



The Great Duty of a Tiny Grain: Conserving the Alxa Oasis Ecosystem Through the Cultivation of Drought-tolerant Millet

Company/Organization

Society of Entrepreneurs & Ecology (SEE), Beijing Weixi Agricultural Development Co., Ltd.

Author of this report

Huang Zhiling and Wu Lingjin, Institute of Communication Studies, Communication University of China

Abstract

The Society of Entrepreneurs and Ecology (SEE) is committed to exploring innovative models of eco-friendly agriculture development and actively advancing desertification governance in China. In 2009, SEE began its work in the Alxa region, exploring and promoting the cultivation of drought-tolerant millet for arid regions. In 2015, SEE initiated the establishment of a social enterprise, Beijing Weixi Agricultural Development Co., Ltd. The company, based on operational needs, set up cooperatives in the Alxa region. Since then, the cooperative has been responsible for the front-end promotion of drought-tolerant millet and drip irrigation technology, while the company handles the back-end tasks of purchasing, developing, and marketing the millet products. This initiative aims to forge a win-win path that combines ecological protection with increasing farmers' incomes through the promotion of a sustainable water-saving agricultural model. From 2013 to 2023, the project cumulatively promoted the cultivation of drought-tolerant millet across 2,278.67 hectares. Small as they are, these grains possess a vast collective power to reverse desertification, preserving our blue skies and clear waters.

Keywords

Alxa, desertification prevention and control, drought-tolerant millet for arid regions, new model of philanthropy, public engagement

This report is the first prize winning entry of the 2023 Good Food - University Student Case Analysis Report Competition. The authors of this report would like to express their gratitude to Ms. Mou Zhengpeng, General Manager of Beijing Weixi Agricultural Development Co., Ltd., as well as other staff members of the Millet's Project, for their participation in interviews, materials, and review in support of this case study report.

Case Introduction

Background

On May 29, 2023, Mr. Jiang Huohua, Deputy Director General, Department of Ecological and Environmental Monitoring, said at the regular press conference of Ministry of Ecology and Environment that according to monitoring results, China's ecological and environmental quality had maintained an improvement trend throughout 2022. Notably, the average concentration of PM_{2.5} in Beijing has declined to 30 µg/m³, reaching National Air Quality Standard Class 2 for 2 consecutive years. However, it is important to recognize that the improvement of the ecological environment has not stabilized, with persistent PM_{2.5} pollution occurring in some regions during specific intervals. In 2022, the Beijing-Tianjin-Hebei (BTH) region and the Fenwei Plain continued to see heavy air pollution in autumn and winter. From January to April 2023, China recorded 12 sand-dust weather processes, accumulating a total of 4,892 sand-dust days involving 267 cities of 27 provinces (autonomous regions and municipalities), hitting record high in terms of sand-dust days of the same period over the past five years.

During the strong sandstorm that occurred in Beijing during March 19-23, 2023, the city's PM₁₀ hourly peak concentration escalated to 1,667 µg/m³. Expert analysis estimates that Mongolia can contribute up to 70% of the dust concentrations in Beijing and more than 50% of the dust concentrations in northern China and other central and eastern regions. Beyond Mongolia, China's northwestern arid and semi-arid regions with sandy soils also serve as significant sources of dust for these weather events. According to the Beijing Municipal Key Laboratory of Precision Forestry at Beijing

Forestry University, the problem of sand sources in northwest China can be traced back to the 1950s. During that period, there has been three large-scale grassland reclamation movements in Inner Mongolia to secure food supply for local pastoralist communities.^[2] Ten artificial oases including Barun Beil (also called Yaoba), Chahar and Bayin Maodao have been reclaimed in Alxa League. Underground water extracted from deep wells became the main irrigation water source of water-intensive crops cultivated locally on a large scale, which led to over-exploitation of groundwater, serious land salinization, soil erosion and gradual desertification of artificial oases, making Alxa constructed oases gradually shifting toward desertification.

In response to these environmental challenges, multifaceted actions have been initiated. The Chinese government has implemented methods such as aerial seeding, sealing off mountainous and sandy areas for afforestation and grass cultivation, creating forests for windbreak and sand fixation, as well as forests for soil and water conservation, etc. Nearly 100 entrepreneurs initiated the Society of Entrepreneurs and Ecology Conservation (SEE) (referred to as Alxa SEE). Starting from sandstorm mitigation in Alxa League, SEE has expanded its efforts to desertification control, climate change, biodiversity protection, green supply chain and other environmental issues. In Alxa League, SEE has been pioneering the cultivation of drought-tolerant millet for arid regions, advocating for a shift from traditional flood irrigation to more sustainable drip irrigation techniques. To advance this initiative in a sustainable manner and to attract more farmers to cultivate desert

millet, SEE established a social enterprise called Beijing Weixi Agricultural Development Co., Ltd, which operates the project through a commercial and innovative model, diversifying farmers' income sources and achieving a dual impact of groundwater conservation and agricultural economic growth.

