TC Document

I. Basic Information for TC

▪ Country/Region:	REGIONAL
▪ TC Name:	Agricultural Production and Rural Development in the LAC Region: Productivity and Insertion Into Markets
▪ TC Number:	RG-T3569
▪ Team Leader/Members:	Stein, Ernesto Hugo (RES/RES) Team Leader; Salazar, Lina Piedad (CSD/RND) Alternate Team Leader; Escobar Genes, Myriam Helvecia (RES/RES); Ibanez Londono, Ana Maria (VPS/VPS); Mendieta Navarro, Claudia (IFD/IFD); Negret Garrido, Cesar Andres (LEG/SGO); Urquiola Ralero, Montserrat (RES/RES)
▪ Taxonomy:	Research and Dissemination
▪ Operation Supported by the TC:	N/A
▪ Date of TC Abstract authorization:	15 Oct 2019.
▪ Beneficiary:	State institutions responsible of agricultural and rural development policies, agricultural producers, and agricultural exporters.
▪ Executing Agency and contact name:	Inter-American Development Bank (the TC will be executed by IDB through RES/RES) Ernesto Stein (ERNESTOS@iadb.org)
▪ Donors providing funding:	Institutional Capacity Strengthening Thematic Fund(ICS)
▪ IDB Funding Requested:	US$405,000.00
▪ Local counterpart funding, if any:	US$0
▪ Disbursement period (which includes Execution period):	30 months disbursement (24 months execution period)
▪ Required start date:	
▪ Types of consultants:	Individuals and firms
▪ Prepared by Unit:	RES-Research & Chief Economist
▪ Unit of Disbursement Responsibility:	RES-Research & Chief Economist
▪ TC included in Country Strategy (y/n):	No
▪ TC included in CPD (y/n):	No
▪ Alignment to the Update to the Institutional Strategy 2010-2020:	Social inclusion and equality; Productivity and innovation; Economic integration; Institutional capacity and rule of law

II. Description of the Associated Loan/Guarantee

II.1There is no proposed loan/guarantee associated with the OS-TC.

III. Objectives and Justification of the TC

III.1 Historically, the fastest road to development was thought to go through industrialization. Development occurred through a process of structural transformation, mobilizing workers from low productivity sectors (mostly traditional agriculture) into high productivity ones (particularly modern manufacturing). This process of structural transformation resulted in substantial increases in economy-wide productivity. And it is a well-known fact that differences in total factor productivity (TFP) across countries account for the major differences in per capita GDP

(Caselli and Coleman, 2001; Comin and Hobijn, 2004; Pages, 2010; Rosenzweig, 2010; Foster and Rosenzweig, 2010; Crespi et al. 2014).

III.2 Specializing in agriculture was seen as unappealing: the sector was supposed to experience low productivity growth, be subject to declining terms of trade (as posed by the Presbisch-Singer hypothesis), face low income elasticity of demand (Engel's law) and it was not supposed to breed the type of capabilities that can then be successfully employed in other "more interesting" sectors.

III.3 But this characterization is far from what we observe in modern agriculture today. Few sectors have experienced a more dramatic transformation. Advanced genetics, precision agriculture, big data, and the use of sensors and the internet of things suggests that, at the frontier, farming has become a technology industry. As a result, productivity in agriculture has been increasing rapidly, both in the region as elsewhere. Moreover, as people become wealthier and switch away from staple grains and starches towards more diversified diets, products such as fruits and vegetables, meats and feed grains are facing dynamic demands. Specializing in such products, particularly when countries have comparative advantages in them, has become increasingly attractive.

III.4 Yet successful integration in modern agriculture –and productivity growth in the sector-- is far from automatic and does not typically involve the sector as a whole. In many countries in the region, productivity in substantial portions of the agricultural sector remains low, and this represents one of those main obstacles to poverty alleviation in rural areas.

III.5 The economic literature on the effectiveness of the use of public finances shows that investments aimed at providing rural public goods (e.g., rural infrastructure, technological innovation, plant and animal health, market information, and natural resource stewardship) brings higher economic returns and has a bigger impact on productivity, income, and sustainable management of natural resources than does public spending aiming to provide private goods (e.g., buying and distributing inputs, production subsidies) (Fan et al., 2008; López, 2004; Foster et al., 2011). The evidence shows that shifting expenditure on the financing of private goods toward rural public goods increases rural per capita income, reduces adverse impacts on natural resources management, and contributes to poverty reduction (Lopez and Palacios, 2014; Lopez and Islam, 2011; Lopez and Galinato, 2007; Sills et al., 2015). The provision of these agricultural public goods can also be instrumental in helping firms access international markets (Ardila, Ghezzi, Reardon and Stein, 2019).

