



Annual report 2018



CIALCA 2017-2020

Catalyzing partnerships,
capacity building and research
towards entrepreneurial
farming in Central Africa

Preface

In September 2017, we received the fantastic news that the Belgian Directorate General for Development Cooperation and Humanitarian Aid (DGD) had decided to continue its support to the Consortium for Improving Agriculture-based Livelihoods in Central Africa (CIALCA). With that, we believe we broke the record of becoming the longest funded agricultural research for development consortium within the CGIAR.

The main strength of being around for 12 years now, is that CIALCA has created a history, track record and legacy of research for development, capacity building and partnerships in the Great Lakes Region. This provided a flying start for the new phase of CIALCA, a solid basis for attracting additional investments and for continuing to strengthen our reputation.

Being around for 12 years does not mean that we have become rusty, or lost our innovative CIALCA-spirit. A self-reflection at the end of 2016, as well as aligning ourselves with the new and updated Belgian government's '[strategic note on agriculture and food security](#)' has resulted in an exciting new phase of CIALCA that is characterized by the development and use of digital tools in agricultural research and development, empowering farmer groups in their transition towards more commercially-oriented farming, and better understanding of trade-offs and synergies between increasing food productivity, nutrition security and improved farm household income in the Great Lakes Region. We ensured that we safeguarded the core values and strengths of CIALCA: (1) our partnerships, (2) capacity development and (3) innovation and knowledge services.

Now that we are 1,5 years into the current CIALCA phase, we can already report good progress. We entered into several co-investment agreements with scaling partners such as One Acre Fund in Rwanda (serving approx. 265,000 farmers) and the International Fertilizer Development Center in Burundi. Also, we identified 4 new PhD students from Rwanda, Burundi and eastern DR Congo that are starting their doctoral studies with Belgian Universities and have 5 additional students that conduct their PhD under the

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CIALCA, its partners and beneficiaries strongly acknowledge the long-lasting support provided by the Belgian Directorate General for Development Cooperation and Humanitarian Aid (DGD). CIALCA is implemented as an integral part of the CGIAR Research Program on Roots, Tubers and Bananas (RTB) and supported by CGIAR Fund Donors (www.cgiar.org/about-us/our-funders).

Credits photography

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CIALCA umbrella. CIALCA also attracted considerable additional investment of USD 7.25 Million that complement or build upon previous and ongoing CIALCA work. Last but not least innovative research for development work with the Soil and Water Management & Crop Nutrition Laboratory (SWMC-NL) of the Joint FAO/IAEA Division is providing insights in increase water use efficiency (WUE) to counteract drought effects on cassava production in Central Africa. We build on big data platforms such as RHoMIS and SAND-MAN to better understand household heterogeneity and cassava agronomy at scale.

In sum, there is a lot of exciting developments going on in CIALCA, and solid progress is being made along our impact pathway and results framework. On behalf of all colleagues, partners and friends of CIALCA, I wish you a pleasant reading of this CIALCA 2018 Annual Report.



Dr Bernard Vanlauwe
Central Africa Director IITA and CIALCA Principal Investigator

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An introduction to the new CIALCA

The Consortium for Improving Agriculture-based Livelihoods in Central Africa (CIALCA) is an innovative research-for-development partnership operating in Burundi, eastern DR Congo and Rwanda. CIALCA is led by IITA, Bioversity International and FAO/IAEA and has a 12-year legacy of conducting agricultural research for development in Central Africa. Since its initial establishment in 2006 the Consortium has been supported by the Belgian Directorate General for Development Cooperation and Humanitarian Aid (DGD). Since its establishment in 2006, CIALCA has been operating along 3 integrated Pillars. They form the foundation of CIALCA and the basis for the success of CIALCA in the Great Lakes Region.

PILLAR 1

Partnerships and policies

12 years of presence in the Central African Highlands has allowed CIALCA to develop a broad network of knowledge, policy and public and private scaling partners. Leveraging such networks, and bringing on board new partners facilitate having impact.

PILLAR 2

Capacity development

CIALCA invests in developing individual and organizational capacity through MSc and PhD training with (inter) national universities. It also provides training to NARS and other partners on the use of innovative research approaches and diffusion of research outcomes.

PILLAR 3

Innovation and scaling

Through its networks CIALCA has access to state-of-the-art ICT-based research approaches and tools. CIALCA conducts research to develop innovations and support their uptake and use to overcome livelihood challenges for farmers in Central Africa.

CIALCA is aligned with the Belgian government's [Strategic note on agriculture and food security](#) and the CGIAR Strategic Results Framework (SRF) by aligning with the CGIAR Research Program (CRP) on Roots Tubers and Banana (RTB) and by bridging to the CRPs on Agriculture for Nutrition and Health, (A4NH), and Climate Change, Agriculture and Food Security (CCAFS).

The primary contribution of CIALCA will be on Sustainable Development Goal (SDG 2): 'Zero Hunger', but also on 'No Poverty' (SDG 1), 'Good Health and Well-being' (SDG 3), 'Gender Equality' (SDG 5), 'Reduced Inequalities' (SDG 10), 'Climate Action' (SDG 13) and 'Partnerships for the goals' (SDG 17).

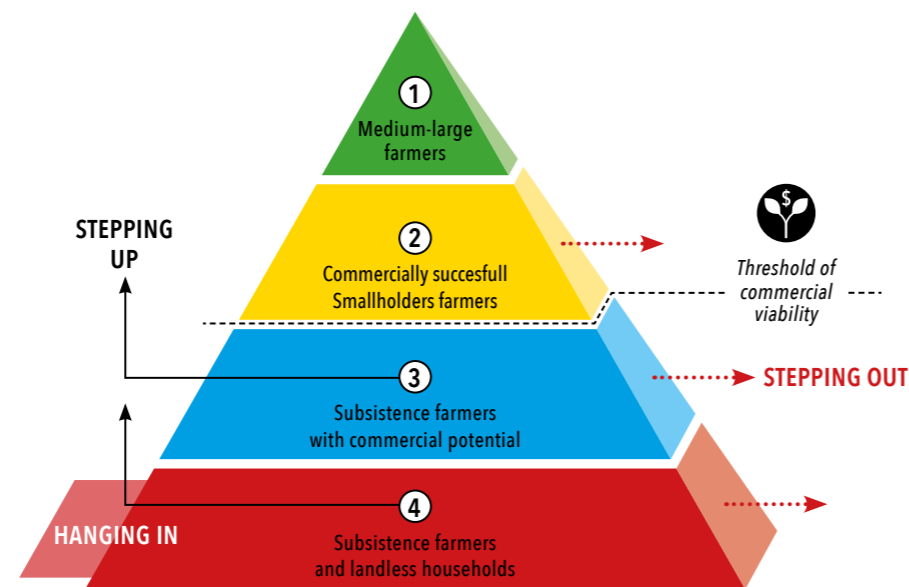


Three cross-cutting themes

In operationalizing its strategy, CIALCA works with government, public and private partners on three cross-cutting themes.

1 Entrepreneurial farming

CIALCA has embraced the challenge to better understand the pathways for different farmers in stepping-up from 'subsistence' (level 4) to 'farming with commercial potential' (level 3) and commercial farming' (level 2). Understanding which innovations (access to fertilizer, credit, knowledge) or conditions (e.g. location, education) enable or constrain farm households can inform government, public and private sector policies that seek to create and enabling environment for entrepreneurial farming. CIALCA invests in [developing farm household typologies](#) to understand the different farmers to support gender equality and women's empowerment.