The United Nations General Assembly declared 2023 as the International Year of Millets (IYM 2023) at its 75th session. As the globe facing complex challenges of extreme weather, depletion of natural resources and a growing global population, the proclamation of IYM 2023 aims to enhance global recognition of millet's resilience under adverse climatic conditions and its significant health benefits. Due to millet's drought-resistance nature, it is often the sole harvestable product, thereby serving as a crucial

sustenance source for communities vulnerable to food scarcity. Its adaptability to infertile soil makes it helpful to reduce soil degradation. Millet's gluten-free nature and low glycemic index (GI) render it an optimal dietary option for people with gluten intolerance and high blood sugar. By promoting millet cultivation, new market opportunities can be created for smallholder farmers. As China has yet to realize the pivotal shift from quantitative to qualitative improvement in its ecological environment, and with environmental conservation remaining a formidable task, SEE will continue to devote itself to exploring the great potential of drought-tolerant millet for arid regions, building a more efficient and resilient agricultural food system, and contributing to environmental protection and healthy diets.

Case story

Breeding and promoting drought-tolerant millet for arid regions

(1) The initial attempts to introduce drought-tolerant crops for arid regions

In Alxa League, corn is the primary crop and is traditionally cultivated using flood irrigation, with an average water consumption of about 800 cubic meters per mu (1 mu equals to approx. 666.67 square meters), leading to a decline in groundwater levels. As a result, the endemic plants and farmland protection forests on the periphery of the oases are deprived of water resources, leading to extensive drought-induced plant mortality. Recognizing this situation, SEE is determined to promoting drought-tolerant crops and driving the transformation from traditional to more sustainable water-saving agricultural production. This transition is aimed to promote the sustainable development and conservation of groundwater resources in agricultural irrigated

lands. In the initial stage, SEE planted a variety of drought-tolerant crops in Alxa, including peanuts, potatoes, millet, cotton, chili peppers, etc. and assisted villagers in implementing drip irrigation. (Drip irrigation involves using plastic pipes to deliver water to the roots of the crops through the orifices or drip heads on the 10mm diameter capillary tubes for localized irrigation. It is the most effective way of water-saving irrigation in arid and water-scarce areas, with a water utilization rate of up to 95%.)

In addition to ensuring the survival rate of crops, the pilot project also aimed to generate profits for the villagers. After one year of trial operation, the project office observed a significant reduction in water usage without compromising crop yields. Despite the success, due to the project office's limited experience in sales, the harvest of the year missed the optimized crop purchase window and failed to render the desired economic benefits. This prompted the project office that innovation

encompasses not only technological aspects but also economic considerations. Moving forward, the project office recognized the need to deepen its understanding of market dynamics and establish its own purchase scheme when introducing new crops in the future.

(2) Breeding drought-tolerant millet for arid regions

During the initial trial phase, millet being a drought-tolerant crop demonstrated its potential adaptiveness to Alxa League. In 2009, the hybrid millet that was later called “drought-tolerant millet for arid regions” was discovered by Professor Zhao Zhihai, director of the Cereals Research Institute of the Zhangjiakou Academy of Agricultural Sciences in Hebei Province. Mr. Wang Shi, the president of SEE, learned about this drought-tolerant millet variety developed by Professor Zhao who is lauded as the “father of hybrid foxtail millet” in China. According to expert calculations, this variety only consumes 200-300 cubic meters of water per mu, significantly. Compared with the flood irrigation method traditionally used for local corn cultivation, the drip irrigation technique employed for desert drought-tolerant millet can reduce water consumption by one-third to one-half, which is equivalent to more than five-months of drinking water supply for a family of three. The widespread cultivation of desert millet in the Alxa League holds the potential to effectively mitigate the expansion of the desert. ^[3]

(3) Encouraging villagers to join the project

When Alxa SEE entered the Chahaer Beach and Yaoba Beach areas in Alxa for experimental cultivation in 2009, the local government was skeptical about whether such an environmental and public welfare organization could deliver tangible results, which further increased the difficulty of mobilizing local farmers. In the region,

over 80% of farmers grew corn, and switching from traditional crops posed significant risks for them. Since farming was the primary source of income for villagers, any crop replacement that resulted in land damage could severely impact their annual earnings.

