

# The revival of an ancient crop

Joshua Spetter and Lisa Thompson

When the Spanish *conquistadores* reached Mexico, almost 500 years ago, they were very impressed by the size of the Aztec capital, its buildings and its infrastructure, and also by its people, their ceremonies and traditions. They were particularly impressed by the diversity of crops grown and which were part of their diet, and by the special relationship which the population had with their environment. The Aztecs revered the animals they hunted, they worshipped the sun and the moon, and they honoured their rain god, *Tlaloc*. This followed a special ceremony which included creating idols made of amaranth paste and eating them, literally becoming one with the god who made things grow.

Amaranth was not only valued as a medium for sculpting figures of the gods. Rulers and high priests were offered tons upon tons of amaranth seed in tribute every year. Warriors were given regimens complemented with amaranth to help increase their strength and endurance. The use of the amaranth seed, both to appease their deities, honour their rulers, and empower their warriors reflected the cultural significance of the grain to the Aztec people. Recognising the importance of amaranth in the daily life of the Aztecs, the *conquistadores* ordered the idols destroyed, the fields burned and the punishment of death upon those who dared to cultivate or eat the “pagan” grain. Not surprisingly, the production and consumption of amaranth declined drastically, gradually being forgotten by most of the population in Mexico. Fortunately, this crop is recently making a comeback, becoming more and more popular around the world due to its exceptional nutritional value, and its ability to grow easily in hot, semi-arid climates. Today more than 60 varieties are cultivated in Asia, Australia, India, North America, South America, Europe, and Africa, and its consumption is being encouraged.

## Growing amaranth in Oaxaca

In contrast to five centuries ago, the population of many rural areas in Mexico today survive on a very limited diet, based primarily on corn. The lack of diversity leads to a deficiency of many amino acids and other essential nutrients. Protein malnutrition is common and severe, leading to stunted growth, development, and learning potential. Because of the high demand for energy and essential nutrients from a growing body, infants and children are at a higher risk of malnutrition. The main problem is that the effects of malnutrition are not only severe but also irreversible, often perpetuating the vicious cycle of poverty.

Malnutrition is common in Oaxaca, a state in southern Mexico with a population of approximately 3.3 million. According to the National Nutrition Survey of Rural Mexico, 31.3 percent of the Oaxaca children under five are mildly malnourished, 18.7 percent are moderately malnourished, and 4.6 percent are severely malnourished. In general terms, Oaxaca is the second poorest state in Mexico. Most families in Oaxaca have between one and five hectares of land and mainly grow corn, beans and squash for self consumption. Yields are low, and soil erosion has drastically increased, forcing many farmers to leave agriculture. The average daily income is less than half the Mexican average, and the illiteracy rate more than doubles the



Photo: Joshua Spetter

**A drought- and pest-resistant crop, amaranth is an excellent source of protein, iron, calcium, fibre and folate.**

average for the rest of the country. As a result, migration has been high during the last decades, leaving a disproportionate number of women and children in rural villages.

Farmers are not familiar with the diverse diet of their ancestors. Some blame the local government and the extension services for not having promoted other crops and for the difficult situation in which agriculture is found (erosion, limited irrigation facilities, lack of markets). But farmers also acknowledge some agronomic difficulties in producing crops such as amaranth, as these can be very time intensive: weeding needs to be done carefully and, being the seeds very small, the harvesting period is short – if you miss it, the seeds fall, leading to a very low harvest. However, amaranth has many advantages: it is a drought-, disease- and pest-resistant crop, with the earliest maturity period among cereals. More important, amaranth is an excellent source of protein, iron, calcium, fibre and folate. Its leaves are consumed as vegetables, while the seed is milled into flour. Both the leaves and the popped seeds can be added to many traditional Mexican dishes without difficulty and without an adverse effect on the flavour of those dishes. A small fistful of popped amaranth seeds every day can prevent stunting, diarrhoea, and other consequences of malnutrition in children under five years of age.

## Puente and its programmes

*Puente a la Salud Comunitaria* (Bridge to Community Health) is a non-governmental organisation operating in Oaxaca. *Puente* is dedicated to raising awareness among the local population about the causes and effects of malnutrition and promoting amaranth as a culturally significant, highly nutritious, and potentially income-generating alternative for crop diversification and food security.