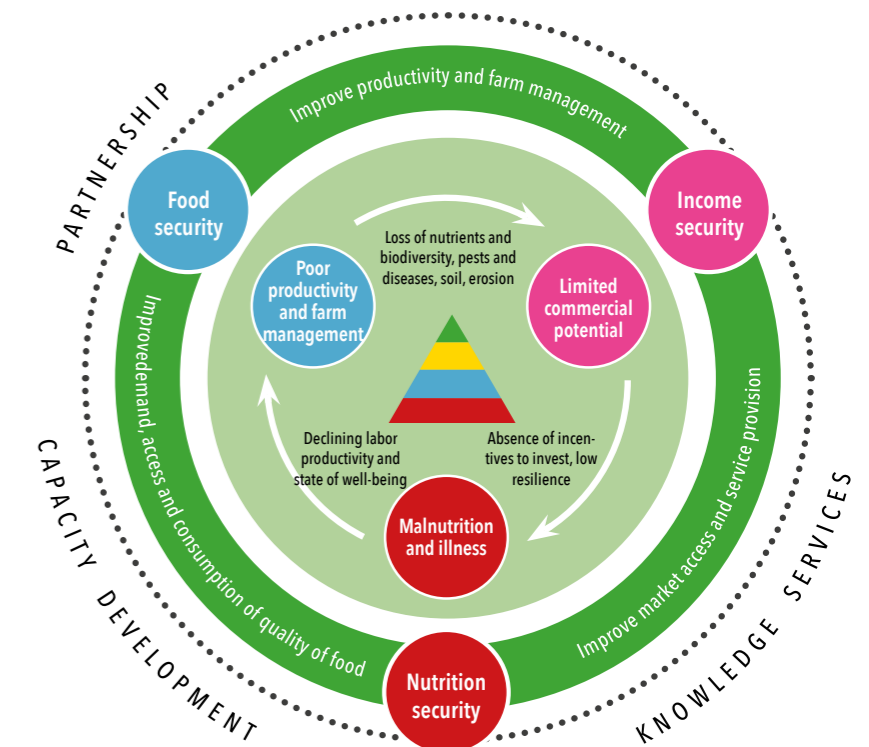


2 ICT for Agriculture

CIALCA invests heavily in developing smart ICT4Ag decision support tools, [and training colleagues, students and decision-makers](#) in using the tools to develop and implement more impactful agricultural development strategies. All CIALCA data is collected using barcode and Open Data Kit (ODK) systems that feed into a centralized database that is freely accessible for our CIALCA network and partners. CIALCA collaborates with other CGIAR Big Data initiatives such as [RHoMIS](#) and [African Cassava Agronomy Initiative](#) (ACAI) to ensure that CIALCA data can be integrated at regional and global level. It allows for the development and implementation of agricultural strategies that respond to the needs of different types of farmers in the Great Lakes Region.

3 Integrated agricultural systems for nutrition

Sustainable development requires attention for food security, income and diet quality. CIALCA has a long tradition of identifying innovations that boost crop productivity, but also take into account the commercial potential of crops, and the dietary diversity of rural population. Increasing productivity and income alone is not sufficient to improve nutritional outcomes such as diet quality and anthropometric measurements. Together with its partners, CIALCA investigates how stepping up towards entrepreneurial farming can benefit and avoid trade-offs for nutritional outcomes at farm and at regional levels.

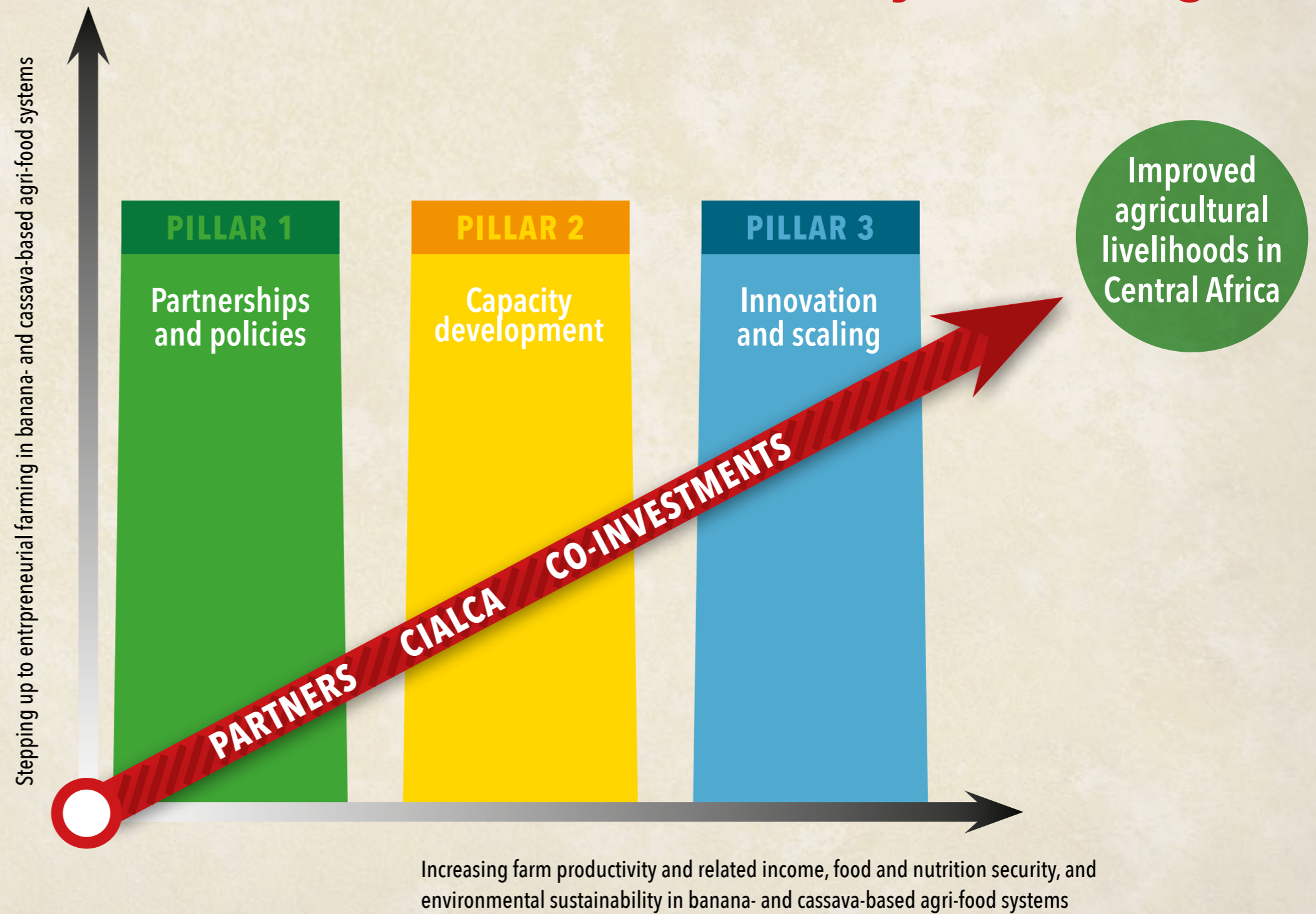




CIALCA thinks long-term and thereby aims to contribute to real transformation. We leverage partnerships to connect farmers to a choice of options for transitioning out of poverty and contributing to sustainable agri-food systems. We tailor specific innovation and implementation models to different agro-ecological (e.g. highland, lowlands) and geographical zones (dynamic, intermediate or hinterland), but also to the needs and interest of farmers of different socio-economic, gender and age groups engaged in different value chains. We build in-depth problem solving and analytical capacity together with Belgian and regional universities.

We deliver cutting-edge research for development (R4D) in banana- and cassava-based agri-food systems to support innovation and scaling for overcoming challenges in farmers livelihoods.

CIALCA's Theory of Change



PILLAR 1

CIALCA co-invests in partnerships for sustainable impact

1

CIALCA's co-investment approach ensures that research is responding to real stakeholder demands. If a topic is important enough for the partner to invest their own resources in, then this underlines the relevance of the work, and increases the likelihood that the research outcomes contribute to real change. The development of co-investment agreements generally take more time at the offset of a project, but it eventually leads to sustainable results and impacts. CIALCA has formalized co-investment agreements with other R4D projects and scaling partners that equal a total value of USD 50,000. For more information, please see page 15.

CIALCA leveraged significant investments in R&D and capacity building by governmental and multilateral organizations, such as the Flanders and Belgian Government and the International Atomic Energy Agency (IAEA), VLIR and CARITAS. CIALCA investments provided a basis for attracting new funding to develop cassava agribusiness seed systems (supported by NWO), scale BXW management (supported by CGIAR RTB and GIZ), and to optimize nutrient recycling in cassava and coffee value chains in Rwanda and eastern DR Congo (supported by SDC). The total value of these additional investments is USD 7.25 Million which is nearly 2.5 times the investment by DGD Belgium in CIALCA 2017-2020. For more information, please see page 17

2

CIALCA attracts investments in agriculture in the Great Lakes Region

PILLAR 2

CIALCA develops the capacity of future science, business and policy leaders

3

CIALCA is currently developing the capacity of 9 PhD-candidates in collaboration with national agricultural research centres and Belgian Universities. In 2018, 3 CIALCA supported PhD students have defended their PhDs with Catholique University Leuven (KULeuven) and Universite Catholique de Louvain (UCL) in Belgium and with Wageningen University in the Netherlands. Also, 4 new candidates have been selected to start their PhD-trajectory with KULeuven, UCL and Ghent University. 5 Additional PhD students conduct their doctoral research in collaboration with CIALCA and our partners. During his address at Tropentag 2018 in Ghent, Minister De Croo explicitly mentioned the achievements by CIALCA in developing capacity for agricultural research in the Great Lakes Region. For more information, please see page 25.

