



# Bhutan's 'Middle Way': Diversification, Mainstreaming, Commodification and Impacts in the Context of Food Security

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**Abstract** The Himalayan kingdom of Bhutan is both wedded to tradition and influenced by the global push to modernize. In this study of the country's path to food security, Mai Kobayashi describes its evolving national 'middle way' towards sustainable agriculture. She traces seed-sector dynamics over the past 70 years, as exogenous influences from India and Japan mingled with endogenous practices. First following a Green Revolution-style high-input agricultural model reflecting India's, Bhutan joined the Colombo Plan in 1962, paving the way to autonomous economic development. Meanwhile, two Japanese specialists—agriculturalist Keiji Nishioka and seed-processing technologist Katsuhiko Nishikawa—respectively introduced open pollinated varieties and imported hybrids. The latter sited seed access within commodity relations for the first time. But Bhutan's own National Seed Center has supported a pluralistic approach serving the seed demands of both

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family and market-oriented farmers, while organic agriculture became a national mandate in 2007. Bhutan, Kobayashi concludes, has shown that its evolving, idiosyncratic ‘middle way’ towards food security is likely to endure.

**Keywords** Bhutan · Indian Green Revolution · Japanese development aid · Seed security

## 11.1 INTRODUCTION AND BACKGROUND

Celebrated for his theories on the origins of Japanese agriculture (Nakao, 1966), the botanist, Sasuke Nakao, was the first Japanese national to visit the Kingdom of Bhutan. In his book *Hikyo Bhutan* [Mystical Bhutan], documenting his five months of travel there in 1958, Nakao recalled a conversation with King Jigme Dorji Wangchuck, the third king of Bhutan.

The Bhutanese king was keenly interested in horticulture, and particularly concerned about the country’s future food security, given its growing population. The king opined that importing synthetic chemical fertilizers was probably the best choice, but Nakao told him that they should not run the risk of having to rely on imported inputs and advised instead to plant nitrogen-fixing plants in the rice fields during the off seasons. Nakao promised to send milk-vetch (*Astragalus sinicus*) seeds, which would also be useful as fodder (Nakao, 2013, 151).

We do not know if any milk-vetch seeds were ever sent to Bhutan. However, Nakao’s meeting with the king was the beginning of Bhutan’s intimate relationship with Japan, which had considerable influence over future narratives of agrarian change. Two years after the exchange, Bhutan’s first five-year development plan (FYDP) was drafted, with the support of India, marking a significant step in its emergence from medieval polity to a nation-state. In the plan, Bhutan outlined the establishment of a department of agriculture, which launched a number of model farms and research stations, and set up training for agricultural extension agents in consultation with India, which fully funded all the initiatives (RGoB, 1966a; Savada & Harris, 1993).

Given its steep topography and variable climatic conditions, agriculture in Bhutan remains extremely diverse and employs some 57% of the total labour force (Royal Government of Bhutan [RGoB], 2018). Largely

revolving around subsistence-oriented integrated crop-livestock systems, the average landholding is 1.5 hectares, albeit with large regional variation (Renewable Natural Resources Statistics Division, 2019). Expanding urbanization and an increase in fallow land in rural regions has led to a shortage of farm labourers, prompting the government to call for expanded commercialization of the agriculture sector to achieve food and nutritional security (Gross National Happiness Commission, 2018).

Today, Bhutan has come to be best known as a remote kingdom that promotes a unique developmental paradigm, emphasizing happiness and founded on equity and cultural and ecological preservation. But it was far from being independent of global 'modernization' projects, following what Henry Bernstein would describe as a shift from 'farming' to 'agriculture' (2010). This chapter is a brief exploration into Bhutan's modern history, from the last half of the twentieth century to the present, by looking at the interplay of actors within the seed sector. It focuses, in particular, on specific external interventions from India and Japan, and their interaction with endogenous practices, as Bhutan navigates the terms of its autonomous existence.

## 11.2 A COUNTRY IN SEARCH OF ITS OWN PATH

Bhutan's emergence onto the world stage took place in a precarious era for regional geopolitics. India had just gained independence from the United Kingdom in 1947. Two years later Bhutan, formerly a protectorate of British India, signed a treaty with India confirming its own independence. The treaty, however, also established India as the main sponsor of Bhutan's socioeconomic development.

