

Like Cattle, Like Industrial Culture

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Different breeds of cattle are suitable for different environments and thus results diversified cultures. Agricultural development manifests the social and cultural changes within a country and can result in multiple cattle breeds.

I. Taiwan Buffalo

There are two cattle breeds in Taiwan – buffalo and cattle. Both categories are not in the same genus, the genus *Bubalus* and genus *Bos*. These two genres, therefore, cannot mate with each other. Buffalo genus is comprised of the Indian and African buffalo. The Indian buffalo consist of swamp and river buffalo with distinctive heads and appearances. The swamp type buffalo are distributed over Southeast Asia and are used to till farmland. The river type buffalo are popular in India, Italy and the Middle East for dairy purposes.

The Dutch brought the swamp buffalo from Java to Taiwan in 1624, whereas Chinese ancestors also introduced buffalo from Mainland China to Taiwan too. The buffalo in Taiwan are all swamp type buffalo. In the 1630s, between the end of the Ming Dynasty and early Ching Dynasty, the Chinese Emperor encouraged the Fukienses refugees from Fukien Province to immigrate to Taiwan with three taels of silver for each refugee and one buffalo for every three refugees as incentive. This was known as the "one buffalo, three taels of silver system". These swamp buffalo then became the Taiwan buffalo (Fig. 1). These Chinese ancestors worked with their buffalo and contributed to Taiwan's agricultural development, and thus brought changes to the aboriginal culture.

Buffalo domestication started in 2000 B.C. in China. Buffalo are adapted to water and are tolerant to heat. With large hoofs, mighty joints and steady steps, buffalo can move around easily in muddy soil and paddy fields. Buffalo

are excellent helpers in the rice paddies and, therefore, are perfect for Taiwan. The aboriginal Taiwanese used to grow calla taro as their staple food. Buffalo were used successfully to help farmers transformed the calla taro paddies into rice paddies. Without the buffalo the Han people would have to live the same way as the aboriginal Taiwanese. The buffalo were used to help farmers carry rice, sugar cane and sweet potatoes, in addition to tilling the rice paddies and breaking the soil. The farmers also used buffalo to crush sugar cane, peanuts and sesame seeds. Buffalo were also used to the mix soil for producing brick at brick furnaces.

By the time the Japanese occupied Taiwan in 1895, the number of buffalo had grown to more than double that of the Taiwan Yellow cattle (Fig. 2). From this agricultural development the number of buffalo continued to grow. The number of buffalo grew to more than several times that of the Taiwan Yellow cattle. According to Fig. 2, the number of buffalo was 6 – 7 times greater than the Taiwan Yellow cattle in Taiwan before the end of the Second World War. According to Fig. 3, the Taiwan Yellow cattle were sacrificed for food purposes due to the food shortages during the war but not buffalo. After the war was over, the number of buffalo and Taiwan Yellow cattle increased as agricultural development resumed. In October 1959, 3 male and 4 female Murrah – the river type buffalo used for dairy purposes, were brought from the Philippine to Taiwan by the government to attempt to cross them with local buffalo to upgrade the dairy productivity of local buffalo. However, the Murrah were quite different from the local buffalo in appearance, and thus farmers were reluctant to see their buffalo change (Fig. 4). The government plan eventually failed. Tractors replaced buffalo in the rice fields, as mechanical mobility became popular in the rural areas in the 1960s. The buffalo were gradually retired after they made remarkable contributions to Taiwan culture and economic development (Fig. 1). The 1st January 1985, All Taiwan Buffalo Show was resuscitated and held in Meilun, Hualien. However, which was the last buffalo show even summon up a lot of people in crowd to met buffalo and fling round with gratitude sign (Fig. 5) but means Taiwan buffalo no more were a work stock with Taiwanese like a family again.

The number of buffalo dropped significantly and only a few can be seen in Taiwan now. The Hualien Animal Propagation Station, Livestock Research Institute, Council of Agriculture, Chinese Taipei maintains buffalo (Fig. 6) for the research and work with zoos around Taiwan to prevent the ancestors'

friends from disappearing.