CIALCA heavily invests in using digital technology and ICT to enhance agricultural research and development. In line with the strategic policy note on 'Agriculture and Food Security' for the Belgian Development Cooperation, CIALCA uses digital technology to empower researchers, decision-makers and beneficiaries of different sex and age in more cost-efficient and equal access to knowledge, information and innovation. In doing so, CIALCA supports the Belgian government in contributing to SDG 5.b: 'Enhance the use of enabling technology, in particular information and communications technology, to promote the empowerment of women'. For more information, please see page 27.

4

CIALCA uses ICT and big data for effective research and development

PILLAR 3

CIALCA understands what it takes for rural households to invest in entrepreneurial farming

5

CIALCA is investing in improving the understanding of how farm household heterogeneity in the Great Lakes Region can explain engagement with modern farming techniques and the transition from subsistence to entrepreneurial farming. These insights can assist in the development of tailored and targeted interventions and provide key insights into the motivations and limitations facing farming households. For more information, please see page 33.

CIALCA develops packages of isotope techniques to increase water use efficiency (WUE) to counteract drought effects on cassava production in Central Africa. Standard sample preparation and measuring procedures for stable isotope indicators are being developed and soil, plant and farm household data is being collected. These activities are supported by a lab to field approach, with Research and Development in Austria and Belgium in combination with a range of numerous field trials in Burundi, eastern DR Congo and Rwanda. For more information, please see page 35.

6

CIALCA develops isotope technology for climate smart agriculture



PILLAR 1

Partnerships and policies

The objective is to leverage public and private partnerships for impact along the agri-food system and set up an inclusive, ICT-based monitoring, evaluation and learning (MEL) system.

CIALCA has a 12-year legacy in the Great Lakes Region, both in terms of its development impact, but also through its partnerships and networks. This elaborate network enables the Consortium to leverage CIALCA innovations with governments and other public and private sector development programs. While building on existing - strong - partnerships with the agricultural ministries and national agricultural research institutes, CIALCA has also advanced collaboration with strong market parties (e.g. by linking farmers to agrifood processors), and with non-governmental service providers (e.g. development organisation with a track record of impact).

Expected outcomes

- By the end of 2019, strategic partnerships have been established and partners are engaged in validating and scaling CIALCA innovations;
- On a continuous basis, feedback obtained through Participatory Action Research and the ME&L framework influences any future R4D investments of government, development and business partners.

Progress along the Pillar 1 activities and achievements

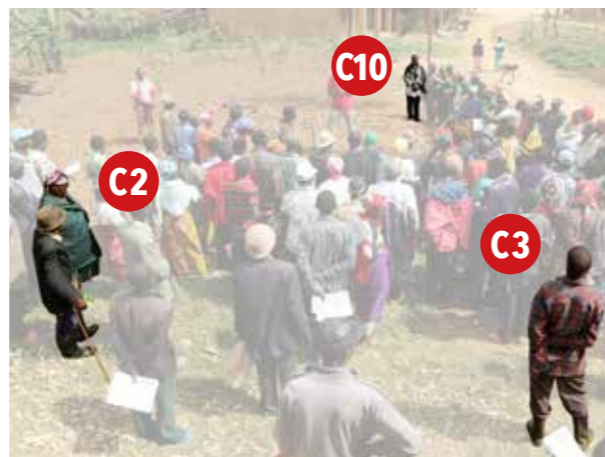
ACTIVITIES	OUTPUTS	ACHIEVEMENTS
Activity 1.1 Mapping of the demand for R4D solutions within RTB systems.	By the end of 2017, the demand for research and innovation has been assembled and documented in the CIALCA Theory of Change (ToC).	CIALCA demand-mapping has been concluded and resulted in 5 signed MoUs developed with key knowledge and scaling partners.
Activity 1.2 Agreement on the zones of influence in consultation with scaling partners.	By the end of 2017, zones of influence have been agreed upon and are adapted and documented in the ToC on a yearly basis thereafter.	At least 3 CIALCA co-investment MoUs have been developed and signed. Partners have invested with CIALCA in implementing R4D activities.
Activity 1.3 Engagement with value chain partners (private, public) that are active with proven capacity to deliver in the Great Lakes Region.	By the end of each year, agreements are reached with development partners on specific contributions from CIALCA.	One of the MoUs with a scaling partner (One Acre Fund Rwanda) is currently being reviewed and renewed based on a successful first phase.
Activity 1.4 Activation of a participatory, inclusive and gender-sensitive ME&L framework.	By the end of 2017, an ICT-based data collection and ME&L framework is functional and used by stakeholders.	CIALCA has invested considerably in developing ICT-based data collection system using the ONA, RHoMIS and Sandman platforms and embedding the project in the CGIAR MEL platform .
Activity 1.5 Co-design of government, development or business R4D investment strategies for sustainable intensification.	By the end of 2019, CIALCA has contributed to the shaping of R4D investments of government, development and business partners.	Ongoing CIALCA investments are shaping BXW policies in Burundi and Rwanda, as well as collecting data to review fertilizer recommendations for cassava in all CIALCA countries.

CIALCA co-invests in partnerships for sustainable impact

CIALCA 2017-2020 applies a partner co-investment model to ensure that we work on real stakeholder demand. As part of Activity 1.1, we identified and initiated discussions with key public and private scaling partners to better understand their capacity development and innovation needs. Subsequently, we develop Memoranda of Understanding (MoU; also referred to as Theory of Change (ToC)) that documents the collaboration, the different activities and the desired results, division of tasks and responsibilities and a joint investment. Two appealing examples of where CIALCA entered into co-investment agreements come from collaborations with One Acre Fund in Rwanda, and with the International Fertilizer Development Center (IFDC) in Burundi. In both cases 50% of the activity costs were funded by our CIALCA partners.

With One Acre Fund, CIALCA agreed to develop farm household typologies to identify barriers and opportunities for adoption of agricultural innovation. One Acre Fund provides improved seeds, fertilizer and training to approximately 265,000 farm households in Rwanda and wanted to have better insights in which types of farmers are more likely to adopt their improved seed, fertilizer and trainings they provide. It provides a basis for tailoring their interventions to specific farm households (e.g. uneducated with low market access versus educated with good market access). For CIALCA it provides a database of farm households in Rwanda and what characteristics or variables can explain the entrepreneurial potential of farmers, which is a cross-cutting theme in CIALCA 2017-2020. Together we surveyed over 2700 farmer households covering all agro-ecological zones in Rwanda. CIALCA supported the design of the survey, and One Acre Fund facilitated data collection using their network of data collectors in Rwanda (~USD 15,000). CIALCA led the data analysis which led to the development of a research publication, and incentivized discussions in One Acre Fund on how to tailor their business model to serve farmers more effectively.

Initial discussion with IFDC Burundi started end 2017, and it took until November 2018 to reach agreement on the joint endeavor. CIALCA wanted to conduct Nutrient Omission Trials (NOT) in Burundi to calibrate tools developed under the Bill and Melinda Gates Foundation-funded African Cassava Agronomy Initiative (ACAI). IFDC showed an interest in the trial protocols and ICT-based data collection tools that ACAI and CIALCA were offering and wanted to include cassava to the crops for which they had developed fertilizer recommendation as part of the Dutch-funded project PAPAB. The discussion between the CIALCA and IFDC scientists were tough, but eventually CIALCA and IFDC decided to establish 47 trials across the country, each covering 50% of the total costs (~USD 30,000). The IFDC contribution also actively facilitated the engagement of the Burundi national agricultural research institute ISABU in data collection, analysis and interpretation of the results. Similar work is being conducted in Rwanda (48 trials co-funded under the CGIAR RTB program) and in eastern DR Congo (15 trials fully funded by CIALCA), so that the site-specific fertilizer recommendation tool covers the entire CIALCA region.



Co-investment with 'One Acre Fund' to develop farm household typologies that provide a basis to optimize innovation delivery to different groups of farm households.