While Bhutan consulted India as it built its foundations, India was itself negotiating its own terms of state-building with the international community as the Cold War began and US foreign policy started to influence the region's development. Taking advantage of India's initial post-independence agricultural policy goals of food self-sufficiency, US philanthropic foundations sent in scientific advisors and funds to increase cereal production, greatly shaping India's agricultural development narratives (Seshia & Scoones, 2003). The foundations focused not on the generation of new knowledge but on public policy, as well as training Indian agronomists and experts in industrial agriculture (Patel, 2013).

By the time Bhutan was initiating its first FYDP in the 1960s, India was starting to espouse notions of modernization and linear progress,

becoming the forerunner in the Green Revolution—the introduction of high-yielding varieties and a range of industrial inputs. G.S. Bhalla and colleagues attribute the success of the new seed-fertilizer agricultural technology in Punjab to the ‘large public investment in irrigation and power, scientific research, extension services, roads, markets and other rural infrastructure’ during that period (1990). Therefore, by the time of Bhutan’s second FYDP, its government similarly included schemes to popularize ‘improvements’ in tools, fertilizer, seeds, and expanded extension services, with more than a third of its budget going towards rural infrastructure, including roads, water supply and electrification (RGoB, 1966b). A report published by the government detailing the third FYDP, launched in 1972, highlighted efforts to introduce ‘modern techniques and practices in agriculture’ and the ‘regional specialization of crops, provision of improved seeds, implements and fertilizers, [and] introduction of new and improved varieties’ (RGoB, 1972). While an emphasis was placed on ‘modern methods of farming’, it is important to note that discourse was still centred around food self-sufficiency in grains, while also placing importance on the development of cash crops.

Synthetic fertilizers and pesticides were imported from India to spearhead Bhutan’s push towards agricultural modernization. While the porous borders between India and Bhutan make it difficult to estimate what agrotechnologies were available when and to whom, it is generally acknowledged that synthetic agricultural chemicals were available in Bhutan from the mid-1960s. Bhutan’s national government was put in charge of the procurement and promulgation of these new inputs and technologies, and agricultural extension agents were trained by Indian extension officers. The generation that worked in the ministry of agriculture in Bhutan and gained technical training during this time, accordingly adopted a strong allegiance to modern productivist agricultural methods.

During the following decades, Bhutan’s efforts towards food self-sufficiency through agricultural modernization took shape via substantial government subsidies, encouraging the use of inputs and improved seeds. The government provided ‘free seeds, free fertilizers, and free pesticides from the 1960s to the mid-80s’, according to an officer at the National Plant Protection Center (personal communication, 6 November 2015). To this day, in eastern Bhutan, farmers refer to synthetic fertilizers as *zhungka-ki* in Sharchopikha (commonly spoken in eastern Bhutan), which literally translates to ‘government fertilizer’. In western Bhutan, synthetic fertilizers are informally called *jaga lue* in Dzongkha (the

national language), which translates to 'Indian fertilizer' (Kobayashi et al., 2015). This clearly reflects the close, ongoing relationship between India and Bhutan, and the central role taken by the state to lay the foundations for Bhutan's agricultural development.

In this way, the initial steps Bhutan took as a modern nation-state directly reflected India's own process of agricultural development during its post-independence period, which was in turn influenced by the global political trends that brought the Green Revolution to India. According to the Bhutanese historian Karma Phuntsho, 'the first step for Bhutan to emerge out of the Indian fold onto the international arena as an independent state' was joining the Colombo Plan in 1962 (Phuntsho, 2013). Established by Britain in 1950, this organization—aimed at socioeconomic development in 27 countries of the Asia-Pacific region—brought Bhutan into contact with other member states to foster cooperative economic development (Savada & Harris, 1993, 334). Through the Colombo Plan, Bhutan revisited Sasuke Nakao's promise to support its quest to define nation-building and achieve the critical mandate of food security under its own terms.