So, even though during the experiments, many farmers witnessed that the desert drought-tolerant millet could grow normally and yield impressively in Alxa, there was still strong resistance. In order to encourage participation, SEE offered to purchase desert millet from participating farmers at a price significantly higher than the corn. At that time, a mu of corn generated an average income of about seven to eight hundred RMB (approx. 102 – 117 USD), and at best, up to 1,000 RMB (approx. 146 USD). The project office offered a purchase price of up to 5 RMB (approx. 0.73 USD) per 500 grams of desert millet, making the per mu income of desert millet around 1,500 – 1,800 RMB (approx. 220 – 263 USD). Motivated by the economic return, a small group of farmers joined desert drought-tolerant millet trial planting project in 2009.

Dilemmas and reform in implementing the project

(1) Dilemma of poverty alleviation

In 2009, the entire harvest of desert millet, totaling over 15,000 kilograms, was swiftly purchased by SEE member enterprises. In 2010, the Alxa Left Banner government decided to cooperate with SEE to set up a water-saving subsidy policy to promote the expansion of desert millet cultivation in the region. This initiative motivated farmers who had been on the sidelines to join the project, expanding the total planted area of desert millet to 3,000 mu. Although the project achieved remarkable effect in saving water, it also created a huge stock that exceeded the

purchase capabilities of SEE member enterprises. Some farmers, unable to sell their surplus, pile up their unsold millet at home, and some even petitioned the local government, hoping for assistance in resolving the issue of grain hoarding.^[3] Consequently, the project was temporarily suspended to seek solutions.

As Dr. Wang Shuwen, the then deputy secretary-general of SEE, said: "in the past, our relationships with the farmers were often for poverty alleviation purposes. Could you plant millet to improve the ecological environment in Alxa? We would support you and fund you. We often had this kind of conversations. However, such a model is not sustainable."^[4] Emphasizing the importance of aligning with the farmers' economic interests, Dr. Wang highlighted that meeting their financial needs is crucial to motivate voluntary changes in their attitudes and behaviors towards environmental conservation. This apparently cannot be achieved via charity donation alone, but only through dual efforts of ecological conservation and economic development. Hence, SEE decided to fully utilize the local geographical conditions in promoting desert millet as an organic agricultural product.

(2) Building a "production, supply and marketing" chain and exploring a sustainable public welfare model

In 2013, the desert millet cultivation project was reinitiated in Alxa League. For this phase, the participating farmers were responsible for their own initial investments, while SEE provided technical guidance. Moreover, to meet the organic standards, SEE established a set of organic farming requirements for desert millet encompassed specific soil conditions, irrigation facilities, and the green planting process including zero herbicides, no excessive use of pesticides, etc. Millet cultivated in accordance with these standards was

then purchased by Dachan Food Co., Ltd., where Mr. Han Jiahuan, the third president of Alxa SEE, serves.

In 2013, about 30,000 kilograms of desert millet were harvested from a total planted area of 150 mu. In addition to purchases from member enterprises, SEE also explored various sales channels including e-commerce platforms. Given that private non-enterprise units like SEE are not legally allowed to engage in profit making activities, Alxa SEE established a social enterprise called Beijing Weixi Agricultural Development Company Limited (hereinafter referred to as Weixi) in collaboration with Beijing Sister Kitchen Catering Management Co., Ltd., Zhenglan Banner, Alxa SEE entrepreneurs, and other stakeholders in 2015. Concurrently, they officially launched the "Ren Xiaomi" project (Ren Xiaomi, which translates to "the great duty of a tiny grain", hereinafter referred to as the Millet Project). The company was positioned to address various commercial operational challenges associated with the Millet's Project. Weixi's headquarter in Beijing were responsible for overseeing the product development, promotion and sales of drought-tolerant millet for arid regions, while its agricultural cooperatives in Alxa League are in charge of the entire field management from seeding to harvesting and the communication with farmers. This approach effectively built a sustainable ecological chain of production, processing, sales and profit return of desert millet into the project.

The revived desert millet project is now termed "Millet's Major Task". It highlighted that as tiny as a millet grain, it is instrumental in curbing the continuous spread of dust from the deserts to central China, in easing local groundwater crises arising from the cultivation of water-intensive crops and in keeping the farmers and pastoralists from deserting their homelands in ecological

plights. Located at 38 degrees north latitude and away from industrial pollution, the project benefited from favorable plantation conditions including long sunshine duration and great diurnal temperature variation. This unique combination gradually accumulated many loyal customers. But Weixi did not stop here, but continue promoting and developing the drought-tolerant millet for arid regions.

