B0540x9 CIAT: ACWP2 Year 1 Annual Report

Luis Augusto Becerra Lopez-Lavalle, Adriana Bohorquez-Chaux

1-General progress

-CIAT-RHUL-UCR Output 1: **Presentation of ACWP Phase II data and national/international meetings.**

Target completion date: 31 January 2019. Percentage completion: 100%

Speaker of presentation "QTLs Mapping in Cassava for Whitefly Resistance" in Plant and Animal Genome conference 2019. San Diego CA, 16th January, 2019.

-CIAT-RHUL-UCR Output 2: **Well-characterized parental germplasm for multi-locational/environmental field-testing and use in genetic crossing programs.**

Target completion date: 1 November 2019. Percentage completion: 100%

Twenty (20) of the most WF resistant F1 lines, from the CM8996 (ECU72 x COL2246) and GM8586 (ECU72 xTMS60444) segregation families, well-characterized and phenotyping in greenhouses and field in CIAT. Used for genetic crossing programs.

-CIAT-RHUL-UCR Output 5: **List of F_1 parents for "advanced intercross" F_2 population.**

Target completion date: 1 June 2019. Percentage completion: 100%

F_1 parents for "advanced intercross" F_2 population.		
F1 parents lines	MALE	FEMALE
CM8996-199	X	X
CM8996-193		X
CM8996-246		X
CM8996-255		X
CM8996-596		X
CM8996-581		X
CM8996-758		X
CM8996-759		X
CM8996-778		X
CM8996-803		X
CM8996-173		X
CM8996-842		X
CM8996-107		X
GM8586-198		X
GM8586-103	X	X
GM8586-64	X	X
GM8586-153	X	X
GM8586-146	X	X
GM8586-49		X
GM8586-157		X

-CIAT-RHUL-UCR Output 7: **Production of multiple F_2 "advanced intercross" populations.**

Target completion date: 1 December 2019. Percentage completion: 70%. Actual completion date: 1 June 2020.

We are developing twenty-five F_2 "advanced intercross" populations for resistance to whitefly:

# advanced intercross	Female	Male	Cross	# offspring
1	CM8996-581	CM8996-199	GM12200	308*
2	CM8996-596	CM8996-199	GM12201	349*
3	CM8996-199	CM8996-199	AM1588	241*
4	CM8996-246	CM8996-199	GM12199	595*
5	CM8996-758	CM8996-199	GM12202	490*
6	CM8996-193	CM8996-199	GM12198	33*
7	CM8996-842	CM8996-199	In process	
8	CM8996-255	CM8996-199	In process	
9	CM8996-107	CM8996-199	In process	
10	CM8996-759	CM8996-199	In process	
11	CM8996-778	CM8996-199	In process	
12	CM8996-173	CM8996-199	In process	
13	CM8996-766	CM8996-199	In process	
14	CM8996-803	CM8996-200	In process	
15	GM8586-198	GM8586-64	It has not yet been named	478**
16	GM8586-198	GM8586-103	It has not yet been named	236**
17	GM8586-198	GM8586-153	In process	
18	GM8586-64	GM8586-64	It has not yet been named	178**
19	GM8586-103	GM8586-64	It has not yet been named	24**
20	GM8586-64	GM8586-103	It has not yet been named	56**
21	GM8586-146	GM8586-146	In process	4
22	GM8586-49	GM8586-64	In process	
23	GM8586-153	GM8586-153	In process	
24	GM8586-103	GM8586-103	In process	22**
25	GM8586-157	CM8996-64	In process	

*The seeds of these offspring were sown in soil, multiplied in cuttings and are being phenotyped in the greenhouse.

**The seeds of these offspring are being sown in soil at this time, and then will be phenotyped in the greenhouse.

In process: Crossings in the process of development, such as pollination, bagging of the pollinated flowers, or seeds in the process of collection.

-CIAT-RHUL-UCR Output 8: **Presentation of ACWP-Phase II data and national/international meetings.**

Target completion date: 31 January 2020. Percentage completion: 100%

Poster presentation "QTLs Mapping in Cassava for Whitefly Resistance" and "High throughput phenotyping of resistance against whiteflies (*Aleurotrachelus socialis* Bondar) using image analysis" in X Encuentro Latinoamericano y del Caribe de Biotecnologia Agropecuaria, REDBIO, Montevideo, Uruguay, 10-15 Noviembre, 2019.

2-Key milestone deviation: There were no key milestones deviation according to the proposed plan. Only six months to complete 100% of output 7, more greenhouses and support staff are needed to evaluate 100% of the crossings at the same time, and the budget allocated is not enough to cover these operating expenses.

3-Course correction: We do not propose any modification to the activities, outcomes, outputs, or key milestone of this work.

4-Plans for next reporting period: There is no modification to the results framework, therefore we believe that our organization will achieve the proposed results successfully.

5-Risks: We are not aware of any risk or concern that may affect the ability of our organization to execute the work and obtain the expected results.

6-**Sustainability:** If your organization intends for your goals to be sustained after the sub-grant period has ended, what actions have your organization and associated partners taken and what actions will you be taking to facilitate sustainability, and how will the project be continued?

We are actively discussing the future of the whitefly research activities once the current sub-grant ends. CIAT is committed to streamline whitefly resistance in their breeding schemes; however, whitefly is a trait that will require further investment if we want to reach its impact at scale. Other source of funding will be explored with our strategic partners to support the upstream component of the whitefly research while the current tools will be streamline in our breeding activities.

7-Scalability: If your organization intends for this sub-grant to increase in scale after the grant period has ended, what actions have your organization and partners taken and what actions will you be taking to facilitate that increase in scale?

It is clear from our current results that the technologies we are developing in collaboration with RHUL and UCR are extremely like to be ready for scalability at the end of the sub-grant. Anticipating it will not be a third phase, CIAT and its partners will explore other sources of financing to ensure these activities go to scale. This will include actively seeking strategic partnership with NARs in Africa, Asia and LAC.

8-Lessons Learned: The main lesson learned is that although we have the technical and professional capability to manage and implement the current sub-grant, we overestimating our capacity to deliver at scale due to reductions in other financial sources that used to contribute as in-kind to project. We are concern that with the current level of invest we may not reach the scale need to fulfil the expected impact. For instance, more crosses could have been made if we had more staff to handle more square meters in the field. Likewise, we could have phenotyping all F2 in the greenhouse, but we need more greenhouse spaces and more staff to achieve scalability to increase crossings outputs and phenotyping high-throughput.