II. Taiwan Yellow Cattle

In addition to the Taiwan buffalo, there are Indian cattle (hump cattle; zebu; *Bos indicus*) and European cattle (*Bos taurus*) that originate from the northern and southern hemisphere. The Indian and European cattle are different with respect to their function and appearance. With large humps and dewlap, the Indian cattle are suitable for tilling and tolerant to heat with less succulent and rough taste in meat quality but less cooking loss. Imported European cattle were raised for dairy or beef purposes and commonly referred to as "cattle" with the features of tender and juicy meat. In the western world "cattle" is the collective term for livestock. The word cattle has the same origin as chattel and capital. In English, the first alphabet "A" is a hieroglyphic standing for ox head. In Greek, the first alphabet " α " originated from the "Alef" meaning "cattle" in the Semitic language. Both allusions stress the importance of cattle in ancient western culture. In Taiwan cattle represents the big animals and the person that becomes the "ox head" is a leader with great activity. In Taiwanese culture this would be stated, as "I would rather be a cock head than an ox's tail".

II-1. Crossing with various cattle species for improvement

Most Taiwan native cattle known as Taiwan Yellows belong to the same genus of Indian cattle, *Bos indicus*. The appearance of these cattle is similar to the British dairy cow Jersey breed (*Bos taurus*) (Fig. 7, 10). Results of blood typing indicated that Taiwan Yellows shared some genealogy with European cattle. Furthermore, Taiwan Yellows have tastier meat than that of the Indian cattle and thus many noodle shops in Chinese Taipei claim "Genuine Taiwan Yellow Meat" serving.

The Taiwan Yellow belongs to the same genus "zebu" as the cattle in the Philippines, Thailand, Vietnam, Cambodia and China' Yunlan Province. Taiwan Yellows were in Taiwan before the Chinese ancestors immigrated and thus recognized as the orthodox cattle in Taiwan compared to the buffalo. When the Dutch occupied Taiwan in 1624, there were more Taiwan Yellow cattle than buffalo. However, the Taiwan Yellows were crossed with various cattle breeds over the last 300 years. Therefore, both the appearance and function of these cattle have changed drastically.

Now Taiwan Yellows have changed completely from what they were a long time ago. Farmers in Taiwan were reluctant to cross buffalo with others and, therefore, the buffalo have remained unchanged. Evidence showed that the selfish Han race thought that the buffalo belonged to their ancestors and the orthodox Taiwan Yellows not. The Taiwan Yellows therefore faced various hybridizing attempts and appearance changed.

Changes in Taiwan Yellows reflect the evolution of agriculture in Taiwan. When the Dutch occupied Taiwan in the 17th century, many Indian cattle were brought to Taiwan from Indonesia in an effort to improve the cargo delivery efficiency. Indian cattle were then crossed with the Taiwan Yellows. The Brown Swiss, an improved breed of European dairy cattle, was brought to Taiwan together with dairy and beef dual-purpose breed known as the Devon in 1896 while Taiwan was under Japanese rule. Shorthorn cattle were also brought to Taiwan in 1906 and crossed with the Taiwan Yellows to improve the dairy productivity of the latter. However, this plan failed. The Indian zebu, Kankrej and Sindhi cattle, with large body size, humps and dewlaps were introduced to Taiwan and crossed with Taiwan Yellows. As a result, both the body size and hump of the Taiwan Yellows became stronger and larger and thus the agricultural efficiency improved. Since then, Taiwan Yellows have only served in agricultural purposes and helped farmers with tilling and shipping agricultural products (Fig. 10). The meat characteristics of Taiwan Yellows became more and more different from that of the European cattle, and thus, were no longer suitable for beefsteak production. However, it is perfect for stewing and braising of the Chinese cooking style. To cope with a severe food shortage, Taiwan Yellows were sacrificed for food in the last few years before World War II over (Fig. 3). After World War II, the ratio of the numbers of the Taiwan Yellows to the buffalo dropped to 1:7, a historic low (Fig. 2). The number of dairy Holstein cattle also decreased tremendously as the Japanese moved out of Taiwan after World War II. However, in the Taiwan recovery period after World War II, the number of buffalo and Taiwan Yellows increased greater than that of dairy cattle did (Fig. 2).