In 2015, Weixi forged strategic partnership with COFCO Womai and Dacheng Food Group. COFCO's online grocery website Womai.com became the exclusive sales platform for Weixi's desert millet products. Dacheng, tasked with laying out the desert millet product chain, introduced the concept of ready-to-eat millet porridge. To attract a wider range of customers, Weixi has been consistently innovating and launching a variety of millet products. For instance, uniquely shaped millet fusilli and millet macaroni have been introduced for children; quick yet healthy millet crisps and instant millet porridge are provided for office workers; 100% pure millet noodles are produced for individuals with gluten allergies; and exquisitely packaged millet vinegar and millet brick gift sets are offered for those seeking a premium product experience, and so on. Weixi's millet products have been popular in offline stores and e-commerce platforms like WeChat and Taobao.

Given the project promotes public welfare and organic food, not only does Weixi consider the taste and consumption scenarios of millets, but also the products' health benefits when developing new products. This conscientious approach underlines Weixi's strategy of not hastily introducing new products, but rather steadily expanding its range of healthy food offerings. As Ms. Mou Zhengpeng, the General Manager of Weixi, has stated, Weixi is committed to upholding the brand image of desert drought-tolerant millet

and hopes to communicate and instill environmental conservation concepts among consumers in the market through a series of millet-derived products.^[5]

(3) Raising public awareness of environmental protection through the seed pledging campaign

The Millet project emphasized the idea that tiny grains of millet, collectively, can curb desertification; similarly, individual efforts, when combined, can preserve our precious environment. Running the Millet project in a commercialized manner was a significant first step for SEE. Equally crucial was spreading the message of public welfare, encouraging broader public and corporate engagement in the project, thereby promoting the concept of sustainable environmental protection and public welfare. Nowadays, many people are just aware of what is served on the table, often overlooking the agricultural journey from seed to plate. In telling the story of drought-tolerant millet for arid regions, SEE tried to demonstrate desert agriculture and remind the public of the urgency of water conservation. However, it faced an audience accustomed to the conveniences of readily available food and water, who may struggle to relate deeply to these ecological concerns. SEE acknowledged the challenge in generating empathy and engagement through verbal storytelling alone.

Consequently, Weixi then initiated a series of public-engagement activities including seed pledging, spring sowing and autumn harvesting. The public or enterprises can virtually adopt a certain area of land in various sizes for millet plantation. A "drought-tolerant farm" operates in a size of more than 10 mu (approx. 1.647 acres) and for a "water-saving base" the area would be more than 50 mu. Whilst "farms" and "bases" are mainly initiated by enterprises, an individual has

the option to join any existing “farms” or “bases”, or subscribe to his or her own plot of land. An ordinary landowner can save 40 tons of underground water simply by certifying 1/10 of a mu (approx. 66.67 sqm) compared to traditional flood irrigation. For the public, every subscription is tied to an actual plot of land in Alxa League wherefrom all the millet harvest will be given to the subscriber, either in the form of raw millet or exchangeable into other millet products.

Subsequent to their adoption of land, subscribers are eligible to participate as volunteers in the spring sowing and autumn harvesting of desert millet in Alxa League. In the beginning, it was mainly the SEE member entrepreneurs who signed up as volunteers to these field trips due to people’s anxiety. As the project progressed and coverage of the volunteer activities on various social media platforms including Tik Tok and WeChat raised public awareness, the spring sowing and autumn harvesting activities now attract more than 1,000 volunteers every year, including numerous participants who are not SEE members but consistently engage in the volunteering events.

Prior to their arrival in Alxa League, participants are notified by SEE in advance that bottled water will not be provided at the site, and are encouraged to bring their own water bottles to reduce single-use plastic waste. Once arriving in Alxa, the subscribers will have the opportunity to engage in hands-on farming activities: scattering the seeds into millet fields by way of traditional sowing; learning to manage drip irrigation system that brings water all the way to the roots of the crop through tiny orifices water; harvesting millet ears with sickles. In addition to these activities, the project team will also introduce other crops to the participants and offer tastings of desert millet products.

The hard work of farming is often transformed into smiles of satisfaction when the participants hold the millet they have personally harvested, especially evident among the children in the group. Their firsthand experience in sowing the seeds of desert millet also sows the seeds of environmental consciousness in their young minds. This embodies the core mission of SEE: “from little things, big things grow”; SEE wishes to encourage the public to initiate small changes that can cumulatively make a significant impact to conserve our clear waters and blue skies.

