



**RE-DEFINING
END-TO-END
INTEGRATION:
PEPSICO LAYS
AND POTATOES**

Re-defining end-to-end integration: PepsiCo Lays and potatoes

How does a company produce crisps in Pakistan for which the correct potato variety did not exist before 2006? And how does it maintain farmer loyalty while implementing its global commitments for traceability and sustainability? PepsiCo Pakistan has achieved both.

Crisper crisp

Since it started a snacks operation in Pakistan in 2006, PepsiCo Pakistan has introduced comprehensive agricultural programs for potato production in Pakistan, transforming local potato cultivation. Before PepsiCo's involvement, only table potato varieties were grown in the country. Today, there are also some varieties suited to the production of french fries. But table varieties and french fries varieties are not suitable for the production of crisps. The company introduced its crisp varieties, expanding operations to about 35,000 acres, with 100% of its potato



PepsiCo team monitoring potato production

requirement now fulfilled locally. The potato farmers partnering with the company typically comprise of land owners committed to the company's mandate of growing potatoes in compliance with PepsiCo's globally adopted sustainable practices. For their commitment and adherence to the company's values and practices, PepsiCo has instituted a tailored approach to ensure grower loyalty: two-thirds of the growers that are part of PepsiCo's network at present have been with the company from the very start of its operations in Pakistan. Here's how the company achieved this.

Understanding Potatoes

PepsiCo Pakistan began its potato operation in Pakistan in 2006 with an express focus on developing the crisp varieties in the country. Prior to this, Lady Rosetta—the leading crisp potato variety—was not grown in Pakistan; the table variety potato usually used for general consumption was the only kind of potato under cultivation. Lady Rosetta is a publicly available crisp variety and is now grown across Pakistan. This also meant that there was an established ecosystem and network of potato production that the company was able to leverage for its crisp variety penetration.

PepsiCo Pakistan used to import the mini tubers for its crisp variety. This was not a cost-effective method of supplying this variety to contracted farmers directly and the company worked to multiply its crisp potato variety seed bank for a few years beginning in 2004 so economies of scale could be achieved ahead of going into commercial production. At present, 100% of the company's potato seeds are also grown locally for the Lady Rosetta variety. Using the potato life cycle, PepsiCo instituted a 5-year seed growing period to find the right balance between quality and supply.

Operating like a seed company

The farmer is bound to the company through contracts from the point of seed issuance to the delivery of the harvested potato. Once the seeds have been issued, PepsiCo continues engaging with its contracted farmers through its network of its field team. Each year the company runs internship programs whereby agriculture university students apply to participate in the September-March potato cycle; they are vetted through tests, shortlisted, given assignments, interviewed and then hired with competitive compensation to facilitate potato farmers in the field throughout the season. About 200 interns are hired to work with farmers on-farm and to complement the company's mobile field labs for quality testing. The program not only helps the university student to get hands-on experience of the field but for the farmer community to receive advisory services from field agronomists. The program also helps to ensure traceability of all the practices and ensure implementation of Good Agriculture Practices at the farm level.

The farmer's capacity is built on optimal crop management practices: crop monitoring, pest management, yield assessment, quality assurance, etc. PepsiCo has also introduced geo-mapping of farmer's scattered plots and GIS-linked plot-level monitoring of the crop. The PepsiCo Agro field team along with interns also aid in building the season's potato database feeding information on all parameters into PepsiCo's standardized system contributing to traceability efforts: PepsiCo's potato value chain is 100% traceable.

Off-taker role

Once the crop is ready, mobile field teams under the quality assurance department run under the supervision of experienced managers visit each farm and conduct live testing prior to accepting the potato batch. The live testing at the farm also contributes to farmer accountability as batch payments are contingent on the potato batches clearing these tests. Once a batch load has cleared testing, three copies of the load testing report are generated: one for the farmer, one for the field team, and one is sent to the PepsiCo finance department to process the farmer's payment within two weeks.

Logistics, storage and quality control

PepsiCo operates its farm engagements in three main regional zones: Depalpur, Kasur, and Multan. The company has set up its plants and collection points centred around its regional production areas in such a way that once the remote labs notify that a harvested batch of potatoes has been cleared for pick up,

trucks arrive to collect the harvested potatoes from the farmer's doorstep. This is crucial as potato is a live organism and highly sensitive to its environment. Delays at this stage would result in costly post-harvest losses and impact the quality of the end-product. PepsiCo uses temperature-controlled stores owned and operated by vendors who are required to maintain potato quality.

The treatment of the potato from seed, through its growth cycle, to its treatment once harvested is extremely important given the nature of the vegetable. Monitoring its health and ensuring factors that contribute to changes in potato health are imperative when it comes to ensuring global quality compliance for Lays chips. It is for this very purpose that the Lays production lines installed in all Pakistan plants have automatic checks at various stages of production.