In 1962, the Hengchun Branch, Livestock Research Institute, Council of Agriculture, Chinese Taipei brought Santa Gertrudis, American beef cattle, to Taiwan for crossing with Taiwan Yellows. The plan worked

successfully and Taiwan Yellows were successfully transformed into beef cattle (Fig. 8). These cattle are no longer considered “work stock” only. Taiwan Yellows, in addition to conservation purpose and maintained in the Hengchun Branch, Livestock Research Institute (Fig. 9), was kept in rural areas for either beef or tilling purposes (Fig. 10).

II-2. All dairy cattle are artificially inseminated in Taiwan

Taiwan was developed based on agriculture but not livestock. Cattle were originally used for tilling purposes. Farmers used pig's excreta as fertilizer for farming. No farmers in Taiwan ever raised cattle for dairy purposes. In 1897, the Japanese brought the first dairy cattle to Taiwan and produced milk in the suburbs of Taipei. The scale of production was rather limited and far away from an industrial scale. Before World War II, the Taipei Emperor University's Ranch (now the Experimental Farm, National Taiwan University) kept a top milking record cow in Taiwan. The 5,003 kg milk with 3.15% fat was produced in 263 days. The highest daily production was 33.4 kg. In 1943, there were 75 dairy farms and 1,706 dairy cattle. This was the peak milk production period during the Japanese colonial period. Farmers lost their dairy cattle as World War II continued. By the end of World War II, there were only 47 dairy farms and 873 dairy cattle in Taiwan. The annual milk production amounted to 1,075 tons. Taiwan's dairy industry declined as the Japanese moved out of Taiwan. The US Relief Agency shipped 75 dairy cattle to Taiwan in 1947 and distributed to National Taiwan University and various agricultural improvement stations around Taiwan. Most of the 75 dairy cattle were Holsteins, with a few Ayrshire, dairy Shorthorn, Guernsey and Jersey. Later on dairy cattle donated by the USA were mated with Holstein bulls because no bulls of the same breed were available. As a result, all cows were up graded using Holstein bulls. In the 1950s, Taiwan's economy started recovering from the shadows of World War II. Taiwan's dairy industry resumed in 1957. The government assisted farmers in developing dairy production in addition to the traditional agriculture to cope with the increasing demand for dairy products.

On April 7, 1960, an artificial insemination research team led by Professor Teng-Yen Lee from National Taiwan University successfully inseminated a Holstein cow with frozen semen from the USA. Lee's achievement set a

milestone for the dairy industry using 100% artificial insemination with frozen Holstein semen in Taiwan. Taiwan's economy boomed and the national income started increasing from 1961. The people's living standard increased and, as a result, the demand for milk and beef increased tremendously. At the same time, mechanical mobility became more and more popular in the rural areas. Consequently, cattle were needed less for tilling and were raised for both meat and dairy purposes. The number of Taiwan Yellows decreased and the buffalo (Fig. 1) were no longer needed for tilling or work stock. However, beef consumption increased. With its milk production capability and tasty meat, Holsteins replaced the Taiwan Yellow cattle. Taiwan Yellows, buffalo and Holsteins reflect the changes in Taiwan local culture. With the growing popularity of Holsteins (Fig. 2), Taiwan is developing in a manner similar to European countries. The Holstein has replaced Taiwan Yellows and buffalo (Fig. 2). This speaks for the prosperity of Taiwan rural areas.



