

## Drought-Resistant Bean Variety Offers Hope to Central American Communities

A new drought-resistance bean variety, *Paraisito Mejorado 2 (PM2-Don Rey)*, was released in 2016 in Honduras for commercial production, offering hope to resource-poor smallholder farmers.

Developed by EAP-Zamorano in collaboration with the University of Puerto Rico with support from the Feed the Future Legume Innovation Lab, *PM2-Don Rey* combines the adaptive and seed quality traits of a creole parent *Paraisito Criollo* with the multiple virus resistances and agronomic traits of the commercial line *Carrizalito*. In field trials prior to release, this variety was also surprisingly found to be adapted to degraded low fertility soils, common to smallholder farms in Honduras. The high yields obtained of low fertility soils suggests that *PM2-Don Rey* is highly efficient in nutrient uptake and utilization, thus enabling farms to obtain good grain yields without intensive fertilization.



A happy farmer in Honduras holds *Paraisito Mejorado 2* plants to show its high yield potential.

Since droughts are common during certain growing seasons in Honduras and contribute to significant crop losses, the value of a bean variety able to withstand drought conditions cannot be overstated. Beans provide a significant and affordable source of protein and mineral nutrition to millions of Central American farmers and their families, who rely on their harvest for basic food and economic security.



This golden yellow mosaic pattern indicates BGYMV, a virus that spells disaster for bean farmers. *Paraisito Mejorado 2* is completely resistant to this economically important virus.

*PM2-Don Rey*, like all new bean varieties being released in the low-land tropical regions of Central America, also has genes for resistance to Bean Common Mosaic Virus (BCMV) and Bean Golden Yellow Mosaic Virus (BGYMV). These are the two most prevalent virus diseases- causing up to 90% grain yield losses in susceptible varieties. This new variety also possesses resistance to anthracnose and rust as well as moderate resistance to angular leaf spot.

Perhaps the trait that most excites both farmers and consumers is that *Paraisito Mejorado 2–Don Rey* is a small-red *seda* seed type bean. Consumers in Honduras, El Salvador and Nicaragua prefer *seda* beans because they have a wonderful flavor and cooking properties similar to creole landraces with which they are familiar. In addition, grain traders will pay a premium price for grain of *seda* type beans for export to the U.S. and other countries where the *seda* type is preferred. Because of these culinary attributes, expanded market opportunities, and high yield potential and stability under smallholder farm conditions, the new variety *PM2-Don Rey* provides hope for increased household income as well as food and nutritional security.

Conventional plant breeding techniques and marker-assisted selection were used by the Legume Innovation Lab geneticists to breed this and other improved dry bean varieties. The Legume Innovation Lab also financially supports regional nurseries, such as the

SISTEVER Bean Network, which evaluated the performance of *PM2-Don Rey* under a wide range of agroclimatic conditions prior to its release. The bean improvement programs of national agriculture research organizations within Central American and the Caribbean participate in this regional bean nursery. Regional nurseries are important to breeders because they provide a mechanism to assess the performance of their lines against other elite and commercial lines from other breeding programs, under diverse cultural conditions, and to gain regional visibility for promising lines such as *PM2-Don Rey*.

Growing beans in Central America has never been easy. With the introduction of *Paraisito Mejorado 2-Don Rey*, however, farmers now have access to a technology that not only provides hope for increased yields in the field but also expanded market opportunities and income and better flavor for household consumption.



Dr. Juan Carlos Rosas, head of the Bean Program at EAP-Zamorano and breeder of *Paraisito Mejorado 2-Don Rey*, inspects an elite line in a field trail in Honduras.