GOOD PRACTICES 69: April 2025

Bringing Biofortified Zinc Wheat to Farmers, *Chakkis*, and Consumers in Punjab, Pakistan

In this Good Practices Note, Tanya and Syed Qaisar share the strategies that enabled the Global Alliance for Improved Nutrition (GAIN) effectively reach farmers, chakkis (small flour mills), and consumers with Biofortified Zinc Wheat (BZW) in Pakistan's Punjab province.

CONTEXT

Pakistan faces triple burden of malnutrition—the coexistence of undernutrition, micronutrient deficiencies, and rising obesity, affecting different segments of the population. Among micronutrients, zinc deficiency impacts 18.6% of the population and is particularly concerning in rural communities and among women of reproductive age. Zinc-deficient diets increase the risk of various diseases and negatively impact health. In developing countries, zinc deficiency is a significant concern, especially affecting children, the elderly, and pregnant women. Given that wheat is a staple food in Pakistan, biofortifying it with zinc offers a natural and sustainable solution to this issue.

Farmers Training on Production, Segregation and consumption of BZW, Khanewal

GOOD PRACTICES

Against this backdrop, the Global Alliance for Improved Nutrition (GAIN), in partnership with the Association for Gender Awareness & Human Empowerment (AGAHE), launched the Biofortified Zinc Wheat (BZW) project. Implemented in Multan, Khanewal, and Bahawalpur districts of Punjab Province, the initiative addresses gaps in nutrition, agriculture, and economic empowerment by ensuring BZW

reaches bottom-of-the-pyramid (BoP) consumers. Key intervention areas include seed multiplication, storage, and grassroots-level management:

Capacity Building for Multiple Stakeholders

To boost awareness and adoption of BZW, AGAHE and the Department of Agriculture Extension & Adaptive Research conducted 276 field-level training sessions across the target areas. A total of 7,010 farmers—including semi-subsistence, subsistence, and progressive farmers—were trained in BZW production, segregation, and consumption.

To strengthen post-harvest handling and supply chain coordination, GAIN facilitated a specialized training for 60 aggregators and food inspectors from the Punjab Food Department. The orientation covered zinc deficiency and its health effects, the nutritional benefits of BZW, segregation at aggregation centres, record-keeping protocols, and the Feedback and Complaint Redressal Mechanism (FCRM).

AGAHE also supported 90 commercial flour processing units across Multan, Khanewal, and Bahawalpur to ensure the purchase, separate grinding, and sale of BZW whole flour, aiming to reduce zinc deficiency by promoting its consumption.

Technical Support for Effective Segregation

To preserve BZW's identity and quality, AGAHE provided essential segregation tools at aggregation centres—including weighing scales, sewing machines, tarpaulins, zinc stamps, and branded stickers. These measures helped ensure proper segregation from farm to market, impacting 75 aggregators.

GAIN supporting *Chakkis* for segregation & processing of BZW grain

Establishing and Strengthening Community-Based Organizations

Three Community-Based Organizations (CBOs) were established to support local seed multiplication of BZW and reduce dependency on external sources. A total of 180 semi-subsistence and progressive farmers received training in seed multiplication, quality management, and storage. Each CBO was provided basic seed, hermetic bags, and a seed grader to support localized BZW production.

Connecting Aggregators with Small Processors (*Chakkis*)

A core part of the project was strengthening supply chains by linking farmers, aggregators, and flour mills (*atta chakkis*). AGAHE set up new aggregation centres with tools such as weight scales and packaging supplies to enable effective handling and traceability of BZW. The *chakkis* then purchased BZW grain, processed it into whole wheat flour, and sold it at standard market prices, increasing accessibility to nutrient-rich flour.

CHALLENGES

Initial hesitation among farmers-

Farmers were initially reluctant to grow BZW due to limited knowledge and uncertain markets. GAIN and AGAHE countered this with trainings, field demonstrations, and awareness campaigns that built trust and increased adoption.

Weak Market Linkages

Chakkis had difficulty sourcing BZW, and consumers were unaware of its benefits. GAIN connected farmers to aggregators and chakkis, registered growers, and ran community outreach and nutrition education sessions to boost demand.

BZW seed distribution drive in Pakistan

Processing Issues at *Chakkis*

Mill owners lacked knowledge about proper milling, segregation, and packaging. Training in 95% extraction milling, hygiene, and biofortified labelling improved the overall processing quality.

BENEFITS AND IMPACT

The project engaged over 14,000 farmers and 45 aggregators, resulting in enough BZW to meet the staple food needs of over 1.5 million people. 90 *chakkis* are now processing and selling BZW flour.

Impact Story - *Zafar Iqbal*:
At *Allah Wali Atta Chakki* in Bahawalpur, *Zafar* previously mixed wheat varieties, leading to customer dissatisfaction. After training, he switched to exclusive BZW milling.