Water conservation and sand control: continuous efforts from all fronts

SEE endeavors to engage efforts from all fronts to raise public awareness of environment issues, not only raising environmental awareness but also fostering emotional connections and inspiring public action for environmental conservation.

At the local government level, the Alxa relevant departments have been conducting an annual monitoring of oasis groundwater. In 2014, observing a sharp decline in the underground water table, the local government agency enacted an irrigation water restriction policy, limiting the groundwater quota to 550 cubic meters per household per mu, for certain areas the quota was as low as 350 cubic meters per household per mu. The insufficient water supply for corn cultivation led many farmers to reconsider their traditional farming practices and explore planting drought-tolerant millet for arid regions as promoted by SEE. Since 2014, the government has been tightening the irrigation water quota. As a result, although some small holders were still reluctant to switch from traditional crops, the necessity imposed by these restrictions has popularized the adoption of SEE's drip irrigation technology across Alxa's oases. In Alxa, drip irrigation has been applied to almost all other crops besides millet. With the support of

the local government, SEE plans to launch cultivation projects of other drought-tolerant crops to create a line-up of eco-friendly agricultural products in the future.

Community-wise, the project office recognizes the importance of gaining the trust of the farmers not only by offering economic benefits but also by involving them as key mobilizers in the community to attract more farmers. As most of the farmers are at the age of 50 years or older, altering their traditional agricultural concepts poses a significant challenge. Alxa SEE has specifically engaged a group of younger farmers to share their experiences and promote the desert millet project. Since 2018, Weixi has been holding annual award ceremonies to commemorate star millet producers. On one hand, it is to express gratitude to farmers who have continuously participated in the cultivation of drought-tolerant millet for arid regions and provide them with material incentives; on the other hand, it is to demonstrate that involvement in this project is not solely for economic gains, but also a contribution to

environmental conservation, inspiring broader awareness among other growers. The award ceremonies have successfully cultivated a sense of honor among participating farmers and attracted new households to join the project. Consequently, there has been a gradual increase in the local community's awareness of the importance of conserving groundwater.

Enterprise-wise, being a social organization mainly composed of entrepreneurs, SEE inherently benefits from its member enterprises. Examples include subscriptions from member enterprises, endorsement of famous entrepreneurs, promotions by renowned entrepreneurs and free booths provided by Alibaba, Sina and other enterprises at cooperate charity bazaars. Many enterprises have participated in the desert millet seed pledging activities. Looking ahead, SEE aspires to establish strategic cooperation with more enterprises to further develop its innovative model to solve environmental problems via commercialized operations.

Addressing the Good Food Pledge



Healthy Eating:

Alxa has established a set of organic farming standards for the cultivation of drought-tolerant millet for arid regions. That can be summarized as “Four Nos”: no excessive use of pesticides, chemical fertilizers, herbicides and underground water. Every year, SEE engages third-party institutes to conduct presale pesticide residue analysis in their produce of desert millet. Over the years, desert millet has scored high in organic food testing, proving health whole-grain products for consumers.



Local and Seasonal:

SEE is committed to promoting drought-tolerant millet for arid regions and other drought-

tolerant crops suitable for local cultivation. By positioning these products as organic agricultural goods to expand market sales channels, SEE aims to help local farmers increase their income while simultaneously improving the regional ecological environment.



Food Education: To advocate for the conservation of oasis ecosystems, the Millet Project has been recruiting online subscribers of millet plantation so that all subscribers are eligible to participate in the spring sowing and autumn harvesting activities in Alxa League. In addition, the project has enabled more members of the public to learn about the agricultural journey of desert millet, foster heightened awareness of drought-tolerant and environment protection knowledge while inspiring tangible changes in daily behaviors.