III.6 The IDB has been supporting agricultural productivity as a strategy to develop rural areas and reduce poverty in our member countries. In fact, the majority of the RND projects have as their main objective to increase agricultural productivity and therefore, income and food security. For this purpose, the IDB through the CSD/RND division has actively worked in the design and implementation of projects that finance several types of public goods and the adoption of agricultural technologies. As part of this work, several rigorous impact evaluations have been conducted to shed light on the effectiveness of these programs (e.g., ULP, PROVIAR and PROSAP (AR-L1063), PRONAREC (BO-L1021) and CRIAR (BO-L1040)). Overall, the results present evidence of higher household income and agricultural productivity. For instance, Maffioli, Gibbons and Rossi (2016) evaluate the PROVIAR and PROSAP programs in Argentina. The PROVIAR program provided non-refundable contributions for the purchase of inputs and technology, as well as technical assistance for specific farmers. On the other hand, the PROSAP program financed the construction and rehabilitation of public water infrastructure (i.e. irrigation). The results from the analysis show that PROVIAR increased productivity by 7.7% while PROSAP program increased productivity by 4.6%. However, when both programs overlap, farmers' productivity increase by 14.7%.

Furthermore, Salazar and Lopez (2017) find that a program that financed rehabilitation and construction of irrigation infrastructure in Bolivia (PRONAREC) increased farmers' value of agricultural production by 60% and income by 35%. Also, in Bolivia, the impact evaluation of the CRIAR program, which financed non-reimbursable vouchers for the acquisition of agricultural technology and technical assistance, finds an increase of 92% in productivity and 36% in income (Salazar et al, 2015). In Nicaragua, the impact evaluation of the APAGRO program, that financed the acquisition of livestock technologies and technical assistance, showed increases of 60% on agricultural production (Salazar, Fahsbender and Kim, 2018). In Perú, Salazar et al (2016) perform an impact evaluation of a fruit fly eradication program (MOSCAMED). The results showed positive impacts of 15% on agricultural productivity of fruit producers. However, little research has been conducted to identify and analyze the specific determinants that affect agricultural productivity at the national level and the contribution of each of these determinants to total agricultural output. Likewise, much remains to be done to understand what drives success in the integration of agricultural products into world markets.

III.7 This technical cooperation aims to reduce these knowledge gaps. Its objective is to support LAC public sector institutions in designing and investing in effective public policies to boost agricultural productivity and remove barriers for successful integration into modern agriculture. Target institutions include Agriculture and Trade Ministries among other relevant public agencies. Attaining this objective would contribute to the ultimate goal of reducing rural poverty. This TC will also support LAC public sector institutions responsible for agriculture and rural development policies in learning from the Chinese experience, what it takes to export to China, and assessing opportunities for knowledge exchange between both regions on best practices for enhancing agricultural productivity and insertion into markets, as well as boosting rural development.

III. 8 China's experience in boosting its agricultural productivity has relevant lessons for the LAC region. Agricultural production in China increased fivefold in three decades, driven mostly by increased productivity. Changes from the collective agricultural production system to individual household production as well as rapid farm mechanization and reduced use of labor were the main drivers of increased productivity. Aggregate productivity growth in China is higher than in most OECD countries and other emerging economies (OECD, 2018; Huang and Rozelle, 1996). Moreover, it is estimated that average annual Total Factor Productivity (TFP) in China grew from 1.9 percent in the 1980's to 4.21 percent in the 1990's, while for the period of 2001 to 2015, China's TFP grew at an average rate of 3.5 percent per year, which represents twice the global average during that period (GAP Report, 2018). Thus, this TC will be complemented with similar studies that will be conducted by the Chinese Academy of Social Sciences (CASS), however, these studies will not be funded by this technical cooperation.

III. 9 This TC will also support LAC public sector institutions responsible for agriculture and rural development policies in learning from the Chinese experience and learning as well as from what it takes to export to China, and assessing opportunities for knowledge exchange between both regions on best practices for enhancing agricultural productivity and insertion into markets, as well as boosting rural development.

