonghaksa yön’gu* [Study of agricultural history in the late Chosön Dynasty] (Söul: Ilchogak, 1988), 21–28; Yi Hoch’öl, “*Nongsö chibyö* ūi nongböp kwa kü yöksajök sönggyök” [Agricultural methods in *Nongsö chibyö* and its historical characteristics], *Kyöngje sahak* 14 (1990): 19–22.

18. Chi Yongnin et al., “Sudo ūi t’üksu chaebae” [Special cultivation on rice farming], in *Sudojak* [Rice cultivation] (Söul: Hyangmunsa, 1958), 326–31.

19. Yi Söngjae, “*Nongsö chibyö* ūi idu,” 189–90. “Valley areas around mountains without reservoirs are not adequate for securing rice fields as those areas have smaller farmlands remaining fallow. . . . When transplanting rice seedlings into other paddies, it is important to consider optimum density of rice plants. The weedy fields which are not adequate for ‘crop rotation’ might be also used for transplanting rice seedlings, as they require smaller workforce for weeding.”

20. Yi Hoch’öl, “*Nongsö chibyö* ūi nongböp,” 20–22.

21. *Sejong sillok*, 19/2/9. The price ratio of beans to rice was 1:2 at that time.

22. *Sejong sillok*, 12/8/10. Compared with 10 *tu* (2.57 bushels) per 1 *turakchi* or *majigi* (0.6 hectare) of rice fields in the seaside regions in Kyöngsang and Chölla, the productivity of the mountainous regions in Kyönggi and Kangwön remained at about 5–6 *tu*.

The productivity of rice fields per *kyöl* (結; 0.9–7.3 hectare) in the seaside regions of Kyöngsang and Chölla was 50–60 *sök* (212.1 bushels) in the highest level and 20–30 *sök* (96.4 bushels) at the lowest.

23. Kim Yöngjin, ed., *Chosön sidae chön'gi nongsö* (Söul: Hanguk Nongch'on Kyöngje Yön'guso, 1984), 54–55. “Early-ripening rice should be raised on fertile land near a water source (Rice paddies which can be irrigated by the water source during droughts and drained in the rainy season are the best, and the puddle area is the next one . . . and those in higher areas, which could be cultivated only after rainfalls are the worst) . . . Rice paddies for late-ripening rice should be plowed when the ice starts to melt, and manure should be added to the soil, in the same method to raise early-ripening rice. In case of rice transplanting, the rice paddies should not dry up even in droughts. The paddies should be plowed late in the second lunar month or early in third lunar month. . . . It is an easy weeding method, but may spoil the farming itself if severe droughts set in, thus jeopardizing farmers.”

24. Ch'oe Hyön (1563–1640), *Ilsön chi* [The gazetteer of Sönsan], “Farmlands” (Kumi: Kumi Munhwawödn, 1998), 11.

25. Sejong Taewang Kinyöm Saöphoe, *Sejong sillok, chiriji*, “Sönsan Regional Military Command” (Söul: Sejong Taewang Kinyöm Saöphoe, 1972), 189.

26. Yi T'aejin, “15-segi üi suri chöngch'aek,” 244–45.

27. Kim Söngu, “Taegu üi chiyök kaebal,” 318–24.

28. *Ibid.*, 337–42.

29. For references on development of rice transplanting after the mid- and late fifteenth century, see Kim Söngu, “15-16 Segi sujön nongpöpp üi paldal,” 155–57.

30. Yi Sugön, “Komunsö rül t'onghae pon Chosönjo,” 30–40; Chöng Ch'iyöng, “Chirisanji chöngjuhwa üi yöksa chirijök yöngu: Nong'öp kwa ch'ollak üi söngsoe” [Historical geography of settlements around Mt. Chiri: Rise and fall of agriculture and villages], (doctoral dissertation, Korea University, 1999), 240–45; Kim Söngu, “Taegu üi chiyök kaebal,” 336–41.

31. The government began paying greater attention to population growth starting in the 1440s. *Sejong sillok*, 22/2/23, 23/1/27.