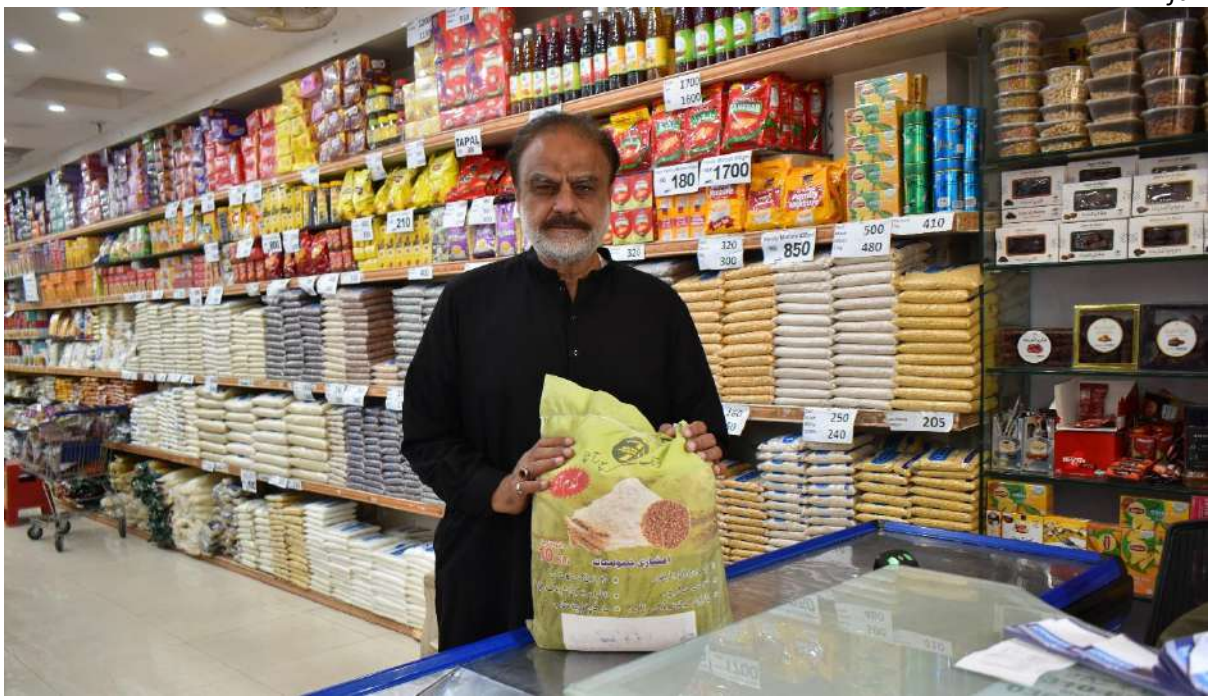
> "I didn't know about the health benefits of BZW before. Now, I will only buy BZW. It costs the same as regular wheat but is much better for your health!"
>
> *-Zafar Iqbal*

Impact Story - *Syed Sajjad Hussain Shah*:
Owner of *Lajpal Al-Mehboob Atta Chakki* in Khanewal, he improved packaging and saw a 10% income increase.

> "Joining AGAHE helped me overcome quality and packaging issues. Now, I sell BZW in AGAHE-provided bags, which attract more customers."
>
> *- Syed Sajjad Hussain Shah*

Impact Story - *Irfan & Al-Masoom Mega Mart*:
After AGAHE's facilitation of linkage between *Zafar Atta Chaki* and *Al-Masoom Mega mart*, the mega mart sold 100 BZW flour bags in the first month.

> "At *Al-Masoom Mega Mart*, we proudly offer BZW flour—healthier choices for customers while uplifting local businesses."
>
> *-Irfan*



BZW flour being sold at a retail shop

Consumer Impact - *Haider Abbas*:
Haider's family, especially his children, frequently fell ill due to zinc deficiency. After switching to BZW, their health improved significantly.

> "Switching to BZW flour was the best decision. We no longer suffer from frequent illnesses, and it reduced our medical costs."
>
> *- Haider Abbas*

To date, the project has reached over 100,000 consumers.

SUSTAINABILITY AND SCALING UP

To ensure sustainability, GAIN strengthened policy alignment and industry collaboration. BZW has been integrated into government strategies. Nine Multi-Stakeholder Platform (MSP) workshops were held to facilitate engagement between actors across the value chain.

GAIN also collaborated with Balochistan Agricultural Research & Development Centre (BARDC), supporting the production of 43 tons of seed from 240 bags of BZW basic seed.

BZW seeds stored at a private aggregation centre in Punjab, Pakistan.

LESSONS LEARNED

- **Farmer Registration and Training** built clarity around BZW use and strengthened value chains.
- **Private Sector Engagement** improved flour quality, boosted incomes of *chakki* owners, and increased consumer reach.
- **Challenges Remain:** Lack of subsidized inputs, limited access to quality seed, low consumer awareness, and insufficient labelling standards hinder broader adoption.

For scale, biofortification of zinc wheat must be included as strategy for tackling malnutrition in Pakistan. BZW must be included in national seed subsidies programme, school feeding programmes. Research institutes like Ayub Agriculture Research institute (ARRI) and Pakistan Agriculture research

council (PARC) etc must be provided with enough resources to continue their work on biofortification with more innovations.

ENDNOTE

The BZW initiative in Pakistan shows the impact of multi-sector collaboration—empowering local actors and transforming food systems. Scaling BZW requires continued investment, strong partnerships, and supportive policies. As communities grow and consume nourishing foods, everyone benefits.

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