### 11.3 DIVERSIFICATION OF CROP PRODUCTION

When he returned to Japan in 1958, Nakao arranged for an agricultural specialist to assist in developing Bhutan's agricultural sector. He recommended his student Keiji Nishioka for the job. Nishioka arrived in Bhutan in 1964 as an agricultural specialist under the Colombo Plan.

Nishioka was tasked with assisting the country in developing modern agricultural techniques, diversifying crop production in rural households, and meeting growing demand in urban areas. Nishioka began to grow vegetable and rice varieties from Japan on an experimental farm in Paro, Bhutan. The seeds were then examined and released by Bhutan's National Agriculture Seed and Plant Production Program (NASEPP), which was established in 1984 to produce and supply the domestic need for improved varieties of seed and fruit plants (Tshering & Domang, 2004). At this time, the government allowed only open pollinated (OP) varieties in order to limit their dependence on imported resources, to minimize the economic risk associated with the adoption of new technologies, and to ensure Bhutan's autonomy. Nishioka thus introduced only OP varieties, which can still be found in Bhutan today. Many are recognizable by their Japanese-sounding names (Table 11.1). In 1980,

Nishioka became the first foreign national to be awarded the honorific title *Dasho* by the King of Bhutan and continues to be revered as the father of modern agriculture in the country to this day (Dorji & Penjore, 2011; FAO, 1994).

Despite encouragement to expand and diversify production through extensive government subsidies in chemical fertilizers and seeds (Young, 1991), Bhutan's production of a marketable net surplus of food remained limited. A memoir by Yoshiro Imaeda, a pioneering Tibetologist from Japan, described how upon arriving in 1981 in the capital Thimphu, he was shocked to find not a single market selling fresh produce (Imaeda, 2008). Access to genetic resources remained largely reliant on bartering and gift exchange, despite the government's intentions to expand the subsistence-based agricultural tradition towards a market economy.

While international aid agencies categorized Bhutan as one of the poorest among the least developed countries, World Bank analysts knew that this did not reflect on-the-ground realities (Savada & Harris, 1993) in a primarily subsistence agricultural economy based on bartering. What was calculated as the gross domestic product (GDP) was based on a limited private sector controlled by a small group of people surrounding the royal family or with ties to the government (Savada & Harris, 1993). To encourage further GDP growth, however, the first Companies Act of the Kingdom of Bhutan was adopted in 1989 to separate public and joint-sector enterprises from government regulations (Ramakant & Misra, 1996; Savada & Harris, 1993). Accordingly, NASEPP was privatized in 1995, becoming the Druk Seed Corporation.

Among the sources Nishioka used when ordering seeds from Japan was the Takii Seed Company in Kyoto, where one Katsuhiko Nishikawa was among those taking orders. Nishikawa developed an interest in Bhutan through these exchanges. Upon retirement, he became a senior volunteer with the Japan International Cooperation Agency (JICA) in Bhutan, and was placed in the Druk Seed Corporation, where he served between 2006 and 2008.

When Nishikawa arrived, he was shocked to find that the Druk Seed Corporation sold only OP varieties. He soon learned that hybrid seeds were avoided because they incurred a significantly higher upfront cost. There was also a fear that foreign seed companies would take advantage of smaller nations such as Bhutan, and sell them lower-quality seeds (personal communication K. Nishikawa, 2015). Nishikawa noted other developments, such as the country's high dependence on imported food