Forging farmer loyalty

On average, the acreage of a PepsiCo farmer is about 60-70 acres with a maximum of about 200-300 acres set as an informal cut off point. This is to cultivate more homogeneity in the treatment of the contracted farmers. Adaptability and protocols are the foundation of how PepsiCo has managed to engage with the same farmers over a period spanning almost two decades and weathered the tests of price fluctuations, crop yield fluctuations and a changing climate and socio-economic environment.

Among the three main types of growers: land owners, land owners who have contracted their land out and those farmers who have leased land, PepsiCo has clear categories in terms of farmer loyalty based on its historical engagement with farmers. The first two categories have conventionally been the most receptive to new initiatives the company launched, and these farmers were eager to support the company in adhering to the checks, balances and accountability measures implemented. The support of interns is viewed by farmers as a capacity building tool. Much of the principles of the knowledge gained on pest management, crop tending and general best practices can be applied across different value chains and so is an added benefit to the farmers. Another element that is deemed instrumental by the agro team at PepsiCo is the uniformity in the company's management of its contracted farmers. Farmers talk amongst themselves and are clear on the unequivocal focus the company places on adhering to laid out best practices.

Positively sustainable

Positive Agriculture is at the root of PepsiCo's business and is one of the key pillars of the company's PepsiCo Positive (pep+) sustainability agenda. PepsiCo aims to source crops and ingredients in a way that accelerates regenerative agriculture and strengthens farming communities in the local food system while making local agriculture practices more resilient, efficient, and inclusive.

PepsiCo is leveraging High Efficiency Irrigation Systems (HEIS), high-yielding varieties, and innovative agricultural technology transfer to enhance capacity building of the company's affiliated growers. Currently, PepsiCo engages 10,000 acres of farmland through regenerative agriculture efforts in Kasur,

Multan, and Depalpur in Punjab province. Under regenerative agriculture initiatives, PepsiCo is focusing on soil health, watershed health (including through HEIS, laser land levelling, solar tube wells, etc.), biodiversity, and GHG emission reduction/carbon sequestration.

PepsiCo is committed to significantly lowering the company's water footprint, especially in agriculture. The company has conducted multiple stakeholder sessions to keep increasing the number of agriculturists who are fully involved in PepsiCo's water conservation targets. The company increased water-use efficiency by 17 percent in PepsiCo's potato crop in 2023 by using HEIS on 2,370 Acres. The main lever for this is pricing premium offered to farmers who use drip irrigation. Further to this agenda, PepsiCo is also encouraging the implementation of best practices and delivered laser levelling of land and water channel lining on 21,040 acres. Introduction of high yielding varieties is further improving the water usage efficiency.

Improving women's empowerment and farmer livelihoods

PepsiCo is working with existing partner growers to create an empowering ecosystem for the well-being of women agricultural workers. These farms prioritize the inclusion and empowerment of women by providing adequate rest and sanitation facilities. Three day-care facilities are developed in Kasur and Depalpur for the female labor engaged in field activities during potato crop season. Around 430 female farm workforce was provided with technical training to upskill them to contribute in farm profitability while new roles have been identified for female workers at farms which includes digitization of farm records. Ten smart schools are currently operating in partnership with Institute of Rural Management (IRM) with an enrollment of 300 students with an ultimate objective to enroll these children to a regular student after two years.

PepsiCo is also working to introduce technology in agriculture, which can enable the farmers to make the right decisions, build resilience in crop management and deliver better yield. The company has deployed 12 micro weather stations in Kasur, Depalpur and Multan to improve grower resilience by providing them proper tools to improve farmer practices through informed data-driven decision-making. Micro Weather stations provide weather forecasts, temperature, moisture, relative humidity & wind speed / direction, early warning system for crops with about ten disease predictions, early warning prediction for frost, etc.

Looking Ahead

While the company is making strides in its pursuit of sustainable agriculture practices through its potato value chain, a significant appetite for macro-level reforms is also revealed through the farmers' needs and demands. There are exclusive PepsiCo varieties which can give better results but are not being introduced due to intellectual property constraints. Finally, PepsiCo has its proprietary FritoLays varieties whose potatoes



PepsiCo Lays introductory presentation

ensure an international-class Lays taste but are not being introduced in Pakistan for the same reasons. The majority of the landowners PepsiCo works with have expressed interest in modern farm machinery that may aid in sowing and harvesting processes. Many have shown interest in adopting drip irrigation if service providers are available. There is also a palpable demand for solar-powered turbines, tube wells and machines. All this highlights a clear demand from the grower community, which has been aggregated into formal groups by private sector companies like PepsiCo, for both the public and private sectors to rally together and serve.