Fig.1. Taiwan Buffalo

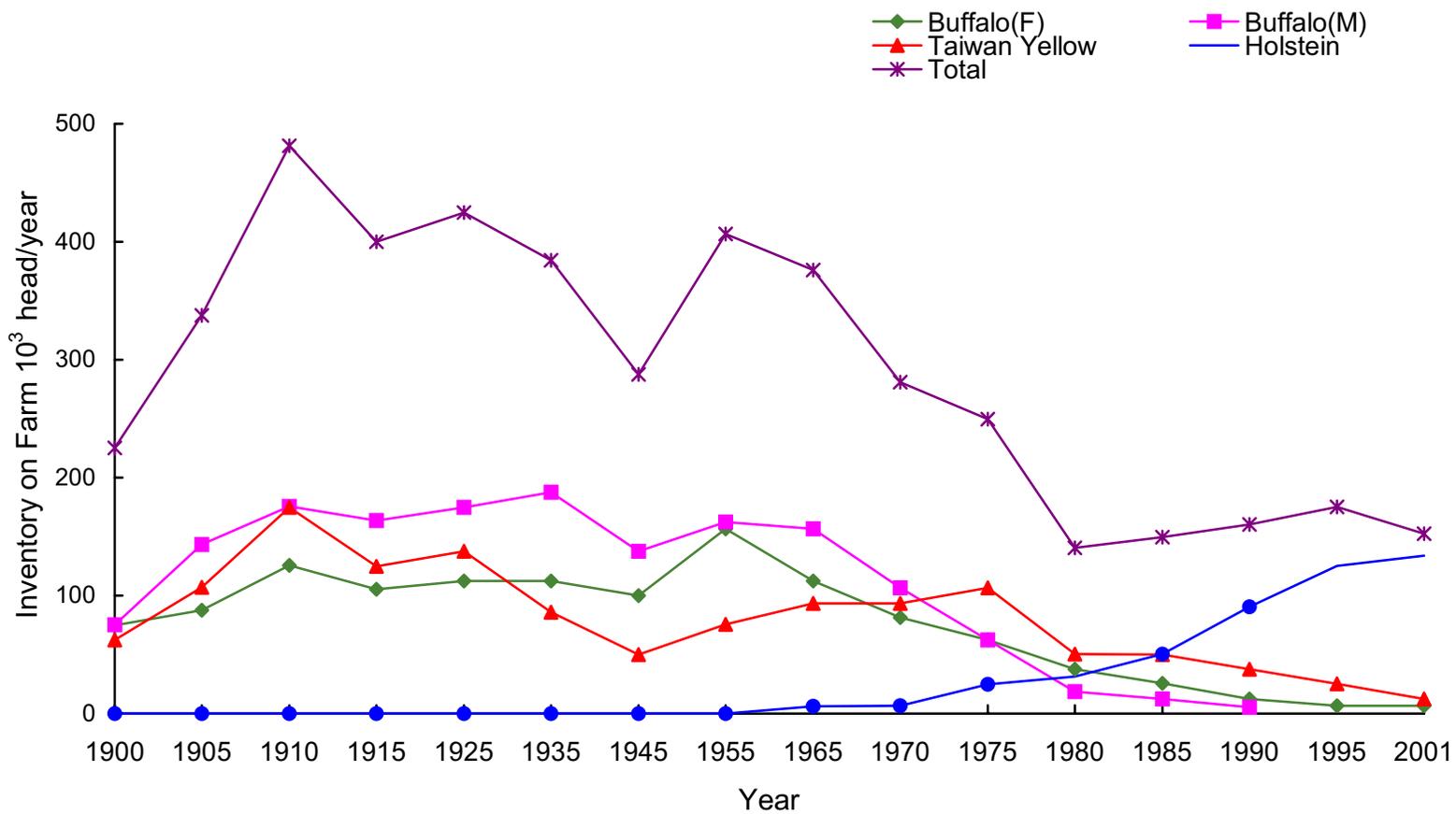


Fig. 2. Cattle inventory changes on farms over the last century in Taiwan

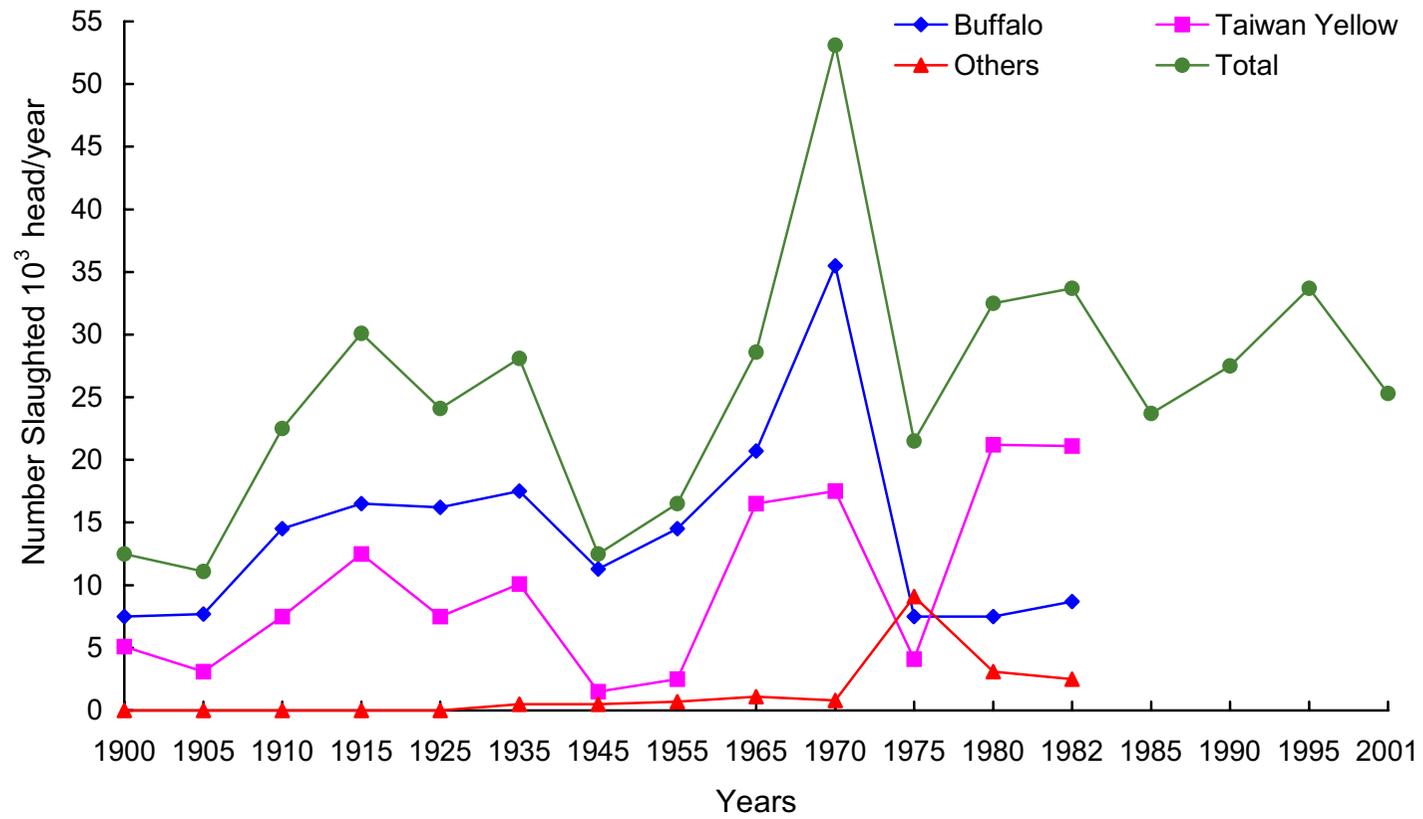


Fig. 3. Changes in the number of cattle slaughtered over the last century in Taiwan



Fig. 4. Murrah river buffalo



Fig. 5. All Taiwan Buffalo Show was held on 1st January 1985 in Meilun, Hualien



Fig. 6. Buffalo stock conserved at Hualien Animal Propagation Station, Livestock Research Institute, Council of Agriculture, Chinese Taipei

