

## Two New Climbing Bean Varieties Offer Hope for Smallholder Farmers in Guatemala

Two new improved varieties of dry climbing bean, *ICTA Utatlan* and *ICTA Labor Ovalle*, promise to lessen the hunger period and increase household income of Guatemalan farmers in the western highlands—critical advances in a country where 43 percent of the population suffers from chronic malnutrition and stunting is widespread.

***ICTA Utatlan***, a climbing bean adapted to the high altitude of Guatemala's western highlands (1,500 to 3,000 meters above sea level) and the milpa cropping system practiced in these mountainous regions, matures a month earlier than other climbing bean varieties and produces greater yields than the local landrace bean usually planted in the highlands. This early maturing and additional 200 kg/ha (ha=2.47 acres) sets *ICTA Utatlan* apart for resource-poor smallholder farmers, who often suffer during the seasonal hunger period between June and September, when the previous season's food stores are depleted and the new crop is not yet ready for harvesting.



New crosses from the *ICTA Utatlan* and *ICTA Labor Ovalle* growing in the greenhouse.

As one farmer noted, “I like the earliness of *ICTA-Utatlan* because I can harvest much earlier than my current variety. It also facilitates my maize harvest.”

In the milpa system, farmers intercrop maize and beans, with the climbing beans using the maize stalks for support as they grow upward. One of the challenges within this system is that maize and bean can interfere with each other's growth, resulting in yield losses due to competition. If a bean plant grows too tall too quickly, for example, it can cause the corn stalk to break, a problem called *lodging* that, when severe, leads to increased seed losses. One of *ICTA Utatlan*'s most attractive traits is its “less aggressive climbing ability,” which farmers find to be an added bonus.

One of the local farmers agrees, stating, “These new cultivars have a less aggressive climbing ability compared with my variety and therefore, my maize doesn't lodge and I can have good production of both maize and beans.”

Lodging has even led some farmers to abandon bean production completely. With too many Guatemalan families consuming corn and corn-derived foods almost exclusively, a climbing bean variety that grows successfully with maize is more likely to be planted by smallholder farmers.



Project PI Juan Osorno and ICTA Bean Program Leader Angela Miranda examine fields of the new varieties in Guatemala.

With other USAID and Feed the Future projects focused on nutrition education and encouraging greater bean consumption among families in Guatemala's western highlands, the added value of a bean seed that complements that goal cannot be ignored.

**ICTA Labor Ovalle**, a small, black Bolonillo seed type with a shiny appearance that is also adapted to growing in the elevated mountain regions of western Guatemala and produces an average yield 172 kg/ha greater than the local landrace bean, has also been received enthusiastically by highland farmers.



The new cultivars growing in the field.

As a Bolonillo seed type, ICTA Labor Ovalle is considered a preferred market class that is highly valued in the marketplace. Additionally, both farmers and buyers have praised its excellent taste, shorter cooking time, and wonderful broth color—all characteristics valued by buyers, making it an excellent cash crop for smallholder farmers who want to increase their household income. Bolonillo beans sell for about \$1.50/lb., making it a profitable bean.



Dr. Fernando Aldana, who was central to the development of *ICTA Utatlan* and *ICTA Labor Ovalle*, presents information on the varieties at the Liberacion Oficial de Variedades de Semillas de Frijol event near Quetzaltenango, Guatemala, in March 2017.

As one of the women farmers notes, “I like the culinary quality of the new cultivars. They both have good flavor, texture, and brine color.”

Officially released in March 2017 at the ICTA (Instituto de Ciencia y Tecnologia Agricolas) Centro Regional de investigacion del Altiplano Occidental, just outside Quetzaltenango, Guatemala, at the Liberacion Oficial de Variedades de Semillas de Frijol event, both of these bean varieties were initially developed by Dr. Fernando Aldana, a bean breeder at ICTA Quetzaltenango (now retired).

The last breeding stages, seed purification and production, and release were made with support from the Feed the Future Innovation Lab for Collaborative Research on Grain Legumes project, *Genetic Improvement of Middle-American Climbing Beans for Guatemala*, in cooperation with ICTA and the Feed the Future Buena Milpa and MASFRIJOL projects. Event participants received 1.5 kg. of each bean seed at the event for planting.

Buena Milpa distributed approximately 7,000 pounds of each seed during the 2017 planting season, and ICTA is producing more seed of these varieties for distribution to farmers in the 2018 season. The Feed the Future MASFRIJOL project also received 200 pounds of each variety for distribution.