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# GAIN Report

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## Nicaragua

**Post:** Managua

### **Cochran Faculty Exchange Alumnus Pioneering in Cocoa Research**

**Report Categories:**

Agricultural Situation

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**Report Highlights:**

The Cochran Fellowship and Faculty Exchange Programs facilitated research on genetic improvement of sustainable cocoa production in Nicaragua. Cochran/Faculty Exchange Alumnus, Dr. Ivan Marín, established the foundation to implement a program of genetic improvement for sustainable fine cocoa production.

### **General Information:**

In 2006, Dr. Iván Marín, Head of the Food Technology Laboratory at the [National Autonomous University of Nicaragua](#) benefited from a Cochran training at Michigan State University. The training provided in-depth knowledge of biotechnology regulatory policy, biotechnology research, technology development and established the groundwork for GMO diagnosis and bio-security measures, including genome sequencing. Participation in this course motivated Dr. Marín's interest in cocoa genes related to aroma and flavor. Later in 2008, Dr. Marín was selected to participate in USDA's Faculty Exchange Program at Texas A&M University. Training at this university included consulting and being mentored by Dr. Konstantin Krutovsky, specialist in population genetics whose teachings proved crucial to carrying out Marín's cocoa research.

According to Dr. Marín, over 6,500 small Nicaraguan producers cultivate 7,500 HA of cocoa planted in the States of the Southern Autonomous Atlantic Region (RAAS), the Northern Autonomous Atlantic Region (RAAN), Río San Juan and Matagalpa. The Nicaraguan Ministry of Industry, Trade and Development reported that in 2009 Nicaragua exported 73,113 MT of cocoa and cocoa sub-products valued at over \$2.8 million. The main export destinations included the US, EU countries, Costa Rica and El Salvador. Nicaragua has over 415,000 HA available for cocoa production with a potential annual yield of 1,000,000 MT. According to Dr. Marín, Nicaragua only produces 5% of fine cocoa from its annual harvest.

One of the main concerns of the cocoa world market has been outsourcing fine cocoa and a steady supply from producing countries like Nicaragua. International manufactures of fine cocoa have a high demand for this product to make gourmet chocolate. Small fine cocoa producers are very interested in the niche market for fine cocoa that provides for a higher, more stable sales price than for bulk cocoa.

Marín's research investigated the genetic diversity and classified Nicaraguan native cocoa based on different properties, like the degree of genetic variation within specific areas of Nicaragua for subsequent extrapolation with elite cocoa from the Mesoamerican region. Marín's studies established the foundation to implement a program of genetic improvement for sustainable fine cocoa production.



Dr. Marín taking cocoa samples in El Rama, RAAS.



Dr. Marín and cocoa producers taking samples in El Castillo, Río San Juan.



Drying process for fermented cocoa beans, El Castillo, Río San Juan.



Identification and "rescue" of the legendary Campana (Bell) cocoa tree that produces white beans, Muelle de los Bueyes, RAAS. The campana variety is currently under ecologic pressure (limited growth) despite its highly valued organoleptic characteristics demanded in fine cocoa markets.