Results and Impacts

- From 2013 to 2023, the Millet Project has engaged 762 households and organized the cultivation of a total of 2,278.67 hectare of desert millet.
- The project has achieved balance of the use and replenishment of groundwater in the main desert millet growing areas for 4 consecutive years.
- Desert drought-tolerant millet was selected into the third batch of China's national list of famous, special, excellent and new agricultural products of 2021 evaluated and published by the Agricultural Product Quality Safety Center under the Ministry of Agriculture; and included in the third volume of the National Guide for Production and Consumption of Famous, Special, Excellent and New Agricultural Products published in 2022.
- SEE's Millet charity projects of "Safeguarding Alxa Oases" are showcased on the Alipay Charity Platform. Up to now, the projects have attracted nearly one thousand donations. More people are now aware of desert millet and get to understand the importance and imperativeness of water conservation.
- In 2024, the SEE Drought-tolerant Millet Project was successfully selected for inclusion in the World Economic Forum's report titled "*Catalyzing Climate Action in Asia: Unlocking the Power of Philanthropy-Public-Private Partnerships*," showcasing its proactive role in advancing climate action.^[6]
- Beijing Weixi Agricultural Development Co., Ltd. was nominated for 2 of the 6 industrial awards of the first China Social Enterprise Awards in 2016: the Industrial Poverty Alleviation Award and the Environment, Energy and Ecological Agriculture Award.

Future prospect

The main challenge encountered by the Millet Project was to effectively promote desert millet products with limited financial resources. Toward the future, the project team aspires to engage more volunteer in

the hands-on agricultural experience activities, explore more efficient and dynamic ways to promote the millet products and the concept of water conservation generated from the project. Most importantly, the environmental concept of water conservation for public welfare has been deeply ingrained in people's minds through projects.

Discussion

The narrative thus far recounts the story behind the implementation of the Millet project in Alxa League. This project has accumulated valuable experience and encountered numerous challenges both for the front-end (desert millet cultivation and promotion of environmental conservation) and the backend (external collaboration and partnerships, as well as the sales of derivative products). The forthcoming case analysis will delve deeper to analyze the project's front-end and back-end processes, roles of different stakeholders, issues concerning product development and urgent resource allocation, aiming to provide some initial thoughts and map out the feasible next steps by answering the following questions.

- What are the strengths and weaknesses of the innovative charity model behind the Millet Project?
- What are the roles of different stakeholders to the project?
- What are the actions required to efficiently promote the products, concepts and practical experience generated from the project?

Case Analysis

What are the strengths and weaknesses of the innovative charity model behind the "Millet's Major Task" project?

Through continuous exploration and experimentation, the The Millet's Project has evolved into an innovative model that combines public welfare and economic benefits, environmental protection and business operation. SEE drives environmental protection and supports the cultivation of drought-tolerant millet for arid regions and water conservation in the oasis. SSE formulates product standards, purchases agricultural products from farmers, and enters strategic cooperation with enterprises like Dacheng Food Group to produce a variety of millet products appealing to the consumers. While generating economic return for local farmers, the cultivation of desert millet helps to raise community awareness of ecological protection, which further supports desertification control.

The advantage of this novel model lies in its establishment of a sustainable ecological chain around the production, processing, sales and profit return of desert millet. Stakeholders are able to react quickly and take appropriate measures to address any problem arising throughout the execution of the ecological chain. However, as highlighted in the case story, the model also presents its weakness in maintaining balance between public welfare and economic benefits. During the project, if the public welfare is overly prioritized, some stakeholders may be deprived of profits hence lose the motivation to participate. Conversely, if it leans too heavily towards economic benefits, the project may deviate from its original

intention of advocating environmental protection.

What are the roles of different stakeholders to the project?

SEE: initiator. Identifying problems and exploring solutions. Since its inception, SEE has been focusing on desertification control, especially measures to mitigate sandstorms in Alxa. After experimenting with a variety of drought-tolerant crops, SEE launched trial cultivation of drought-tolerant millet for arid regions varieties introduced by then SEE President Mr. Wang Shi.

Professor Zhao Zhihai and his team : the authoritative researchers. Breeding drought-tolerant crops. Professor Zhao, director of the Cereals Research Institute of the Zhangjiakou Academy of Agricultural Sciences in Hebei Province, is acclaimed as the "father of hybrid foxtail millet" in China. Upon extensive investigation and experiments in Alxa, researchers successfully bred a variety of millet called "drought-tolerant millet for arid regions", which adapted to the cultivation conditions in Alxa League.

Weixi Cooperative (front-end): executor, engaging in on-site management at Alxa. A segment of the project team is stationed in Alxa, where they manage and supervise the farming activities of the participating farmers, and at the same time carry out related volunteer activities.

Beijing Weixi Agricultural Development Co., Ltd. (back-end): executor, engaging in external cooperation, product operation and sales. Weixi formulates product standards, purchases

farmers' products, searches for suitable enterprises to enter strategic partnership, and execute online and offline product marketing when the products enter the market.

Partner enterprises: partners, developing products. Partners design and produce various types of millet products in cooperation with Weixi following product standards formulated by Weixi.

What are the actions required to efficiently promote the by-products, and practical experience?