*Puente*'s “Training Farmers” project promotes the cultivation of amaranth as an economically viable alternative. Because of increasing demand, the market value of raw amaranth seed is about 12 pesos per kilo (approx. US\$ 1). A farmer can expect to yield between 1000 and 2000 kilos of amaranth seed per

hectare, so its production can greatly contribute to income generation. But *Puente* does not promote a monocrop, nor aims to replace other crops. Their main objective is to diversify production. Francisco Ramirez Pacheco, for example, attended the first of four Training Farmers workshops in April 2007, in which he learned about the benefits of crop diversification and inter-cropping (pest control, soil fertility, weed control, etc.) and how to plant amaranth. He has planted amaranth with corn, broad beans and potatoes on his farm in La Brujería, in the district of Zaachila. He has applied compost and is thinking of growing green manures. As a result, the difference in the growth and development of his crops and that of the crops of some of his neighbours is notable. Francisco is now convinced that he will have a substantial amaranth harvest.

This year, *Puente* is working directly with more than 100 Oaxacan producers who volunteered for the “Training Farmers” project. Each producer agreed to plant 1/8 hectare of amaranth seed and to attend capacity-building workshops that cover everything from plot selection and soil preparation to harvesting techniques and seed storage. *Puente*’s four intense workshops integrate sustainable farming practices with amaranth production for food security and income generation. The workshops are reinforced by one-on-one discussions with the farmers in their amaranth fields. Agricultural extensionists diffuse information that the producers can apply to all of their crops, not just their amaranth plots. Farmers receive hands-on training in inter-cropping, composting, crop rotation, and ecological pest control. As part of the agreement with the producers, *Puente* will serve as a bridge between them and the lone amaranth processing factory in the state of Oaxaca, operated by another non-governmental agency. Farmers will also receive important information about alternative markets should they choose to look elsewhere to sell their harvests.

But *Puente*’s activities aim to go beyond agricultural production. Its flagship project is “Healthy Families”, through which they work with 1500 women in twenty communities in this region, teaching them about basic nutrition principles and demonstrating how to cultivate and cook with amaranth. Work is carried out in the communities in co-ordination with the local health centre where the workshops take place. Women learn about the benefits of amaranth and how to integrate it into their everyday routines of preparing food for the family. *Puente*’s Health Educator, Hitzel Quero, has facilitated many workshops with the producers where they learn to integrate amaranth leaves and seeds into the dishes they prepare every day. For example, *atole* is a corn or oat-based porridge usually drunk in the morning to which popped amaranth seed can easily be added, greatly increasing its nutritional value. Similarly, fresh fruit juices are prepared by adding fresh amaranth leaves, again, adding greatly to the drink’s nutritional value. *Puente* also shows families how to add amaranth seed and leaves to the staple of their diet, corn tortillas. The leaves can be diced and added to the tortilla dough along with popped amaranth seed and/or amaranth flour. Many soups are prepared with amaranth leaves as well, and people really enjoy the flavour. When amaranth is added to another cereal or grain, as in the *atole* and tortillas, a complete protein is formed that otherwise would only be consumed through eggs, beef, or other animal products. Project beneficiaries have reacted with much excitement and interest and are very eager to learn how to integrate their new crop into their diets. The cooking demonstrations are very participative, with the producers splitting up into groups to make different recipes and then sharing as a group how each recipe was prepared. Through the production and consumption of amaranth, the diet, and subsequently the health, of each family will improve.

### Interaction and integrated programming at Puente

The “Training Farmers” project aims to promote the cultivation of amaranth as a very marketable cash crop. More importantly it aims to reinforce the “Healthy Families” project, promoting the cultivation of amaranth as an excellent foodstuff with a vital role to play in combating malnutrition. *Puente a la Salud Comunitaria* blurs the line between rural health and agricultural development through an integrated programme of nutrition education, cooking demonstrations, crop diversification, and soil conservation. The Aztecs prayed to the rain god *Tlaloc* to make things grow and ate amaranth idols made in his image. Today, it is learning about, cooking with, and cultivating that very grain that empowers Mexican farm families to take their well-being into their own hands.

Fertile soil is the lifeline to a community’s well-being. Sustained, diversified production leads to food security and a balanced diet. From an integrated programming perspective, it is very natural for a rural health education project, focused on nutrition, and a crop diversification/soil conservation project to function simultaneously in a community. As *Puente* is a relatively new,



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small organisation, we are looking for ways to optimise our available resources to have the greatest impact in each and every community. Our Community Health Educators (CHEs) and our agronomist travel together to communities. The agronomist helps the CHEs when they give workshops about amaranth cultivation in family gardens, and the CHEs help the agronomist give cooking classes and nutritional information to the farm families. In the long term, for amaranth to really become a part of the daily diet again, we found that it needs to be regarded as one of the crops traditionally cultivated for consumption. It will be interesting to see how this relationship between the two projects continues to grow and move forward.

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