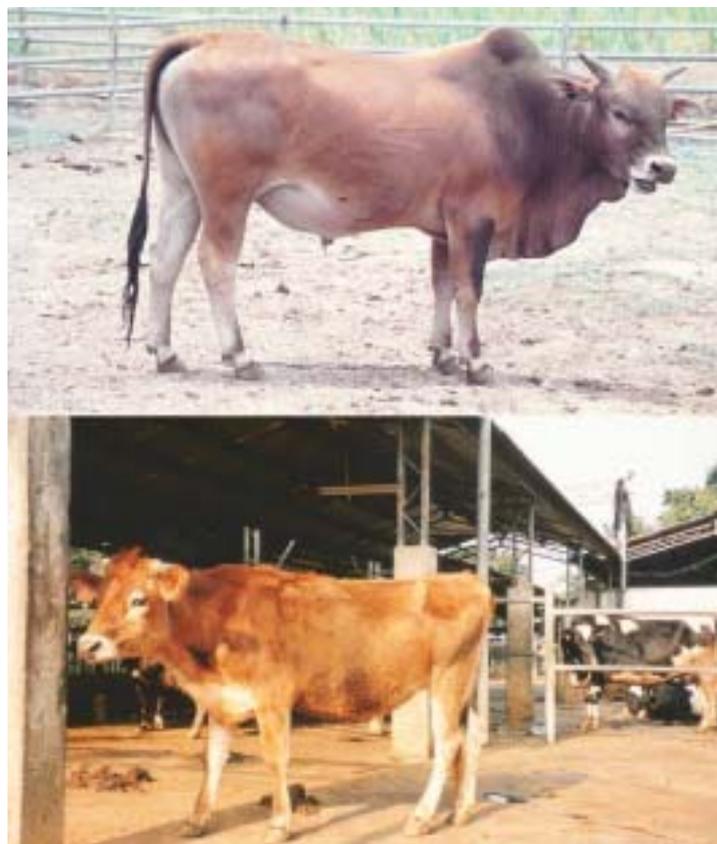


Fig. 7. Taiwan Yellows and Jersey Cattle



Fig. 8. Santa Gertrudis used in upgrading breeding system



Fig. 9. Taiwan Yellow Stock conserved at Henachun Branch, Livestock Research Institute, Council of Agriculture, Chinese Taipei

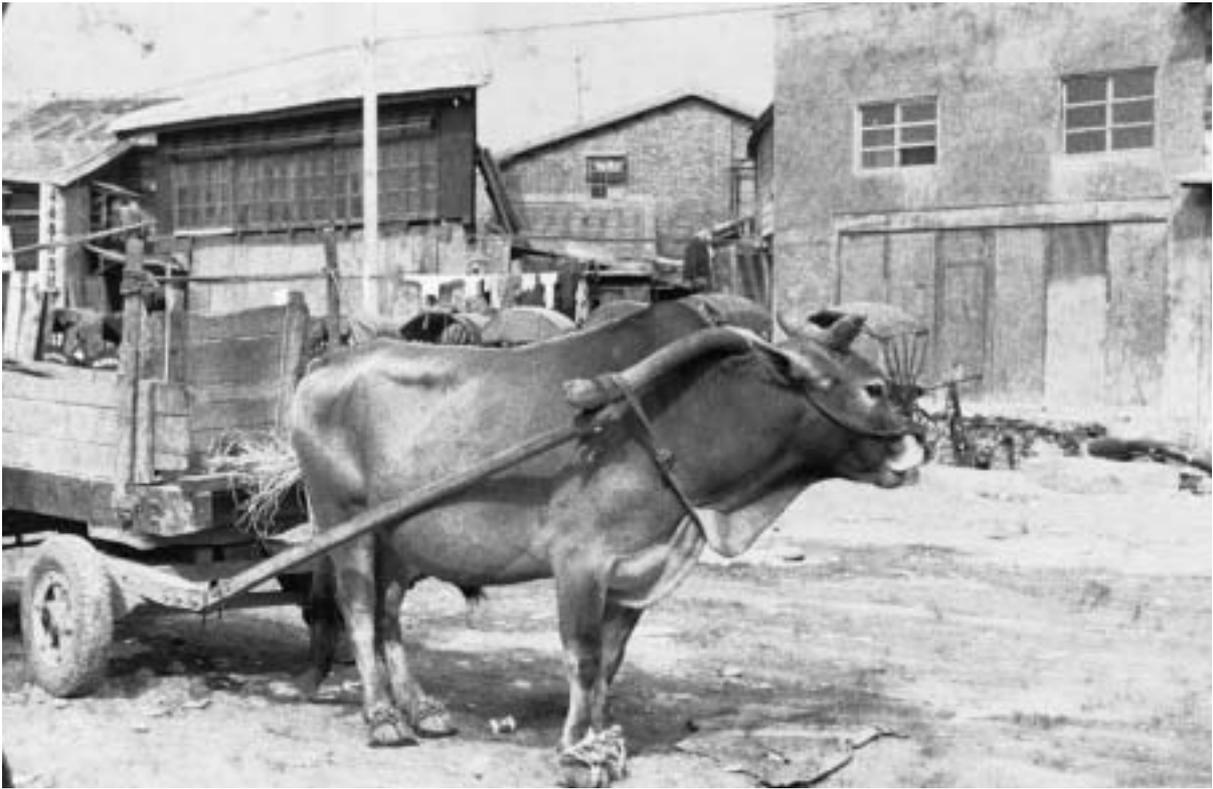


Fig. 10. Taiwan Yellow used as working stock