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MEMORANDUM

February 11, 2017

To: Dr. Raúl Machiavelli
Dean and Director
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Through: Dr. Esbal Jiménez Cabán
Deputy Director
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Dr. Elvin Román Paoli
Director
Dept. of Agroenvironmental Sci.

From: James S. Beaver, PhD
Professor

Subject: Report of official trip to Haiti and the Dominican Republic from 5 to 10 February 2017

The principal purpose of the trip was to meet with bean researchers in the Dominican Republic and Haiti to evaluate bean breeding lines planted in field trials and to visit seed multiplication fields of the black bean cultivar 'Sankara'. We also had a meeting in the USAID Mission in Haiti to discuss a proposal to the PASA program to multiply seed of 'Sankara' during the upcoming year.

Dr. Tim Porch and I traveled to the Dominican Republic on 5 February 2017 where we met Dr. Juan Carlos Rosas and Dr. Graciela Godoy. The following morning we had a short meeting with Ing. Raphael Peréz Duvergé,

Executive Director of the Instituto Dominicano de Investigaciones Agropecuarias y Forestales (IDIAF). We described ongoing collaboration with IDIAF bean and pigeonpea researchers including the preparation of proposal to support research activities in the Dominican Republic. We also discussed the challenges of seed production. After the meeting, we traveled to San Juan de la Maguana with Ing. Fernando Oviedo. Bean planting in the region were delayed due to excessive rains which increased disease and pest pressure. We visited a commercial bean field that had a high incidence of BGYMV infection. We had a meeting with IDIAF researchers at the Arroyo Loro Research Station to discuss the proposal. Later in the afternoon, we visited field trials and seed multiplication plots. Black, pinto and red mottled lines from Puerto Rico were identified that no BGYMV symptoms in the presence of severe disease pressure. Most lines were well adapted and exhibit good seed yield potential. There was also little leaf damage in the presence of a high incidence of leafhoppers in the field. The most promising lines will continue to be tested in the Dominican Republic. Ing Julio Cesar Nin plans to release the black bean cultivar 'Charlona Negra' which is derived from the cross 'DOR303 x Rosada Nativa. The line has good agronomic traits and seed yield potential although it appears to have some phenotypic variability. We recommended that individual plants be selected and evaluated to purify the breeder seed lot. Ing. Nin has under evaluation several promising bean breeding lines.

The following morning, we traveled to the border where we were met by Ing. Emmanuel Prophete and Ing. Gasner Demosthene. We traveled to Cabaret where Dr. Raphael Colbert had planted field trials from Puerto Rico. Although the trials received no fertilizer or insecticide application, there were many breeding lines that had vigorous growth. Leafhoppers were the most serious pest in the nursery. Lines previously identified to have resistance in Puerto Rico such as 'Morales', 'Verano' and 'TARS-LFR-1' had little or no leafhopper damage. Black bean lines that combine multiple virus (BGYMV & BCMNV) resistance with other biotic constraints such as rust, common blight, leafhoppers and bruchids were tested at this site and at Damien.

The following morning, we traveled to Damien where the National Seed Service had planted field trials. Fractyl Mertilus, PASA-USDA Plant Health Specialist, joined us in the field. Gasner Demosthene and the NSS team have done an excellent job this year maintaining the nurseries. There was moderate pressure from leafhoppers and some rust and angular leaf spot. Although the plots were not fertilized most of the lines had vigorous growth. Most of the lines in the trials are resistant so there was very little BGYMV in the field. There were several entries from the BASE 120 trial, including 'Sankara' and PR1217-16, that had excellent agronomic traits and good seed yield potential. With the exception of the pinto lines, most of the breeding lines in the nurseries were not damaged by the leafhopper pressure. The lines that combine multiple virus and bruchid resistance look very promising. One nursery of red mottled beans with multiple virus resistance contained several lines with good yield potential. Emmanuel

Prophete mentioned that the red mottled line PR0737-1 is very popular among farmers in the mountains. All of the seed of this line produced by the NSS in Savane Zombi is sold. Emmanuel also mentioned that farmer groups supported by FAO expect to produce this growing season 30 MT of DPC-40 and 30 MT of Sankara. The NSS provided basic seed stocks for this seed multiplication and also offered training to the farmer groups in seed production techniques.

In the afternoon, we visited the vocational school Zanmi Agrikol near Mirebalais. We met the founders of the school, Gillaine and Charles Warne, in a large field of 'Sankara'. Zanmi Agrikol purchase sufficient seed to plant 15 ha of this bean cultivar. The field germinated well and had vigorous growth. It should be possible to produce almost 20 MT of seed. There was no BGYMV or BCMNV although some rust was present. In general, rust will not cause yield loss if it appears after flowering. Local farmer families participated in the planting and will help with the harvest. Gillaine mentioned that the comments from local farmers concerning Sarkana have been very positive. It would be very helpful to be able to harvest the beans on a timely basis using a small thresher.The threshers are locally available for sale for a price less than $5,000.

The following morning we visited a Bas Boen Rural Center for Sustainable Development (CRDD). Mr. Kenel Cadet, Executive Director of FONHDAD, noted that 50 ha of Sankara was planted in the area. The goal is to produce 60 MT of seed if Sankara can produce a mean seed yield of 1,200 kg/ha. Based on what we observed in the seed production fields this appears to be a realistic target yield. The soil at the CRDD Station has a pH of 8.0 which requires special management practices to avoid micronutrient deficiencies. This problem was not observed in the other fields where Sankara was planted. A low level of rust was observed in some of the fields.

In the afternoon, we had a meeting at the USAID Mission with Michael Wyzan, Kimberly Lucas, Eva Christensen, Frislan Isidor, Bengy Pierre from the USAID Mission and Pierre Basquiat, Director of the National Seed Service.

- Update of research activities (National Seed Service and collaboration with the Univ. of Florida project)
- Status of the 'Sankara' bean cultivar plantings
- Plans for the distribution of the 'Sankara' bean cultivar seed for April 2017 planting
- Discuss the logistics for the seed contracting, purchase, shipment, receipt, and storage of 'Sankara' for the upcoming year.
- Discuss how to facilitate the involvement of Haitian seed and agricultural input companies in the purchase of basic bean seed stocks from the U.S. We need to demonstrate the advantages of having a reliable supply of high quality seed of an adapted bean cultivar. How can we generate confidence among seed producers and buyers?
- Discuss the PASA proposal and coordination of activities with the MSU/IICA seed project

- Status of the Legume Innovation Lab project - M.S. degree training of Didier Joseph and possible RFA for an additional five-year period of funding
- Travel plans to Haiti for the upcoming year
- Development of a joint database (across projects) of irrigated winter seed producers in Haiti would also facilitate future seed sale/distribution efforts to promote the development of a commercial seed business/value chain.

Based on a suggestion from USAID Haiti, it might be useful for the MSU/IICA project to arrange for Basin Seed and other U.S. companies interested in producing seed for Haiti to travel to Haiti to meet with potential buyers. We recommend that the MSU/IICA project contact Basin Seeds to contract the production of the Sankara seed in Idaho during the summer of 2017. Basin Seeds should be able to produce 50,000 pounds of Sankara seed next summer.