C2 Traditional, very poor

Package: Access to information, Vegetables and chicken, NPK

C3 Marginal and Unsupported

Package: Improved seeds, Travertine, Trees

C10 Cropping Champions

Package: Trees, Vegetables

CIALCA coordinator Dr Marc Schut: *"The co-investment approach is truly the ultimate way to test whether CIALCA is responding to real stakeholder demands. If a topic is important enough for the partner to invest their own resources in, then this underlines the relevance, and it increases the likelihood that the research will lead to transformation. Co-investment agreements may take more time at the offset of a project, but it eventually leads to more sustainable results and impacts."*

CIALCA attracts investments in agriculture in the Great Lakes Region

CIALCA leveraged significant investments by governmental, non-governmental and multilateral organizations in Capacity Development and Innovation and Scaling in the Great Lakes Region. Through the Technical Cooperation of the International Atomic Energy agency (IAEA), a regional project proposal was designed and submitted in 2018 for direct funding by the IAEA. This proposal targets capacity building in the use of isotope and related techniques for climate-smart cassava production in at least eight countries in Sub-Saharan Africa. Upon final approval in September 2019 by IAEA, it is expected to start in 2020 and have a duration of 4 years. This project with a total value of between USD 1.1 and 1.6 Million and will allow to disseminate the CIALCA results in the region, and further strengthen the national and regional networks.

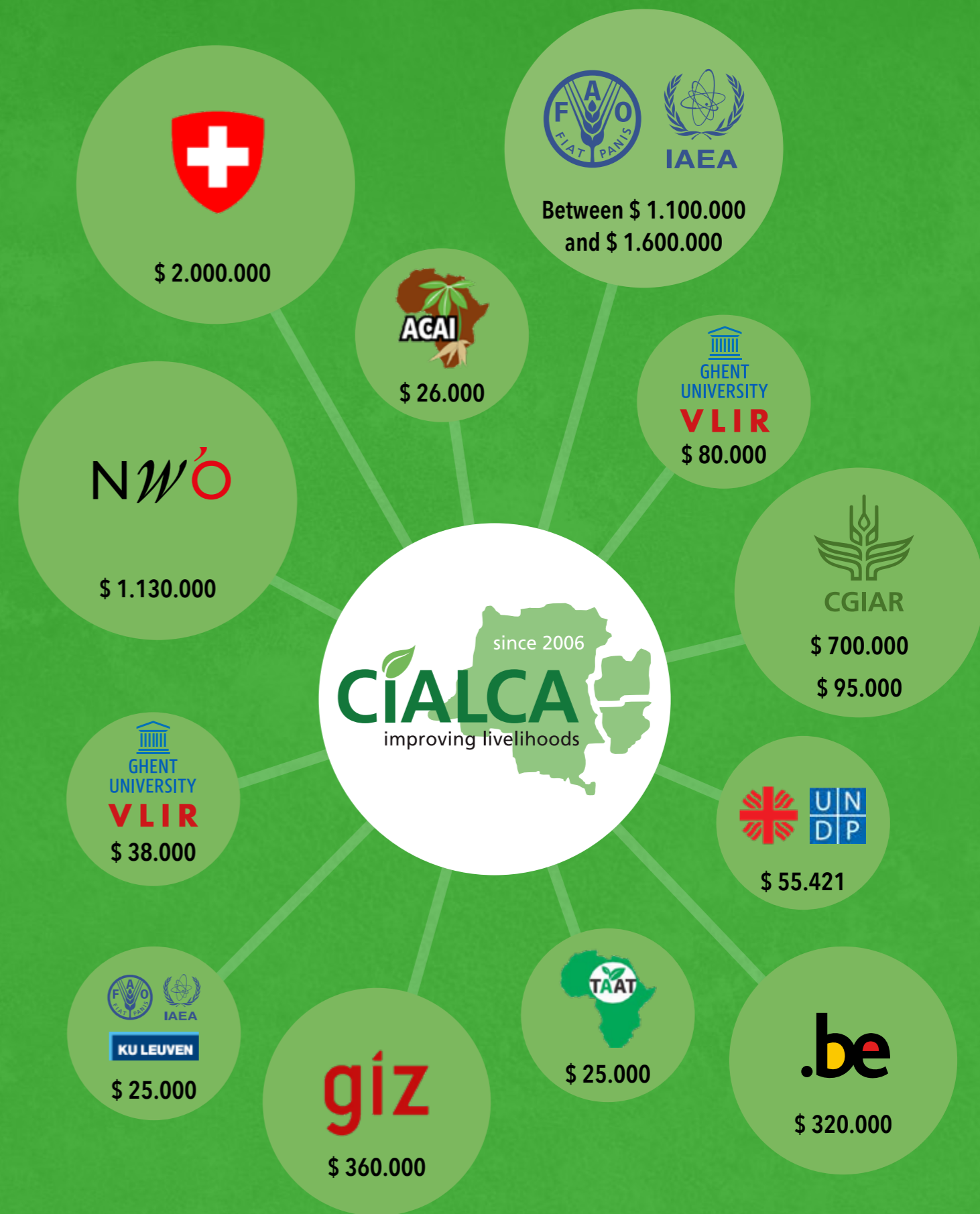
Further, based on the FAO/IAEA activities within CIALCA, the Belgian government decided to support research and development on climate change adaptation of banana-coffee systems in East Africa. This project with a duration of three years will be carried out through two PhD studies together with the universities of Leuven and Ghent and local partners in Uganda and Tanzania. In addition, the KU Leuven, Research Foundation of Flanders and the Flanders Trainee Programme also provided financial support for one sabbatical and one from the KU Leuven to work at the Soil and Water Management & Crop Nutrition Laboratory (SWMCNL) of the Joint FAO/IAEA Division. Based on this support, the KU Leuven and the SWMCNL agreed to fund further one additional PhD and one MSc study on the use of isotope techniques for counteracting drought effects on cassava production, complementary to the PhD study initiated in 2018 financed by the Flemish Interuniversity Council of Belgium.

Twelve years of investment in CIALCA by DGD Belgium has resulted into innovations that other donors are ready to invest in. For example, CIALCA's long term work on combatting Banana Xanthomonas Wilt (BXW) in Central Africa resulted in Single Disease Stem Removal (SDSR) approach that attracted funding from the CGIAR Research program on Roots Tubers and Bananas (RTB) to outscale SDSR to approximately 37,500 households in Burundi, eastern DR Congo and Uganda, and to upscale SDSR through changing the banana management policy in Rwanda. The German Corporation for International Cooperation (GIZ) funded a proposal worth USD 1.360.000 to develop ICT tools to scale SDSR in the national agricultural extension system in Rwanda. The groundwork done on BXW control and SDSR under CIALCA enabled this.

The Netherlands Organisation for Scientific Research (NWO) has funded a project worth USD1,130,000 to enable 'Enabling agribusiness development for scaling quality cassava seed systems for control of major viral diseases in Rwanda and Burundi'. This project is aligned to CIALCA and seeks to support entrepreneurial farming by linking farmers to markets and - by doing so - incentivize investment in using disease-free cassava planting material. The CIALCA cassava agronomy work will further contribute to transforming cassava from 'poor man's crop' to a commercially-viable crop that smallholders can earn good money

from. Further investment of USD2,000,000 in developing the cassava value chain in Rwanda and the coffee value chain in eastern DR Congo has been obtained from the Swiss Agency for Development and Cooperation (SDC). The existence and credibility of CIALCA has contributed significantly to attracting these additional investments. Smaller collaborations with CIALCA were established with CARITAS Belgium (USD 55,421) and VLIR through the University of Ghent (USD80,000) in Rwanda. The focus in these projects is capacity development with the University of Rwanda (UGhent/ VLIR) and technical backstopping on integrated cassava farming systems (CARITAS).

In its first 2 years, CIALCA attracted a total of USD 7.25 Million of additional investments, which equals nearly 2.5 times the DGD investment in CIALCA. It confirms the leveraging role that CIALCA plays in the Great Lakes Region.