**Table 11.1** Vegetable varieties introduced to Bhutan by Japan

| <i>Vegetable</i> | <i>Variety</i>   | <i>Year released</i> | <i>Notes</i>   |
|------------------|------------------|----------------------|--|
| Pea              | Usui             | 2002                 | <i>Usui endo</i> , a variety said to have been introduced by the United States to the Usui region of Osaka (FoodsLink, 2020)             |
| Carrot           | New Khuruda      | 2006                 | <i>New Kuroda</i> , a hybrid, introduced by Katsuhiko Nishikawa, from Takii Seed Co. Released by Druk Seed Corporation (formerly NASEPP) |
| Radish           | Spring Tokinashi | 1990                 | <i>Tokinashi-daikon</i> , a spring variety introduced by Nishioka. Released by NASEPP  |
|                  | Minowase         | 1990                 | <i>Mino-wase-daikon</i> , introduced by Nishioka   |
|                  | Miyashige        | 1990                 | <i>Miyashige-daikon</i> , introduced by Nishioka. Released by NASEPP   |
|                  | Shogoem Short    | 1990                 | Probably a misspelling of <i>Shogoin-daikon</i> . A spherical daikon and well-known heirloom variety from Kyoto. Released by NASEPP      |
| Tomato           | Nozomi           | 1990                 | <i>Nozomi</i> . Source unclear, although Japan's Mayukyo Agricultural Network produces a tomato by this name. Released by NASEPP         |
| Mustard greens   | Taisai           | 1990                 | <i>Taisai</i> , possibly introduced by Nishioka. Released by NASEPP  |
|                  | Takana           | 1990                 | <i>Takana</i> , possibly introduced by Nishioka. Released by NASEPP  |
|                  | Neguna           | 1990                 | <i>Mibuna</i> , possibly introduced by Nishioka. Released by NASEPP  |
| Bulb onion       | Senshu Yellow    | 1990                 | <i>Senshu-tamanegi</i> , a common winter onion possibly related to the Shenshu variety grown in southern Osaka                           |
| Welsh onion      | Kujo             | 1990                 | <i>Kujo-negi</i> , possibly introduced by Nishioka. Released by NASEPP   |
| Chinese cabbage  | Kyoto 1          | 1990                 | <i>Kyoto ichi-goh</i> (Kyoto number one), introduced by Nishioka. Variety released by the Takii Seed Company                             |
| Pumpkin          | Tetsu Kabuta     | 1990                 | <i>Tekko-nankin</i> , introduced by Nishioka. Probably the <i>Tetsu Kabuto</i> from the Takii Seed Company                               |

(continued)

**Table 11.1** (continued)

| <i>Vegetable</i> | <i>Variety</i> | <i>Year released</i> | <i>Notes</i>  |
|------------------|----------------|----------------------|---|
| Watermelon       | Asahi Yamato   | 1990                 | Possibly from the original Yamato variety developed pre-war in Nara, Japan, and possibly introduced by Nishioka. Regarding the origin of the name, it is uncertain, although an Asahi variety is bred by Kyoto-based Maru-tane Ltd. |

*Source* Modified from reports published by the Agriculture Research and Extension Division, Department of Agriculture, Bhutan (Ngawang, 2017, 2018)

from India, indicating that Bhutan's domestic market could grow if it increased production. Meanwhile, the domestic seed stock and multiplication technology were not very reliable, revealed by numerous complaints regarding the low germination rates of both domestic seeds and those imported from India.

Nishikawa became convinced that Bhutan should lift its partial ban on hybrid seeds, which, under the 2006 Seed Rules and Regulations of Bhutan, were limited to five ornamental species (Ministry of Agriculture, 2006). He was clearly not alone in this assessment, as he was given immediate permission by the Bhutan Agriculture and Food Regulatory Authority in the Ministry of Agriculture to import hybrid seed samples (Nishikawa, 2015). The breeds he introduced were initially cabbage, cauliflower and broccoli, later expanding to carrot, watermelon and squash (2015). The *New Khuruda* carrot shown in Table 11.1 was one of his introductions. While the tendency towards generalized commodity production does not imply that all aspects of agricultural production are commodified, this was still a revolutionary step: the terms for reproduction were formally outsourced to a foreign company, thus firmly placing access to seeds within commodity relations (Bernstein, 2010).

#### 11.4 MAINSTREAMING AND COMMODIFICATION

Bhutan's tenth FYDP (2008–2013) called for substantial improvements in the delivery of improved seeds, inputs and technology (Gross National Happiness Commission, 2009a), and mandated the introduction of monoculture (Gross National Happiness Commission, 2009b). The Druk

Seed Corporation's continued dependence on government subsidies to meet the costs of production and distribution (Gross National Happiness Commission, 2009a) led to its reincorporation under the auspices of the government in 2010 and renamed the National Seed Center, or NSC (NSC, 2021). The 2018 edition of Seed Rules and Regulations of Bhutan incorporated a new section on hybrid seeds, stipulating that the country's agricultural department, through the NSC, would be the authorizing body for the import and distribution of these seeds (Department of Agriculture, 2018).