32. Kim Söngu, “Taegu üi chiyök kaebal,” 318–24.

33. *Söngjong sillok*, 16/8/26, 20/6/21.

34. Ch'oe Hyön, *Ilsön chi*, “Forest and Swamp Land,” 7–8.

35. Ch'oe Hyön, *Ilsön chi*, “Farmlands,” 12. Ch'oe Hyön listed the major fields and excluded the minor ones.

36. *Sejong sillok, chiriji*, 189.

37. Ch'oe Hyön, *Ilsön chi*, “Forest and Swampy Land,” 7–8.

38. Kim Söngu, “Taegu üi Chiyök Kaebal,” 309–12, 348.

39. *Söngjöngwön ilgi*, Yöngjo 1/8/16, 11/2.

40. Ch'oe Hyön, *Ilsön chi*, “Farmland,” 12. “The riverside fields below the Nugyo Bridge, stretching 60–70 *li*, were vulnerable to inundation as rivers run in both sides of them.”

41. In the early seventeenth century, dry field crops, such as barley, wheat, and millet were raised in the riverside fields in Mun'gyöng, 60 kilometers northeast from Sönsan. Ko Sangan (1553–1623), *Nongga Wölyöng* [Farmer's work and days], “Chamnyöng” [Miscellaneous regulations], *Kungmunhak yöng'gu* 13 (1990): 20.

42. Unlike Sönsan, which remained stagnant throughout the sixteenth century, Taegu, a region with a mix of the field and mountain regions, recorded continued progress in rice farming and regional development throughout the eighteenth and nineteenth centuries. The regions which led the development of Taegu at that time were mountainous areas such as P'algong Sub-township (in the north), Kach'ang Sub-township (in the south), and Okp'o Sub-township (in the west), adjacent to Mt. P'algong, Mt. Ch'oejöng, and Mt. Pisül, which rose about 1,000 meters above the sea level. Kim Söngu, "Taegu üi chiyök kaebal," 332–43.

43. Kuksa P'yönc'h'an Wiwönhoe, *Yöjidosö*, vol. 2, "Sönsan Regional Military Command" (Söul: T'amgudang, 1973), 458.

44. Kim Söngu, "15–16 segi 'injaehyang' Kumi üi söngjang kwa palchön" [Development of Kumi, the hometown of human talent], *Söngnihak üi ponhyang Kumi üi yöksa wa munhwa* [History and culture of Kumi, hometown of Neo-Confucianism] (Kumi: Kumi Muhwawön, 2006), 166–68.

45. *Yönsan'gun ilgi*, 10/9/8.

46. King Yönsan, the worst despot of Chosön Dynasty, was so notorious for his tyrannical acts and evil deeds as to be compared to Chinese despot, Zhu Houzhaoh (r. 1505–1521) of the Ming Dynasty. For more information on the tyranny of King Yönsan, the state administration disarray in the sixteenth century, and the fiscal crash and downfall of the peasant economy, see Kim Söngu, *Chosön chunggi kukka wa sajok* [State and gentry in the Mid-Chosön Dynasty] (Söul: Yöksa Pipyöngsa, 2001), 51–159.

47. Kim Chongjik (1431–1492), *Chömp'iljae chip* [Collected writings of Kim Chongjik] "Sönsan chidoji" [Sönsan geography].

48. Yi Chunghwan (1690–1756), *T'aengniji* [Guide to selecting a village], "P'aldo ch'ongnon" [Introduction to the Eight Provinces], "Kyöngsang-do," 65.

49. For more information about the adverse effects that resulted from the disorderly development in the mountainous regions in Korea in the nineteenth century, see Yi Uyön, "18–19 segi sallim hwangp'yehwa wa nongöp saengsansöng" [Forest denudation and agricultural productivity in the eighteenth and nineteenth centuries] *Kyöngje sahak* 34 (2003): 42–52; Kim Söngu, "Taegu üi chiyök kaebal," 348–50.

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