III. 10 The TC is aligned with the IDB institutional strategy by addressing the social exclusion and inequality, low productivity and innovation, and limited economic integration development challenges, as well as the institutional capacity and the rule of law. As mentioned before, the ultimate goal of the TC is to reduce rural poverty. The TC aims at supporting LAC public sector institutions in designing and investing in effective public policies to boost agricultural productivity and remove barriers for a successful integration into modern agriculture. The TC will contribute to build institutional capacity with relevant information to prioritize interventions

in the agricultural and rural development sectors, engage public agencies in these sectors to implement evidence-based decision making, and support country-level policy dialogue by emphasizing on key interventions that improve the agricultural sector productivity and the successful integration into modern agricultural markets.

III.11 The TC is also consistent with the Institutional Capacity Strengthening Fund (ICSF) (AB-3008) overall objective of strengthening institutions and the fund's strategic priority of supporting high-impact initiatives that strengthen ties between China and LAC.

IV. Description of activities/components and budget

IV.1 **Component I: Identification of the specific factors and policies that affect agricultural productivity in LAC.** Between 2000 and 2014, the real agricultural GDP of Latin America and the Caribbean grew at an average annual rate of 2.8%, less than the rate for the region's total GDP (3.5%). This was slightly higher than the 2.7% achieved in the 1990's and the 2.4% in the 1980's, although it fell short of the 3.5% received in the 1970's (ECLAC, 1997; CEPALSTAT, 2015). Similarly, agricultural GDP grew 3.4% in the period 2000-2010. This contrasts with 28% growth in the period 1990-1999. Lastly, agricultural GDP has grown 15% so far this decade (2010-2014). The countries leading this growth are Paraguay, the Dominican Republic, and Peru, for which this indicator rose by around 76%, 58%, and 42%, respectively, over the period 2004-2014 (CEPALSTAT, 2015). Latin America and the Caribbean are responsible for 12% of the agricultural global output. Agriculture contributes to almost 5% of the region's GDP (15% or more of GDP in Haiti, Guyana, Nicaragua, and Paraguay). It provides employment for one in five workers (and is the biggest employer in rural areas) and its exports make up almost 30% of the region's total trade, the highest absolute value for any region comprising developing countries. The region accounts for 14% of global food exports, and generates 56% of world soy exports, 45% of coffee, 31% of sugar, 28% of meat, 32% of chicken, 64% of bananas, 18% of citrus fruits, and 41% of corn (FAOSTAT, 2013).

IV.2 Regarding agricultural productivity, the region's output increased between 1990 and 2014. Nevertheless, there is still room to improve agricultural productivity. A recent study (Nin-Pratt et al., 2015) shows that the total factor productivity (TFP) of the region's agriculture grew by 45% between 1980 and 2012, with an average annual growth rate of 1.2%. It is worth noting that the progress of TFP has fluctuated over the last 30 years. In the 1980's, which were characterized by import substitution policies and a bias toward industry, the average rate of TFP growth in agriculture was 0.5%. In the 1990's, when macroeconomic (fiscal, monetary, and trade) reforms were embarked upon, accompanied by a set of policies more favorable to the agricultural sector's development, the average growth rate of TFP was 1.2%. Finally, in the 2000's, the consolidation of the macroeconomic reforms and rising international prices for agricultural products helped achieve a higher average growth rate of TFP than in the three previous decades (1.7%). Despite this growth, the gap of TFP with respect to OECD remains wide, at almost 50%.

IV.3 Growth in agriculture has been shown to help reduce poverty in Latin America and the Caribbean. Between 1990 and 2013, the incidence of poverty in the region's rural areas dropped from 65% to 48%, while extreme poverty in rural areas dropped from 40%

to 28%. Several analyses corroborate the data showing that in Latin America and the Caribbean, aggregate growth based on agriculture would be more effective at reducing poverty than non-agricultural GDP growth (2.7 times more effective according to Foster and Valdés (2010), World Bank (2008), and Lingon and Saoulet (2007), or 2.5 times more effective according to Bravo-Ortega and Lederman, 2005).

