



World Food Programme

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# Rwanda's wholegrain trailblazers:

## Reflections on a fortified wholegrain maize meal pilot in school meals

While food fortification is an effective and widely used approach to reduce micronutrient deficiencies, vitamins and minerals are normally added to the refined versions of staple grains, where the fibre- and nutrient-rich bran and germ have been removed in processing. Fortification of wholegrain flours, where most of the grain remains in the processed product, remains largely uncharted territory but represents a promising way to increase the micronutrient content through fortification while maintaining the health benefits of wholegrains.

***"WFP in Rwanda trialled a shift from providing its usual fortified refined maize meal to a new fortified wholegrain maize meal."***

In 2021, together with the Rockefeller Foundation and a local implementing partner, Vanguard Economics, WFP in Rwanda trialled a shift from providing its usual fortified refined maize meal to a new fortified wholegrain maize meal. The new product was purchased from a local miller and was served as part of school lunches to

14,000 students in 18 schools participating in WFP's Home-Grown School Feeding programme.

***"The pilot demonstrated that the substitution can be feasible, budget-neutral and be well accepted by students and the school community."***

Based on its success, WFP and partners plan to increase distribution of fortified wholegrain maize meal to more WFP-supported schools (reaching 81 schools by January 2023) and support the government of Rwanda to include wholegrain fortified maize meal into the national school meal programme, which serves 3.5 million students, starting in the 2022-2023 academic year.

We sat down with school feeding and nutrition colleagues from the WFP Country Office in Rwanda to ask about lessons learnt and reflections on the project so far.

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## WFP was already providing fortified maize meal in school meals in Rwanda. What was the motivation to trial a wholegrain version?

WFP's school meals are provided to over 100,000 children in 136 schools in Rwanda. Before the pilot, fortified maize meal, purchased from a local supplier, was already a main component of school lunches along with fortified rice, fresh vegetables from school gardens, beans, fortified oil and iodized salt.

Together with the Rockefeller Foundation, we saw that if we could work with the existing WFP supplier miller to fortify the wholegrain maize meal instead of the refined flour, we could further increase the nutritional value of the school lunches – combining the benefits of both fortification and wholegrain – without having to change the school meal. Wholegrains provide more protein, fibre and micronutrients than refined maize meal, while fortification adds other important vitamins and minerals often deficient in children's diets: vitamins A, B<sub>1</sub>, B<sub>2</sub>, B<sub>3</sub>, B<sub>6</sub>, B<sub>12</sub>, folate, zinc and iron. Also since school feeding seeks to curb short-term hunger that affects concentration, wholegrain flour was promising due to its ability to help children feel full.

***"Wholegrain foods also have a cost advantage over refined versions because a higher yield is extracted from the raw materials (typically 20-30 percent higher)."***

In terms of processing, wholegrain foods also have a cost advantage over refined versions because a higher yield is extracted from the raw materials (typically 20-30 percent higher). For example, our local supplier's system can retain 80% of the maize grain when making wholegrain flour compared to 50% when making refined flour using a hammer mill system. These savings help offset the lost revenue from selling by-products from refined flour production and the slower output of wholegrain production, which can make switching to fortified wholegrain maize meal a cost-neutral activity.

## What makes this project noteworthy?

Besides the fact that we are fortifying wholegrains (we were surprised to learn that we were the first ones in WFP), this project is interesting because we are using a whole food system approach to introduce a new product, combining supply, demand and creating an enabling environment.

At the production end, the Rockefeller Foundation and Vanguard Economics are building miller capacity through enhanced technology and setting up a production line for fortified wholegrain maize meal. WFP purchases and distributes the product in its school feeding programme and Vanguard Economics promotes it at the consumer level through delivering social and behaviour change communication (SBCC) to students, school staff and parents.

Upstream, beyond our own school feeding programme, we as WFP are working to create a favourable policy environment, advocating to the government to use nutritious foods including fortified foods in the national school meal programme. For example, we have already integrated fortified wholegrain maize meal into the menu guidance within Rwanda's School Feeding Operational Guidelines, and we are also working on integrating it into the school feeding recipe book and training curriculum for cooks, storekeepers and school committees.

***"This is the first time that we have worked on developing a product targeted initially to school-aged children."***

Another thing that makes this example stand out is that, in Rwanda, WFP's work on developing nutritious products has traditionally been targeted to children under 5 and pregnant and breastfeeding women. This is the first time that we have worked on developing a product targeted initially to school-aged children. In terms of products, this has expanded our focus beyond the first 1,000 days to the first 8,000 days, which are also essential for good health, growth and development.

## What has been a key success factor in this project?

The pilot had great results. We were able to produce fortified wholegrain maize meal at the same cost as the refined version and distribute it to 18 schools. We also saw a shift in student and parent preferences towards fortified wholegrains – almost all (97 percent) of the students preferred it to the refined equivalent, stating that they liked the rich taste.

***"We did not try to introduce a completely new product but focused on a food that was already being eaten."***

One factor that we think contributed to this success was that we did not try to introduce a completely new product but focused on a food that was already being eaten. Maize meal was already produced by local millers, available in markets, and widely consumed in schools and homes as a porridge or as an accompaniment to meat, beans and vegetables. We just found a way to make it more nutritious. If we had tried with another staple that was less commonly consumed and for which there was less in-country capacity to fortify, we might not have been so successful.

## What has been the biggest challenge?

Since there is currently only one supplier that can fortify wholegrain maize meal in Rwanda, this creates a tension that if we are promoting this product, we may be inadvertently encouraging a monopoly.