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DONOR	DESCRIPTION	INVESTMENT	LINK TO CIALCA
	Swiss Agency for Development and Cooperation (SDC) RUNRES: The rural-urban nexus: Establishing a nutrient loop to improve city region food system resilience. RUNRES focusses on optimising cassava value chains in Rwanda and coffee value chains in eastern DR Congo.	USD 2.000.000 (2019-2024)	CIALCA's past and current investments in cassava agronomy and integrated soil fertility management will provide a basis for optimising nutrient recycling and waste use for improved crop production and processing. Furthermore, RUNRES builds on partnerships established under CIALCA.
	The German Corporation for International Cooperation (GIZ) To develop and test ICT tools to scale (1) the adoption of Single Disease Stem Removal (SDSR) and (2) develop an early warning system for monitoring Banana Xanthomonas Wilt (BXW) in Rwanda.	USD 1.360.000 (2018-2020)	The groundwork done on BXW control and SDSR have been carried out under CIALCA since 2006.
	Netherlands Organisation for Scientific Research (NWO) Testing Cassava Agribusiness Seed Systems (CASS) models for providing farmers with better access to disease resistant cassava planting material. More info here .	USD 1.130.000 (2019-2021)	CIALCA has been supporting research on cassava diseases in the Great Lakes Region. CIALCA's current investments in cassava agronomy are complementary to the CASS project.
	Technical Cooperation with FAO/IAEA Capacity building in the use of isotope and related techniques for climate-smart cassava production in at least eight countries in Sub-Saharan Africa.	Between USD 1.100.000 and USD 1.600.000 (2019-2021)	CIALCA develops packages of isotope techniques to increase water use efficiency (WUE) to counteract drought effects on cassava production in Central Africa.
	CGIAR Research Program on Roots Tubers and Bananas Outscale SDSR to approximately 37,500 households in Burundi, eastern DR Congo and Uganda, and to upscale SDSR through changing the banana management policy in Rwanda.	USD 700.000 (2018-2019)	The groundwork done on BXW control and SDSR have been carried out under CIALCA since 2006.
	Addition PhD scholarship Capacity development on nutrition and agriculture through PhD training.	USD 95.000 (2019-2023)	Student conducts research with UGhent in Rwanda and form part of the CIALCA PhD cohort.
	VLIR and UGhent Food security for smallholder farms in Southern province of Rwanda through the development of an integrated sustainable agriculture model	USD 80.000	CIALCA supports 2 MSc student thesis research through their MoU with the University of Rwanda.
	UNDP and CARITAS Belgium To improve environmental degradation and increase household's food and income security in 2 sectors of Bugesera district Eastern province of Rwanda.	USD 55.421	The project builds on CIALCA's integrative research for development agenda and seeks to (i) increase cassava, legume and livestock production, (ii) to increase and diversify fodder sources, (iii) to improve farmers knowledge on improved and integrated farming, (iv) to improve soil fertility and natural resources management.
	VLIR Co-funding one of the FAO/IAEA and KULeuven PhD students working on isotope technology in eastern DR Congo.	USD 38.000	Student forms part of the CIALCA 2017-2020 PhD cohort
	Banana-Coffee project Belgian government The Belgian Government is funding 2 PhD studies in Eastern Africa that focus on optimizing Banana-Coffee cropping systems.	USD 320.000	Previous CIALCA research showed that banana-coffee integration can be beneficial for farmer livelihoods. The PhD studies will further build on the existing CIALCA knowledge base.
	FAO/ IAEA and KULeuven FAO/ IAEA and KULeuven investment in PhD student working on isotope technology for climate-smart cassava production.	USD 25.000	Student forms part of the CIALCA 2017-2020 PhD cohort and works with data collected from the CIALCA region.
	African Cassava Agronomy Initiative (ACAI) ACAI is scaling its Decision Support Tools for developing site-specific fertilizer recommendations in Rwanda, Burundi and eastern DR Congo.	USD 26.000	CIALCA has a focus on using digital technology for data collection and analysis. CIALCA contributes and builds upon the ACAI agronomy at scale data infrastructure.
	Technologies for African Agricultural Transformation (TAAT - African Development Bank) The African Development Bank is investing in strengthening cassava value chains in the Great Lakes Region by scaling proven production and processing technologies.	USD 25.000	TAAT builds on cassava value chain networks and partnerships established under CIALCA in the Great Lakes Region.
TOTAL		USD 7.234.421	

A smiling woman with a red and white patterned headscarf and a light blue button-down dress is holding a wooden staff. She is standing outdoors in a rural setting with trees in the background.

PILLAR 2

Capacity development

The objective is to strengthen the capacity of national scientists and practitioners to facilitate sustainable agri-food system transformation.

CIALCA continues to focus on capacity development in the Great Lakes Region. In view of the huge demands for state-of-the-art ICT-based research methods and tools, and relevant agricultural and food system knowledge to meet the challenges small-scale farmers and their customers face, capacity development operates at various levels and in close collaboration with the national agricultural research systems and Belgian universities. CIALCA facilitates degree-related training at PhD and MSc level and thereby builds on the successes of the sandwich PhD system organized with Belgian partner universities. CIALCA also facilitates MSc thesis research and training through Belgian and national universities. Action research and continuous monitoring, evaluation and learning with our partners ensures that we place our research 'in' development, and is an important strategy in developing institutional capacity for innovation and scaling.

Expected outcomes

- By the end of 2020, at least 3 PhD and at least 6 MSc students are leading/engaged in research and innovation within their respective institutes;
- By the end of 2020, the extension agents of at least 12 partner organizations (4 per country) are using CIALCA recommendations derived from the decision support framework.

Progress along the Pillar 2 activities and achievements

ACTIVITIES	OUTPUTS	ACHIEVEMENTS
Activity 2.1 Implementation of PhD projects.	By the end of 2017, at least 3 PhD candidates and hosting universities have been identified and yearly progress reports approved.	<ul style="list-style-type: none"> • 3 CIALCA PhD students have graduated in 2018 (2 Burundian, 1 European); • 4 new PhD students have been selected process and are starting as sandwich PhD students with Belgian universities; • CIALCA has leveraged additional funding for 5 extra PhD students. This leads to 8 currently on-going CIALCA-related PhDs.
Activity 2.2 Implementation of MSc projects.	By the end of 2019 and 2019, at least 3 MSc candidates and hosting universities have been identified.	<ul style="list-style-type: none"> • A competitive call with the University of Rwanda resulted in the selection of 4 thesis research students; • One Belgian MSc student performed her thesis research in CIALCA. The number was limited due to security concerns in DRC and Burundi.
Activity 2.3 Development of a decision support framework and strategy, built on ICT principles, that supports science-based decision making.	By the end of 2019, an ICT-based decision support framework and strategy is developed and validated with decision-makers.	<ul style="list-style-type: none"> • CIALCA has adopted the RHoMIS tool (Rural Household Multi Indicator Survey, www.rhomis.org) for integrated farm household data collection, and SANDMAN (acai-project.org) for agronomy data collection; • CIALCA also pioneers a new Monitoring, Evaluation and Learning (MEL) system; • CIALCA works with the GIZ-funded ICT4BXW project on developing decision support tools for scaling SDSR in Rwanda.
Activity 2.4 Activation of CIALCA-base, assembling and disseminating information for the Great Lakes.	By the end of 2018, CIALCA-base is functional, accessible for partners, and continuously updated with new information.	Through new collaborations with other projects e.g. ACAI (acai-project.org) and RHoMIS (www.rhomis.org) a new strategy for the CIALCA-base is being developed that is able to include relevant innovations, build as much as possible on existing efforts, linking or integrating them rather than setting up a separate data system.
Activity 2.5 Facilitation of the capacity development of last-mile delivery and service providers.	By the end of 2018, a first group of service providers have been trained on using CIALCA recommendations and on a yearly basis, groups are added.	In January 2018, CIALCA organized an Open Data Kit training. Twenty-four researchers from across different countries, research and development projects, and organizations attended the workshop. More information can be found here .

CIALCA develops the capacity of future science, business and policy leaders

Since 2006, CIALCA has supported over hundreds of students in pursuing their studies and dreams. In 2018 alone, three CIALCA supported PhD-candidates successfully defended their doctoral theses. Many of the CIALCA alumni are now in key positions in government, development and private sector organizations, implementing some of the CIALCA best practices so that they can benefit the livelihoods of many farm households in the Great Lakes Region. For example, Dr Athanase Mukuralinda obtained his MSc with CIALCA and now leads the cassava program at the Rwanda Agricultural and Animal Resource Development Board (RAB), Dr Wivine Muyahali did her MSc with CIALCA, is now a lecturer at the Catholic University of Bukavu and continues as a consultant with FAO/IAEA under CIALCA. Dr Marie-Chantal Niyuhire and Dr Sylodie Bizimana both defended their CIALCA PhD-theses in 2018, and lead agricultural research and extension programs in ISABU, Burundi.