IV.4 This component will finance two case studies that aim to identify the specific factors and policies that affect agricultural productivity. The importance of analyzing agricultural productivity in rural areas is that this concept is closely linked to rural poverty. In fact, greater agricultural productivity is associated with greater agricultural output, increased income and food security. Two case studies will analyze the role of access to credit, insurance, land titling, agricultural technologies, education, and rural roads, among others, to increase agricultural productivity. In addition, the studies will examine the effect of current agricultural public policies and programs on agricultural productivity. Two countries will be selected to carry out the case studies. Possible countries to be analyzed include Peru, Colombia, Guatemala and Mexico as they have recent agricultural census data and/or nationally representative agricultural surveys available. At the end of this TC, two working papers will be developed, one per each selected country. The studies will have a separate analysis for small landholders in order to identify the specific factors that affect the productivity for this segment of the population. Identifying the factors that determine agricultural productivity will allow us to determine the most effective interventions to reduce rural poverty. This national analysis will be complemented with separate analysis for small landholder farmers who are more likely to face deeper levels of poverty in rural areas. Specifically, this component aims to answer the question: ¿What are the factors that affect agricultural productivity and therefore, rural poverty? To answer this question, an econometric approach to estimate agricultural production functions at the national level will be applied. The definition and validation of the econometric methodology will later allow us to expand this analysis to other countries in the LAC region.

IV. 5 The two countries that will be part of this analysis should fulfill the following criteria: (i) have a recent agricultural census with information regarding agricultural output, inputs, land tenure, access to technology, credit and technical assistance, and amount of land cultivated, among others; (ii) if census information is not up to date, having access to representative agricultural surveys with the relevant information will be necessary; (iii) countries for which small landholders represent an important segment of the agricultural sector; and (iv) countries that experience low levels of agricultural productivity. These two case studies will allow us to identify the data requirements and to define the econometric methodology in order to replicate the model in other countries in the region.

IV.6 This component will support the Bank’s operational program by identifying which specific factors affect agricultural productivity and therefore, how operations must gear towards promoting these activities in the region. The studies promoted through this component will provide crucial analysis to inform policy decisions by identifying the main determinants of agricultural productivity and therefore, inform policymaking. Target institutions include Agriculture and Trade Ministries among other relevant public agencies.

Attaining this objective would contribute to the ultimate goal of reducing rural poverty. The study conducted by this component will be complemented with a study to be conducted by the CASS. Specifically, this study will perform a similar analysis for the Chinese agriculture. Ideally, this study will analyze the feasibility of implementing similar policies in the LAC region. However, this study will not be financed by this TC.

IV.7 The proposed analysis will also complement the TC: RG-T3253, developed by the CAN region and the RND division. Specifically, the RG-T3253 has the objective to identify and prioritize specific geographical areas where public infrastructure will provide greater economic returns, specific infrastructure refers to rural roads, irrigation and electricity.

IV.8 Component II: Identification of success factors in insertion into modern agricultural exports. The component will fund (i) the preparation of case studies on successful cases of integration into modern agricultural export markets, (ii) technical advisors to the case studies, and (iii) the organization of two workshops. The component will fund five papers containing three cases each, for a total of 15 case studies. They will take the form of analytical narratives following a common conceptual framework developed for the agriculture chapter of the 2019 DIA on Global Integration. The selection of the five papers will be done through an open call for proposals within the research network of the IDB. Each case study would focus on (1) the transformations in the demand for the product that make it appealing for the country in question; (2) the sources of comparative advantage in the product; (3) the private sector strategies to compete in the target markets; (4) the investments firms needed to make (in their own companies and all along the value chain) to customize their products to the needs of the target markets; (5) the mechanisms through which the public sector identifies the public goods that are required for the private strategies to have a chance to succeed; and (6) the bundle of public goods required and their role in explaining success. The technical advisors will help prepare the call for proposals, monitor and support country teams in the preparation of the case studies. We will strongly encourage research centers to include in their proposals at least one case study involving small or medium farmers, rather than just large firms. Regarding the workshops, the first one will aim at defining the working methodology and discussing possible advances and limitations faced by research teams, seeking approaches to overcome those limitations. The second workshop will aim at discussing results and improving the quality of final research papers. The workshops will be attended by the research director of each case study, the project's coordinating team including the external advisors, and Bank staff working in the corresponding field of study. If the workshops were to take place in the region, non-objection letters will be obtained beforehand.