Results from a 2014 household survey conducted with 147 households in three districts in western Bhutan (Gasa, Paro, and Wangdue) assessed how small-scale subsistence farms were acquiring their seeds. It showed that an average of 97% of the households were still saving seeds at some capacity, the most common being vegetable seeds, which were saved by 57–80% of households (Kobayashi et al., 2017). The survey also revealed that for the majority of farming households government distribution of subsidized seeds was a more common method of seed procurement than bartering or purchase.

Perhaps as a testament to government subsidies, a 2016 survey by the Department of Agriculture suggests that only 5% of the population considered itself seed insecure (Department of Agriculture, 2017). Farmers can put in a request for specific varieties to the local agriculture extension agent, who processes the request through the NSC and/or Horticulture Division of the Department of Agriculture. Alternatively, farmers may choose to purchase seeds directly from outlets. Some 75% of the surveyed respondents were already using hybrid seeds or would like to use them, on the basis of their higher quality and greater yield (Kobayashi et al., 2017). Yet not all were convinced. Personal interviews revealed that some farmers preferred OP seeds; one described hybrid cabbage as too large, with fewer opportunities to have multiple harvests over an extended period (Dukpa, 2014). And for the vast majority of farmers, hybrid seeds were unaffordable.

Given the continued mandate to enhance food and nutrition security by fostering a transition from subsistence to commercial agriculture, the NSC tries to balance its priorities by 'following the middle path', as described by the director of the NSC at the time (Dukpa, 2014). On the one hand, hybrid seeds support specialization and efficiency in market-oriented farming operations. On the other hand, OP seeds support the

livelihoods of diversified family farmers by minimizing cost and dependence on foreign industries, as well as minimizing the risks associated with genetic uniformity characterized by hybrid seed technology. Attempting a balance and an acceptance of pluralism, the principle of the middle path is critically important to Bhutan's style of governance. Such an approach should not be confused with neutrality, which can be a bureaucratic justification for inaction, avoidance of any action, or consent to the status quo, especially by those who hold more power in society. Instead, it reflects the fact that farmers seek to improve their livelihood and increase overall food provision through diverse means.

Bhutan has attempted to pursue the benefits of market-oriented farming operations, while minimizing dependence on imported inputs—for instance, through its dramatic turn away from agro-chemical inputs as the driving force of agricultural modernization and, as an extension, by adopting organic agriculture as a national mandate in 2007 (Kobayashi et al., 2015; National Environment Commission, 2019). These moves can be understood as deepening commodity relations by further expanding farmers' integration into what is a growing organic market (Bernstein, 2010). However, a commitment to organic agriculture necessitates a deeper dialogue around *processes* of food production, not just the outcome of attaining food security. Reshaping food systems around cultural and ecological sustainability and resilience necessitates a fundamental transformation of Bhutan's agricultural sector.

## 11.5 CONCLUSION

Following Nakao's visit to Bhutan in 1958, the country's agrarian landscape was gradually transformed, from the late twentieth through the twenty-first centuries. Changes in policies around the introduction and dissemination of seeds were particularly noteworthy. The self-isolated medieval kingdom opened up to exogenous influences, starting with India's embrace of the Green Revolution followed by Japanese interventions, as Bhutan sought to define its own narrative of development.

If agriculture is a social construction, the introduction of any seed is inherently a reflection of a social relationship that was bred into the seed. The intended relationship, however, is re-shaped by the endogenous cultural and historical context in which it is embedded. Many introduced varieties of OP seed materials have become naturalized within the fabric of Bhutanese society, while hybrid seeds continue to work their way into

evolving markets and market agencies. Though still largely government-led, Bhutan's efforts to define their own food and agriculture systems will continue through negotiations with new forces in markets, policies and technologies, while maintaining its idiosyncratic commitment towards a pluralistic coexistence by embracing 'the middle path'.

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