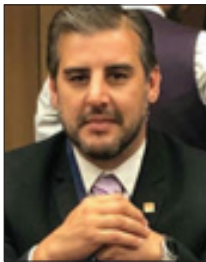




INTA-Driven Science for Diplomacy in Argentina



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Introduction

Science and technology pervade many aspects of diplomacy due to scientists acting like diplomats push the subscription of international agreements (Turekian, 2018). In practice, science diplomacy could mean many things, scientists use to serve as technical advisors or they might participate with decision in negotiations. However, scientists frequently cross international borders to attend meeting and conferences and, to work with colleagues. This approach of science diplomacy is primarily building fellow feeling also in an informal mode. This is the most popular practice in fact, that allowed carrying out the projects toward good scientific results (Copeland, 2016).

The science and technology institutions (STI) need to develop scientific projects to apply for many to work. Usually, the projects are supported if they are proposed as collaboration between two or more institution and, if the institution are from two or more different countries. It encourage to the scientist to work in multidisciplinary team from different labs and, they promote and demand a formal frame to work, it end in the creation of agreements between countries (Colglazier, 2018).

Most of the successful treaties based on science collaborations meet the needs of societies in a politically feasible approach (Moomaw, 2018). This approach need the active participation of professional on field in order to collect real information to attempt real problems. The territoriality of the institution involves become critical to this end.

Argentina is one of the largest economies in Latin America with abundant natural resources in energy and agriculture. In its territory of 2.8 million square kilometers, the country has extraordinarily fertile agricultural land, has significant reserves of gas and lithium, and has enormous potential in renewable energy. Is a world leading country in food production, with large-scale industries in the agriculture and

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livestock sectors. It also has great opportunities in some manufacturing subsectors and in the innovative high-tech services sector, biotechnology. Argentina, one of Latin America’s largest economies is seeking its path of sustained inclusive economic growth (World-Bank, 2019).

Argentina has a long history of promoting Science and Technology Institutions (STI), which is reflected in high standards of quality and scientific production of public institutions such as “*University of Buenos Aires*” (UBA) and “*Consejo Nacional de Investigaciones Científicas y Técnicas*” (CONICET) qualified as the best STI of Latin American countries in 2019 (Fernandez, 2019; CONICET, 2019). In this context, the National Institute of Agricultural Technology (INTA) is the main public Argentinean STI with focus on the agricultural, agri-food and agro-industrial sectors that combine the STI with the social needs of the family farming, small and medium producers and, the export sector.

National Institute of Agricultural Technology (INTA) of Argentina

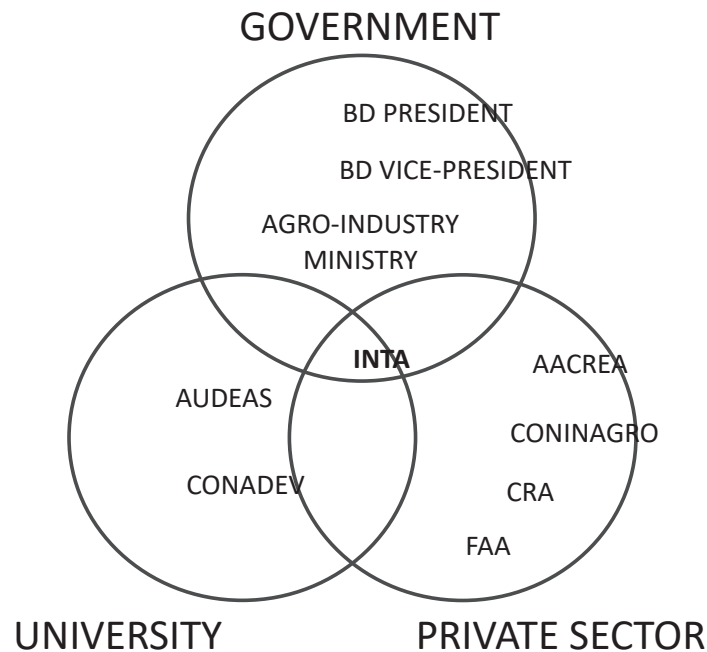
INTA is a singular institution that combine the

research in science and technology with extension activities to bring solutions from research centers to the local agencies.

The INTA of Argentina is a decentralized public body with operational and financial autarchy, which is under the orbit of the Ministry of Agriculture, Livestock and Fisheries. In 1956, INTA was created by law in order to promote the development of agricultural research and extension, and the technification and improvement of agricultural enterprises and rural life. Its mission is to carry out and promote actions aimed at innovation in the agricultural, agri-food and agro-industrial sectors, to contribute integrally to the competitiveness of agribusiness chains, environmental health and sustainability of productive systems, social equity and territorial development through science and technology development and extension (Argentina, 1956).