CIALCA is now sending off its new cohort of four PhD candidates to work on better understanding the food productivity, income and nutrition challenges and opportunities associated with more entrepreneurial farming. In line with the true CIALCA spirit the studies are executed with local universities and public / private development organizations in Rwanda, Burundi and eastern DR Congo. Over the course of 4 years, the PhD candidates will spend 18 to 24 months in Belgium.



We are excited to introduce the four new students here (from left to right):

Willy Desire is a field researcher at ISABU in Burundi. His PhD will focus on agri-food system pathways to improve human nutrition in banana- and cassava-based systems. He will be the first in ISABU to have a specific nutrition education, and this at PhD level. Prof Marijke D'Haese from Ghent University is his primary promoter and Dr Beatrice Ekesa, research scientist and nutrition expert from Bioversity International, provides supervision from CGIAR.



Dr Syldie Bizimana (3rd from the right) after having successfully defended his PhD-theses at Universite Catholique de Louvain (UCL) in Belgium. Dr Bizimana was supervised by Prof Bruno Delvaux (3rd from the left).

Fidele Barheba is a lecturer at the Catholic University of Bukavu in eastern DR Cong. He will investigate environmental, socio-economic and agronomic traits of cassava-based farming systems in Kivu (eastern DR Congo). Prof Bruno Delvaux from UCL is his primary promoter and Dr Kokou Kintche, systems agronomist at IITA is his supervisor from CGIAR.

Aimable Nsengiyumva is a research coordinator at RAB in Rwanda. The overall objective of his PhD is to investigate whether and how knowledge on farm household typology and impact heterogeneity can increase efficiency and return on investment from public and private sector development initiatives in food and agriculture. His promoter is Prof Miet Maertens from KULeuven, and his CGIAR supervisors are Dr Marc Schut, Senior Innovation and Scaling scientist, and Dr Rhys Manners, Data Scientist at IITA.

Didier Yves Umwungeri Mwiza is a lecturer at the University of Rwanda. His PhD will investigate how stepping up towards entrepreneurial farming can benefit and avoid trade-offs for nutritional outcomes, of the farming households as well as of the rural and peri-urban consumers. His promoter is Prof Carl Lachat from Ghent University and his CGIAR supervisor is Dr Roseline Remans, food systems senior scientist at Bioversity International.

During his address at Tropentag 2018 in Ghent, Minister De Croo explicitly mentioned the achievements by CIALCA in developing capacity for agricultural research in the Great Lakes Region.

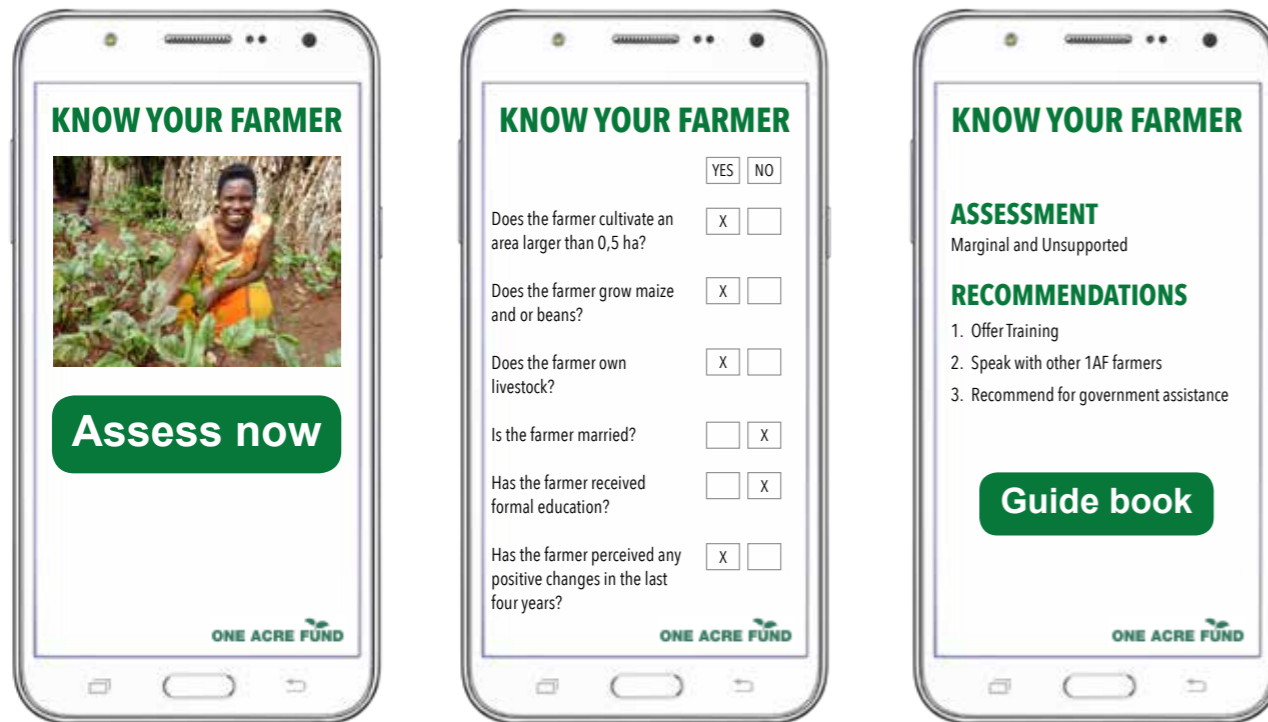
CIALCA uses ICT and big data for effective research and development

In line with the strategic policy note on Agriculture and Food Security for the Belgian Development Cooperation, CIALCA heavily invests in using digital technology and ICT to enhance agricultural research and development. CIALCA uses digital technology to empower researchers, decision-makers and beneficiaries of different sex and age in more cost-efficient and equal access to knowledge, information and innovation.

Researchers are empowered in using digital tools for more efficient data collection, analysis and reporting. CIALCA does all of its data collection using Open Data Kit (ODK) systems operating on tablets. In January 2018, CIALCA organized a training for its key staff and partners on how to develop and use ODK for survey and field data collection ([read more](#)). Digital data collection supports integration of data into centralized databases and enhances consistent, quality and cost-effective data collection. All basic CIALCA research will follow household, field and MEL data collection protocols.

Having centralized data collection and storage in a CIALCA-base enables CIALCA to empower public and private sector decision-makers to make better decisions. For example, it can inform the government on pest and disease hotspots, and how banana and cassava pest and diseases are spreading throughout the region. This enables government to deploy their extension officers in a more targeted and (cost-)efficient fashion. Similarly, collection household data following standardized surveys allows for developing farmer typologies across the CIALCA region, and tailoring innovation delivery to those farm household types by public or private service providers. CIALCA partners (e.g. ENABEL) can use the CIALCA data to design, implement and monitor more impact full development programs and interventions.

CIALCA also empowers different groups of next users (e.g. extension providers) and end-users (e.g. farmers) in accessing knowledge, information and innovations. The ICT4BXW workstream, for example, develops applications that provide improved and more equal access to information for farmers of different age and gender to diagnose banana diseases in their fields and to decide on what would be the most appropriate disease management strategy. Similarly, CIALCA works on developing digital tools that supports making site-specific fertilizer recommendations for cassava aligned with the local agro-ecological and market conditions and taking into account the farm household's production objectives. In doing so, CIALCA supports the Belgian government in contributing to SDG 5.b: 'Enhance the use of enabling technology, in particular information and communications technology, to promote the empowerment of women'.



Mock-up of the Know-Your-Farmer decision-support tool for one of the CIALCA partners One Acre Fund. The tool operates using data from 2700 household surveys for which data were digitally collected using the RHoMIS data platform.





PILLAR 3

Innovation and scaling

The objective is to develop, validate, and avail best get innovations and related implementation processes aiming at sustainably improving productivity, market engagement, and dietary quality, tailored to the variability among producers and their customers in the Great Lakes Region.

This pillar aims to develop, validate, and avail innovations and related implementation processes aiming at sustainably improving productivity, market engagement, and dietary quality, tailored to the variability among producers and their customers in the Great Lakes Region. Five groups of activity are planned under the pillar over the project duration: (i) Develop farmer typologies and livelihood strategies, (ii) assemble and prioritize the interventions related to production, nutrition and market access, (iii) identify a set of production-related interventions which are specific to farmer classes, (iv) evaluate trade-offs of interventions in relation to productivity, nutritional status, value chain access, and environmental conditions, and (v) integrate learnt lessons in the decision support framework. All activities under the pillar are in progress.