Maize meal production is quite decentralized in Rwanda, with small-scale millers producing wholegrain as default, and millers have expressed concern that they would lose their business if they were not able to fortify.

We are therefore still thinking about how to scale this up beyond schools in a responsible manner that ensures that the nutritional benefits reach the public but that also stimulates a diverse and competitive private sector. We are also collaborating with other partners that are building the capacity of more millers to produce this product.

## Wholegrain flour generally has a shorter shelf life than refined flour. How did you manage this in the pilot?

This has been another challenge. The shelf life of the fortified wholegrain maize meal is currently three months – half that of the refined version which lasts six months.

This has had a knock-on effect on our purchasing and distribution. We had to do two dispatches per three-month term instead of one, meaning that we had to organize and budget for additional transport of food to the schools. Because we only had one production line and there is so much that goes into a second dispatch – transport costs, logistics, staff – we couldn't scale up from 18 to 136 schools as quickly as expected. This was compounded by the fact that processing fortified wholegrain is slower, so the same miller will produce a smaller volume of wholegrain than refined meal in a day.

These were some of the complexities of scaling up just within our own programme and are important factors to consider as we advocate for the scaleup of fortified wholegrain maize meal beyond WFP programmes. There is a need to align supply chain processes and structures to the requirements of a new product. This needs time to scale up and iron out production processes and flexibility and technical support on the part of WFP towards the supplier.

## How was the fortified wholegrain accepted by the students?

We were thrilled to discover that the students really liked the wholegrain maize meal and there was no resistance. This was likely partly because maize meal is already eaten in Rwanda (in fact, the local maize meal consumed by rural families would likely qualify as wholegrain, but is not labelled as such), but may have also been influenced by the SBCC strategy that we implemented as part of the pilot.

Through the local partner, WFP supported SBCC in schools to encourage acceptance and to sensitize students and the wider school community on the health benefits of fortified wholegrain maize meal. For us this was also a new challenge because, as opposed

to a consumer market context, our goal was not for people to choose one product over another, but to make sure that children accepted the product, that they understood why it was good for them, and that they became ambassadors for improved nutrition at home.

***"By the end of the pilot, both students and parents were asking where they could buy the product in the market."***

By the end of the pilot, 73 percent of children in the pilot group recognised that fortified wholegrain was a healthier food, compared with 32 percent of children not participating in the pilot. And by the end of the pilot, both students and parents were asking where they could buy the product in the market.

## You've mentioned a number of partners involved in this pilot. Can you reflect on WFP's role?

The pilot brought together three main partners: the Rockefeller Foundation, which sponsored the project; WFP, which was responsible for developing specifications and procurement and distribution of the maize meal to the pilot schools; and Vanguard Economics, a local partner responsible for consumer research and overall implementation.

The pilot demonstrated WFP's well-known power as an institutional buyer—the ability to use our procurement to create predictable demand for products such as fortified foods and therefore stimulate their production. This has always made WFP an attractive partner, well placed to work at the intersection of government and the private sector. WFP is also a key actor in shaping the national school feeding agenda and standards, supporting the newly launched National School Feeding Programme.

***"We saw that the pilot could act as an entry point to encourage the integration of fortified wholegrain maize meal into Rwanda's national school feeding programmes which serves 3.5 million children, as well as offer WFP a platform to advocate with the government for fortified foods in general."***

But as the project evolved, we realized that WFP's role could be much larger than just being the institutional buyer. We saw that the pilot could act as an entry point to encourage the integration of fortified wholegrain maize meal into Rwanda's national school feeding programmes which serves 3.5 million children, as well as offer WFP a platform to advocate with the government for fortified foods in general.

Using the opportunities provided to us through the pilot, we began to systematically promote fortified foods wherever we were engaging on school feeding. For example, we were able to embed fortified wholegrain flours into the government's school feeding operational guidelines that specify which



foods should be prioritized in school meals. We also found opportunities to present on the value of fortified wholegrain flours in school feeding technical working groups and other platforms.

This was a shift in our own thinking about what role WFP could play in fortification beyond being an institutional buyer, to becoming a stronger advocate for fortified foods in national dialogues.

## Do you have any advice for other WFP country offices wanting to introduce fortified wholegrains into school feeding?

Think ahead of what building blocks you will need to have in place before you start the pilot. For example, is there private sector capacity to supply the product if you are successful in your advocacy and the government is willing to scale up over the long term? Are funding, evidence and product development mechanisms available for suppliers that are interested to engage? If you don't do a capacity assessment and plan for how the private sector will be supported over the medium and long term, you risk that demand will outstrip supply.

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Another example is to invest in research and development (R&D) before rollout of the pilot. In Rwanda, we launched the pilot before conducting all the required shelf-life analyses, some of which eventually showed that the product lasted half as long as the refined maize meal. We were able to adapt WFP's procurement and other logistics in order to dispatch more frequently, but if it had been the national school feeding programme, it could have been overwhelming for the systems to rapidly adapt their procurement processes. You don't need to have all the R&D done before initiating a pilot, but you should do so for the critical things that will impact the success of the project.

Finally, it's important to remember that communication matters. We as WFP must carefully calibrate our language so that we don't appear to be promoting a single product as a silver bullet. While fortified wholegrain maize meal has numerous benefits, at the end of the day it is just one ingredient in the school food basket, and one food in what needs to be a diverse, nutritious and affordable diet that is accessible to all Rwandans. It's important that we never lose sight of this.

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