To promote drought-tolerant millet for arid regions products to a wider range of consumers and suppliers significant strides are yet to be made. This includes various aspects including national policy environment, product promotion and operational management from an organization level, or raising consumer awareness from an individual level. Some necessary courses of action are listed as follows:

- With the support of existing policies, try to apply for more subsidies for farmers within the scope of existing government policies; increase and improve corresponding planting incentives.
- Diversify sales channels. For example, cooperate with New Oriental Group to conduct livestreaming sales of millet products.

- Optimize the utilization of current marketing resources. In addition to product promotion by SEE member entrepreneurs, expanding the customer base via loyal customers can also be effective. For example, design exclusive perks for users who share social media posts about desert millet or invite 10 new customers to purchase from the brand's official online store.
- Promote desert millet on multiple social media platforms in ways that are adapted to the latest social media marketing strategies. For example, on Weibo, into featuring visual and textual contents about desert drought-tolerant millet with trending hashtags are posted, attracting more user attention and reposts to achieve effective traffic generation. On Douyin (Chinese Tiktok), a short video platform, compelling storylines complemented are made by moving music and visuals to touch viewers' hearts and evoke emotional resonance. On knowledge-sharing platforms like Bilibili, medium- to long-length videos telling the public welfare stories behind desert drought-tolerant millet are published, exploring the project's background, significance, and impact to convey its value to the audience and enhance product recognition and a sense of identification.

Dimensional analysis: levers of change employed in the case

Food production and supply	Production	The key to a continuous and steady production is to raise farmers' willingness to cultivate desert millet. This means that Alxa SEE needs to establish its own purchase scheme to ensure a stable
----------------------------	------------	---

		income of its cooperating households. Leveraging existing resources of SEE member enterprises, SEE established sales channels of internal subscription, online promotion by member entrepreneurs and offline charity bazaars. Moreover, SEE promoted the establishment of a social enterprise called Beijing Weixi Agricultural Development Co., Ltd (hereinafter referred to as Weixi), and officially launch the Millet Project. Thereafter, Weixi founded the cooperative, and took charge of the entire agricultural process of desert millet cultivation. Towards the backend, Weixi oversees product standards and the purchase of desert millet, enters strategic partnership with food manufacturers to produce millet products that are appealing to the consumers. While generating economic return for local farmers, consumption of desert millet products boosts the agricultural production.
	Conservation	Realizing desert millet's water-efficient nature and considerable economic benefits, farmers who were used to flood irrigation and corn cultivation transformed crop cultivation and production methods, providing the most solid operational support for advancing desertification control.
	Livelihoods	Guaranteed purchase prices and subsidies: SEE increase the purchase price of desert millet, provides farmers who adopt drip irrigation techniques to cultivate millet with a subsidy of 140 RMB per mu. Efforts from the backend expand distribution network and reduce the farmers' pressure. SEE established a social enterprise (Weixi) to oversee the production, marketing and sales of relevant desert millet products, eliminating deadstock caused by excessive crop yields among farmers.
Food environment	Policies and Regulations	The United Nations General Assembly declared 2023 as the International Year of Millets (IYM 2023) at its 75th session. The proclamation of IYM 2023 helped to enhance global recognition of millet's nutrition and health benefits, its resilience under adverse and ever-changing climatic conditions, and facilitate the implementation of supporting policies.

	Accessibility	Desert millet products can be purchased at offline stores, charity bazaars, online Wechat stores and Taobao official stores. The project reaches more consumers through offline tasting events and online live-streaming e-commerce collaborations with popular influencers.
	Affordability	Improve consumers' recognition of desert millet's healthy and eco-friendly brand positioning to enhance price acceptance. Leverage the resources of SEE's member enterprises and launch special promotional activities on specific holidays.
Food demand	Information and education	Utilize social media platforms such as WeChat and Tik Tok to promote water conservation; invite volunteers to serve as water-saving public welfare ambassadors; organize a variety of online and offline activities; Set up booths at various charity bazaars to promote desert millet, offer food sampling, and share the story of the journey of grains of desert millet with customers.
	Behavior change	Learn about the charity cause behind desert millet, taste and purchase relevant products, subscribe to a piece of desert millet farm, gain hands-on experience of the sowing and harvesting, take initiative to promote desert millet and put the ecological conservation concept into practice.
	Product experience	Produce products that can be adapted to different consumption scenarios according to the demands of different target consumers. Launch special products for Dragon Boat Festival, Mid-Autumn Festival and other festivals.