Expected outcomes

- By the end of 2020, at least 5 development partners have used the CIALCA segmentation framework to provide diverse innovation options to farm households in the Great Lakes Region;
- By the end of 2020, a set of production-related interventions for cassava- and banana-based systems is integrated in on-going, partner-led scaling initiatives;
- By the end of 2020, a set of nutrition-related interventions for cassava- and banana-based systems is integrated in on-going, partner-led scaling initiatives;
- By the end of 2020, a set of market-related interventions for cassava- and banana-based systems is integrated in on-going, partner-led scaling initiatives.

Progress along the Pillar 3 activities and achievements

ACTIVITIES	OUTPUTS	ACHIEVEMENTS
Activity 3.1 Develop typologies of farmer characteristics and livelihood strategies in banana- and cassava-based systems that enables better targeting of innovations and implementation processes.	By the end of 2018, an inventory of farmer characteristics (location, age, gender, socio-economic status) and livelihood strategies (production objectives, risk coping strategies, etc.) has been developed.	Household survey was conducted in Rwanda with a collaboration of One Acre Fund (2,700 respondents) and similar typology surveys are planned for Burundi and DR Congo. All CIALCA PhDs will integrate typology work in their doctoral thesis research.
Activity 3.2 Assembly and prioritization of production-, nutrition, and market access-related interventions towards sustainable agriculture generated by CIALCA and other R&D initiatives.	By the end of 2017, production-, nutrition, and market access-related interventions have been assembled, integrated in CIALCA-base, and prioritized based on stakeholder demand.	<ul style="list-style-type: none"> • Decision support tools (DST) to sustain soil fertility amendment and low integration of nutrition in agricultural research identified; • Nutrient omission trials (NOT) are being conducted and ICT-based tools are being used to collect and generate the required datasets to calibrate the DST.
Activity 3.3 Validation with of best-bet interventions including aspects of risk and alignment to the status of agricultural companies.	By the end of 2018 and yearly thereafter, a set of production-related interventions has been identified that target different farm classes and are ready for scaling.	<ul style="list-style-type: none"> • DST on soil fertility amendment are going to be developed with different levels of cost investment to meet various farmer conditions; • Some DST (basic nutrients-NPK) will require low investment cost and then affordable even by the resource-limited farmers; • Other DST, requesting high investment cost and then leading to high benefit-cost ratio (micro+ macro nutrients) will be developed to meet entrepreneurial farming proposes.
Activity 3.4 Evaluation of trade-offs of interventions in relation to productivity, nutritional status, value chain access, and environmental conditions.	By the end of each R4D campaign, trade-offs of production interventions are understood.	The household survey conducted in Rwanda revealed that farmers with entrepreneurial minded are those who are more engaged in improved agricultural practices. There was high variability in entrepreneurial agriculture across the regions.
Activity 3.5 Development of production-, nutrition-, and market access-related recommendations for integration in the decision support framework (Activity 2.3).	By the end of each R4D campaign, lessons learnt are integrated in the decision support framework of public and private stakeholders.	<ul style="list-style-type: none"> • In Burundi, NOT are being conducted with a collaboration and co-investment of a government project (PAPAB), led by IFDC to implement the national fertilizer subsidy program; • In Rwanda, NOT are being conducted with RAB, with the aim of expanding the CIALCA approach to other crops and advising government on fertilizer policies; • CIALCA activities leveraged with the African Cassava Agronomy Initiative (ACAI), an advanced project on DST development in Nigeria and Tanzania.

CIALCA understands rural households investing in entrepreneurial farming

Smallholder farmers across the Great Lakes Region are diverse in both their household characteristics and farming practices. Improving the understanding of this diversity can assist in the development of tailored and targeted interventions. Further, it also provides insights into the motivations, limits, and options of these farmers.

To analyse how household heterogeneity might explain adoption of modernised and entrepreneurial agricultural activities, Rwanda was selected as an initial case-study. As part of this, CIALCA formalised a collaboration with One Acre Fund (1AF), one of the largest agricultural NGOs in East Africa to perform the analysis. 1AF delivers agricultural inputs and year-round extension services to more than 265,000 smallholder farmers in Rwanda. Field agents of 1AF used a digital surveying tool to collect data from more than 2,700 Rwandan farming households.

This data permitted the development of ten farm typologies, representative of Rwandan agricultural households. Most households grew a diverse range of crops, earned limited cash incomes, experienced moderate levels of food security, and sold roughly a third of production. These typologies were developed based upon six factors (crops produced, cultivated area, marital status and education level of household head, livestock ownership, and perception of positive changes in farm characteristics). From these typologies, four groups of farms were distinguishable through their engagement with crop modernisation practices (e.g. fertiliser and improved seed use): not engaged (13% of the population), slightly engaged but lacking information (26%), moderately engaged (46%), and highly engaged (15%).

These farm types have also been used to identify whether they can be grouped by entrepreneurial farming activities, in particular the levels of commercialisation of production. Initial analyses suggest a propensity for farmers who are more engaged with modern agricultural practices to be more entrepreneurially minded. Across Rwanda, three farm groups were identified based upon levels of produce commercialisation: subsistence (0% of production sold); moderate (30% of production sold); and high (>70% of production sold). High spatial (sub-national) differences were also observed, with certain regions of Rwanda being more inclined to entrepreneurial agriculture. CIALCA will continue this analysis, investigating what might be the explanatory factors for entrepreneurial farming and considering the barriers which may inhibit farms from transitioning along a commercialisation pathway.



One Acre Fund field agent performing the digital survey.

CIALCA develops isotope technology for climate smart agriculture

Cassava has been for a long time a staple crop but gained interest from industry recently, also in the Great Lakes Region. The industry needs a year-round supply of cassava roots and therefore contracts farmers to spread the planting times over the year, including during dry spells when yields are likely to be lower.

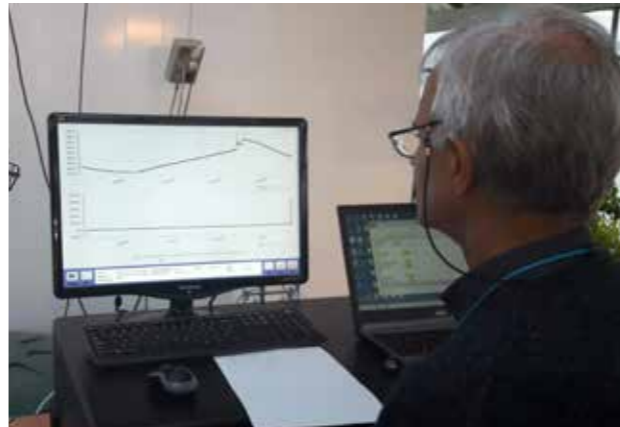
To counteract drought effects on productivity, CIALCA aims to develop packages of isotope techniques¹ for guiding efforts with respect to variety and planting time selection, and nutrient supply for increasing water use efficiency (WUE) of cassava production systems. This aim is supported by a laboratory-to-field approach, with Research and Development (R&D) in Austria and Belgium, in combination with field trials in Burundi, eastern DR Congo and Rwanda and outside the CIALCA region, i.e. Tanzania and Nigeria.

1. For more information on isotopes, please visit: www.iaea.org/newscenter/multimedia/videos/incredible-isotopes



In 2018 the Joint FAO/IAEA Division and the KU Leuven, in collaboration with IITA, initiated the development of standard cassava sample preparation and measuring procedures for Carbon-13 (^{13}C) and Oxygen-18 (^{18}O) stable isotopes, indicators for WUE and stomatal conductance respectively. Exploratory tests were made, to find the optimal method to extract cellulose from cassava leaves or other plant organs. Reasons to go for cellulose extraction are that the stable isotope composition of cellulose is considered to be more appropriate than that of the bulk material for assessing crop water use efficiency. The first results showed ^{13}C and ^{18}O isotope values of extracted cellulose in line with literature. They also confirmed that cellulose can be extracted from cassava leaves and lead to isotope ratios that are reproducible with little variation. Research is now being carried out to clarify the observed patterns, so that operation procedures for sampling, analysis and interpretation can be finalised.