IV.9 China is clearly one of the most important destinations for our region’s agricultural products. In fact, China ranks second after the US, with concentrating nearly 14% of Latin American and Caribbean exports of agricultural products. This country has seen important demographic changes, with rapidly rising income and significant diet changes that have implications for our agricultural exports. There may have also been changes in the nature of the buyers in China, and the type of quality, environmental and labor standards they

impose. There are issues related to China's strategies in terms of trade agreements, and sanitary protocols negotiated with counterparts in Latin America and the Caribbean. For this reason, as a complement to the Latin American case studies, the component will include a study analyzing what firms and governments of other countries must do to be successful in exporting agricultural products to China. Alternatively (or in addition to the above), this component may include the preparation of up to three case studies on China's experience in inserting their own products into modern agricultural export markets, which may have relevant lessons for the LAC region. These case studies would follow the methodology described above so that the studies are comparable and address the same dimensions of analysis. The Chinese studies will be done in collaboration with the Chinese Academy of Social Sciences (CASS).

IV.10 Component III: Knowledge and dissemination. Activities will include the edition and publication of working papers of the case studies produced in Components I and II, as well as the preparation, edition and publication of an overview paper and a book. These knowledge products will be published in the IDB web page. A workshop with representatives from LAC public agencies responsible for agriculture and rural development policies, private sector, academia, think tanks and other institutions working on these matters, and specialists from the IDB, will be organized in order to share preliminary results from the studies and obtain feedback about the methodology implemented in the different case studies. The focus will be placed on the policy recommendations emerging from the findings of the studies, and on engaging LAC public sector agencies throughout the implementation of the TC in order to ensure relevance of the policy recommendations and foster their appropriation by said agencies. The outputs and key outcomes of both components will be shared with the ICSF Secretariat.

IV.11 Preliminary lessons from these studies will also be discussed during the Seventh LAC-China Policy and Knowledge Summit (2020), jointly organized by the Institutions for Development (IFD) department and CASS, which will bring together policy makers and academia from both regions.

IV.12 **Budget.** The total cost of the project is US$405,000, which will be provided by the Institutional Capacity Strengthening Thematic Fund (ICS).

Indicative Budget

Activity/ Component	Description	IDB/ Fund Funding	Counterpart Funding	Total Funding
Component I.	Identification of the specific factors and policies that affect agricultural productivity in LAC	**US$80,000**	**-**	**US$80,000**
	Two case studies (US$40,000 each)	US$80,000	-	US$80,000

Component II.	Insertion into modern agricultural exports	**US$270,000**	**-**	**US$270,000**
	Case Studies	US$180,000	-	US$180,000
	Workshops	US$40,000	-	US$40,000
	Advisors	US$50,000	-	US$50,000
Component III.	Knowledge and dissemination	**US$55,000**	**-**	**US$55,000**
	Book	US$30,000	-	US$30,000
	Workshop	US$25,000	-	US$25,000
	Total	**US$405,000**	**-**	**US$405,000**

IV.13 The sector specialist responsible for execution of component one will be Lina Salazar. The specialist responsible for execution of components two and three will be Ernesto Stein.

V. Executing agency and execution structure

V.1 The Bank, through RES/RES, will be the executing agency for this project. RES will be responsible for the overall execution and supervision of the project in close coordination with CSD/RND. CSD/RND will take the lead in the execution and technical oversight of Component I; RES/RES will take the lead in the execution and technical oversight of Component II; RES/RES and CSD/RND, under the leadership of VPS/VPS, will provide oversight to the execution of Component III.

V.2 The execution of this project by the Bank is justified by the regional scope of the project, which involves the coordination of public sector and relevant private sector participants from countries across the region. The Bank is ideally situated to serve as a regional coordinator. This TC is an initiative of the Bank.

V.3 Procurement. The Bank will contract individual consultants, consulting firms and non-consulting services to carry out the activities described. The activities to be executed are included in the Procurement Plan and will be contracted in accordance with Bank policies as follows: (a) AM-650 for Individual consultants; (b) GN-2765-1 and Guidelines OP-1155-4 for Consulting Firms for services of an intellectual nature and; (c) GN-2303-20 for logistics and other related services.

VI. Major issues

VI.1 The main risk is that national representative agricultural information might not be collected following the same processes and data-collection instruments which might reduce comparability among countries.

VI.2 The Bank will own the property rights of all the knowledge products of this project.

VII. Exceptions to Bank policy

VII.1 This TC does not involve any exceptions to the Bank's policies.

VIII. Environmental and Social Strategy

VIII.1 There are no environmental or social risks associated with the activities outlined in this operation; therefore, its environmental classification is "C".

Required Annexes:

Results Matrix - RG-T3569

Terms of Reference - RG-T3569

Procurement Plan - RG-T3569