Addressing the pillars of sustainable development

PEOPLE Nourishing everyone for health and wellbeing	Desertification, known as the "cancer of the planet", is one of the main causes of dust storms and sandstorms. The adsorption of a variety of harmful pathogens, such as bacteria and viruses, on the surface of respirable particles in sand and dust greatly increases the risk of the spread and prevalence of
---	---

	infectious diseases. Through the cultivation of desert millet and the application of drip irrigation techniques, it is possible to improve the local ecological environment, reduce the impact of dust storms originating in and passing through Alxa on adjacent areas and improve air quality. Millet is a source of nutrients such as antioxidants, minerals and proteins. As a whole grain, millet also provides dietary fiber, which regulates the body's intestinal function, blood sugar and blood lipids. The desert millet products developed by Weixi are free of additives. For example, the millet vinegar is fermented from pure millet grains. In addition, when developing millet products, the team also takes into account people with special dietary needs, such as 100% pure millet noodles developed for consumers with gluten allergies.
PLANET Producing in harmony with nature	Desertification not only threatens the global ecological environment, but also affects global economic development and the sustainable development of human society. There are three major deserts in Alxa, namely Badain Jaran, Tengger and Ulan Buh, and three Deserts. There are also many oases supported by surface or underground water at the periphery of the deserts and areas of yardang landform, as well as along the river banks deep in the deserts. However, in recent years, as the deserts move south, desertified land has continued to expand. Meanwhile, with the spread of large-scale agricultural movements in the oases and downstream areas of the rivers deep in the deserts, Alxa sees frequent occurrence of man-made vegetation destruction and irrational use of water resources, leading to rapid and continuous process of desertification. The drip irrigation technology employed in growing drought-tolerant millet for arid regions can significantly reduce water consumption. By 2020, Yaoba Oasis had achieved a balance between water extraction and replenishment. If desert millet can be

	promoted over a long-term and on a large-scale, it will effectively curb further desertification.
PROSPERITY Inclusive, transformative and equitable recovery for the 2030 Agenda	Located in China's western ecologically fragile region, Alxa has an agricultural population of more than 230,000. Local farmers have low incomes as they mainly engage in the cultivation of water-intensive and low-priced corn. Compared to traditional millet farming, the cultivation of desert millet can increase crop yield by one-third per mu. Coupled with the subsidies provided by SEE, it has, to a certain extent, driven an increase in farmers' incomes. The Millet's Project has cultivated the capacity of local communities to engage in water-saving agriculture by promoting drought-tolerant crops and irrigation technologies, facilitating the positive synergy between local economic development and ecological protection.



We once said in our Declaration: "Why did we entrepreneurs from all over China come to the Alxa Desert? Why did we establish the SEE to engage in sandstorm control in China? It is because we still hold hopes and dreams in us. We hope the Chinese economy will grow stronger and Chinese people will be affluent. And we hope China will preserve the vigor and health of its environment..."

Mr. Liu Xiaoguang
one of the initiators of SEE

References

- [1] Li Xueying. 2023. Editor's Perspective | Exploring the Causes of Frequent Sandstorms in Beijing. https://mp.weixin.qq.com/s/m_dTzljpV6daDUjJx6aw3Q
- [2] Ministry of Ecology and Environment of the People's Republic of China. 2023. The Ministry of Ecology and Environment Holds Its Regular May Press Conference. https://www.mee.gov.cn/ywdt/xwfb/202305/t20230529_1031679.shtml
- [3] The Millet Project. 2015. The Birth of Millet (Part 1). <https://mp.weixin.qq.com/s/Q0dxyLpQ3HjrhUggBYeelw>
- [4] The Millet Project. 2015. The Birth of Millet (Part 2). <https://mp.weixin.qq.com/s/6JL1Qle7nQsuHdwEqYB77A>
- [5] SEE Ecological Association Official Account. 2021. Alxa SEE Participates in the "Road to Kunming: Business and Finance for Biodiversity Conservation" Pre-event Forum. https://mp.weixin.qq.com/s/ThjxJQEkCTwh_WQ2QknXEw
- [6] SEE Ecological Association Official Account. 2024. The Millet's Project Case Selected for the World Economic Forum's Public-Private-Philanthropic Partnership Report. <https://mp.weixin.qq.com/s/y1Vomxj-UhExji5ZOjWtrQ>
- [7] SEE Ecological Association. 2022. Commemorating President Xiaoguang | Move Forward Following the Light with Five Years of Remembrance. https://mp.weixin.qq.com/s/rb0FpPBRUIFEzSc-a_0kxw