Initial steps were taken to know how ^{13}C and ^{18}O isotope values vary in cassava plants under the influence of water availability, for twelve different cassava varieties, either landraces with poor resistance to diseases and water stress or improved varieties, resistant to cassava mosaic virus disease and moderately to very drought tolerant. This R&D is being conducted at the Soil and Water Management and Crop Nutrition Laboratory (SWMCNL) in combination with close to 124 field trials implemented in Burundi, eastern DR Congo and Rwanda, supplemented by 226 trials in Nigeria and Tanzania, with a focus on nutrient management or planting time. Finally, R&D was started for developing new stable isotope techniques to assess drought tolerance and water use efficiency of cassava in walk-in growth chambers.



Laboratory approach for developing packages of isotope techniques to guide efforts for increasing water use efficiency of cassava production systems.

1 CIALCA has a demand-driven R4D agenda that

- Directly aligns with needs and interests of policy, development and business scaling partners as formulated in the CIALCA Theory of Change;
- Timely influences decision-making in which we consider not only whose decisions we try to influence, but also the type of science and communication that is needed to influence their decisions;
- Contributes to CIALCA's results framework and its primary and secondary outcomes;
- Aligns well with the CGIAR Research Program on Roots Tubers and Bananas (RTB), the CGIAR Strategic Results Framework (SRF) and the Sustainable Development Goals (SDGs).

2 CIALCA functions as an open, catalyzing consortium and network that benefits and brings together more people and activities than directly funded by CIALCA

- CIALCA staff of IITA and Bioversity International, associated projects, partners and organisations operate as CIALCA team and contribute to achieving each others individual, project and organisational objectives;
- Other projects can benefit from and contribute to CIALCA, for example through the CIALCA partner network, data infrastructure, and capacity development;
- CIALCA seeks to actively collaborate with research and public and private development projects within its mandate area.

7 CIALCA is visible in the field, online and in policy

- CIALCA develops visually attractive and ICT-based communication and decision-support tools that guide policy, development and business investments in the food and agricultural sector;
- CIALCA is active and visible both in the field, as well as online and in policy, development and business circles;
- CIALCA gives visibility to donors and partners, and we jointly celebrate and publish our lessons learned.

8 CIALCA has a diverse team of engaged and enthusiastic professionals who have CIALCA spirit and work output- and impact-oriented

- People know the CIALCA team as a group of diverse (gender, age, expertise), engaged and enthusiastic professionals who are committed, have CIALCA team spirit and work output- and impact-oriented;
- The CIALCA team is a mix of:
 - Field scientists, who know the local context very well, have boots on the ground and are part of the international research community;
 - 'Wizzkids' who can model, work with big data, conduct applied foresight and trade-off analyses.
- People and network experts who represent CIALCA in the field and in policy and business circles;
- Science and project leaders who ensure proper scientific, technical, financial and performance management in the project team and partners.

3 CIALCA has equal partnerships that are geared towards local ownership, impact and delivery

- We work with government, public and private partners that have a proven track record of delivery;
- Partners are identified based on clear criteria, including their delivery capacity, willingness and ability to co-invest, and level of commitment to contribute to the CIALCA Results Framework;
- CIALCA focusses on the quality of partnerships, not on quantity of partnerships.

4 CIALCA works with public and private sector partners

- CIALCA responds to challenges and opportunities faced by public and private (development) partners;
- CIALCA has public and private sector expertise to meaningfully collaborate;
- CIALCA successfully supports stepping up towards entrepreneurial farming.

9 CIALCA provides value for money and works in a cost-effective way

- We invest in good people and provide good conditions for our national and international employees;
- CIALCA considers cost-effectiveness of various research options and documents cost-effectiveness;
- We explore public, private and policy development models that have a significant return on investment;
- We promote cost-covering travel arrangements for our staff;
- Partnerships are based on commitment and co-investment;
- We use modern communication techniques to reduce costs and environmental impacts on travel.

10 CIALCA has special focus on capacity development of future science, policy, business and development leaders

- We develop long-term capacity through MSc and PhD research;
- We support curriculum development in agricultural universities and colleges;
- We perform, facilitate and promote participatory action research and joint learning processes with our (national) partners;
- We invest in capacity strengthening of service providers to farmers and communities.

5 CIALCA is innovative and at the cutting-edge of applied research in banana- and cassava-based systems

- CIALCA conducts integrated systems research and transdisciplinary science for improving agricultural-based livelihoods in Burundi, Rwanda and eastern DR Congo;
- We identify added value, build on previously conducted research, and contextualise research that seeks to respond to challenges and opportunities in the Great Lakes Region;
- CIALCA experiments with, and builds capacity in developing and using new science concepts, methodologies, and data collection, analyses and dissemination tools;
- CIALCA's data is openly accessible, user-friendly, and is linked to global agricultural research for development data bases;

6 CIALCA conducts solid publishable scientific research

- We work along clearly defined research questions and hypotheses;
- CIALCA promotes solid research, designed according to standards of peer-reviewed publications and solid evidence-base;
- Protocols (for both social and natural science) are systematically registered in the CIALCA-base, and reviewed by the CIALCA technical advisors.

To facilitate and communicate a CIALCA spirit, quality scientific work and to ensure that we work action- and impact-oriented, CIALCA operates along

10 BEST PRACTICES

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- Schut, M., Cadilhon, J.-J., Misiko, M. & Dror, I. (2018). Do mature innovation platforms make a difference in agricultural research for development? A meta-analysis of case studies. In: *Experimental Agriculture* 54(1): 96-119. doi.org/10.1017/S0014479716000752
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- Incomplete systemicity: a helping hand in the fight against Xanthomonas wilt of banana. On: www.promusa.org/blogpost540-Incomplete-systemicity-a-helping-hand-in-the-fight-against-Xanthomonas-wilt-of-banana
- Biodiversity 2017 Annual Report – SDR story. On: www.biodiversityinternational.org/ar2017/2017-highlights/removing-single-diseased-stems
- CIALCA and One Acre Fund join forces in understanding farmers' adoption constraints. On: www.cialca.org/news/cialca-and-one-acre-fund-join-forces-in-understanding-farmers-adoption-constraints

How can YOU integrate gender and nutrition in your research?. On: www.cialca.org/news/how-can-you-integrate-gender-and-nutrition-in-your-research

RAB and CGIAR join forces to combat Xanthomonas Wilt of banana in Rwanda. On: www.cialca.org/news/rab-and-cgiar-join-forces-to-combat-xanthomonas-wilt-of-banana-in-rwanda

CIALCA on the web



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JANUARY

- CIALCA Gender and Nutrition in Agricultural Research for Development Training, 23-25 January 2019, Kigali, Rwanda.

FEBRUARY

- High-level management meeting with One Acre Fund to discuss outcomes of farm household typology work and way forward.

MARCH

- Nutrition team field visits and research demand mapping together with governmental and non-governmental organisations in Burundi and Rwanda.
- CIALCA PhD students start their proposal development with Belgian Universities UGhent, UCL and KULeuven.
- First part of Gender field study on *'When men leave and women are left farming, what happens to gender roles & responsibilities and to agricultural production? Feminization of agriculture in rural South'* *Feminisation of age in Eastern DRC*.

APRIL

- Start of CIALCA MSc student projects in Rwanda.
- Scaling Readiness workshop for strategising the scaling of drought tolerant cover crops and hedges in banana-based systems.

MAY

- Start of Burundi synthesis work on agriculture - nutrition linkages, in collaboration with the Burundi-led PRONIANUT program.
- Second part of Gender field study in collaboration with Oxfam *'When men leave and women are left farming, what happens to gender roles & responsibilities and to agricultural production? Feminization of agriculture in rural South'* *Feminisation of age in Eastern DRC*.

JUNE

- Publication of four new CIALCA peer-reviewed publications related to PhD of Walter Ocimati.

JULY

- Follow up field measurements on integration of shade- and drought-tolerant crops, hedges and trees in banana-based systems in South Kivu. Continuation of drone and smartphone linked work to detect banana disease patterns in South Kivu.

AUGUST

- Open competitive call for Burundi MSc students launched.

SEPTEMBER

- Webinar on new CIALCA PhD proposals. Training workshop on CIALCA data management training.

OCTOBER

- Defence of CIALCA PhD candidate Walter Ocimati.
- CIALCA Midterm Review meeting.

NOVEMBER

- Publication and discussion of Gender study on *'When men leave and women are left farming, what happens to gender roles & responsibilities and to agricultural production? Feminization of agriculture in rural South'* *Feminisation of age in Eastern DRC*.