A board of directors (BD) that is the highest governing body of the Institution leads the INTA. It establishes global policies and strategies and decides on the allocation of resources of the organization. It is made up of representatives from the public and private sectors, guaranteeing an active participation

Figure 1: INTA and triple helix concept.



Source: Author’s own compilation

Figure 2: Territoriality of INTA

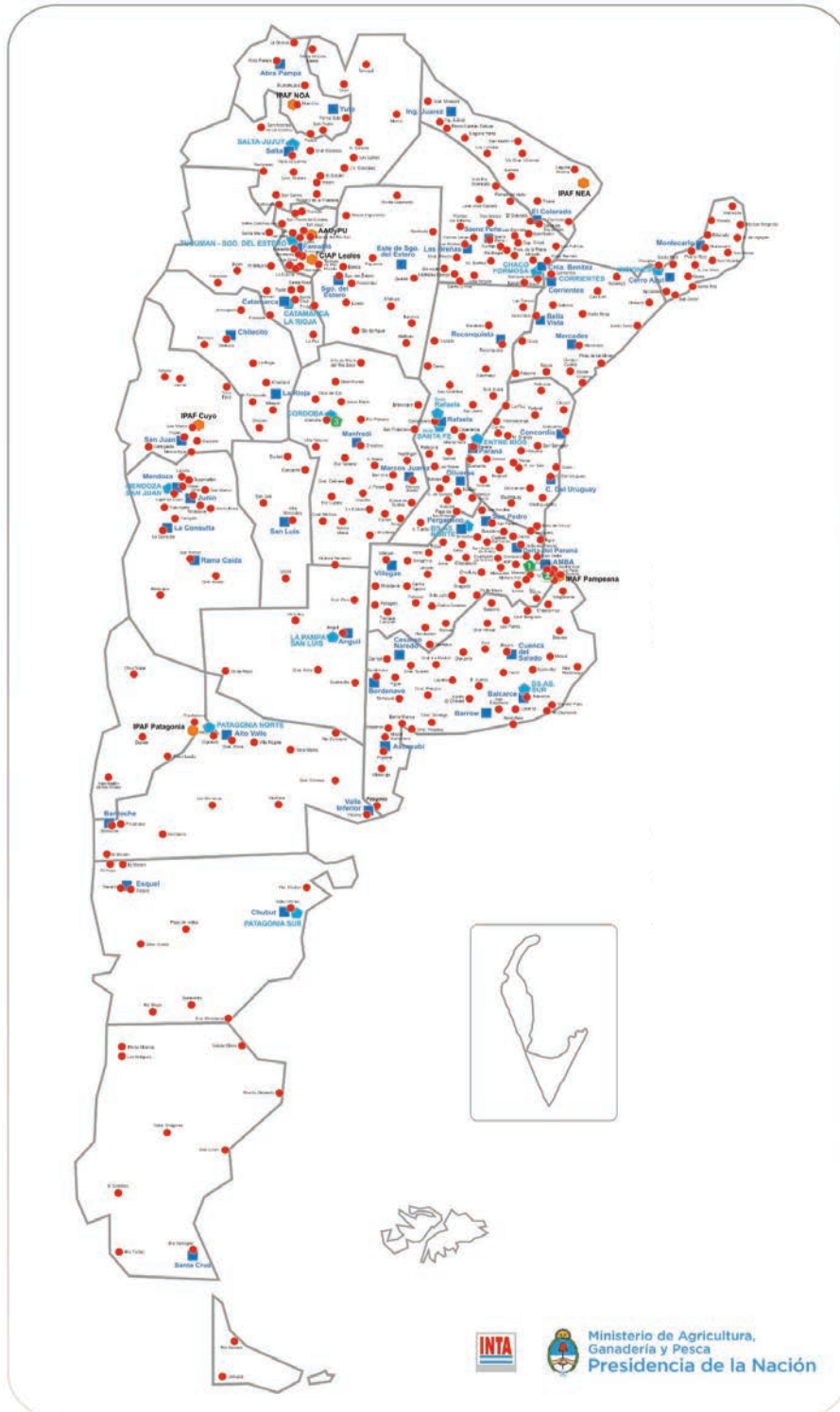


Figure 2. The map shows the territoriality of INTA across Argentina that is building through the 6 Research Centers (◆), 15 regional centers (◆), 23 Research Institutes (◆), 51 Agricultural Experiment Stations “EEA” (■) and, over 377 rural outreach units “AER” (●).

of the productive and academic sector in the setting and prioritization of policies, as well as in the social control of their actions.

The BD is formed by a president, vice-president and a representative of:

- The Agro-industry Ministry.
- Argentina Association of Regional Consortium's of Agricultural Experimentation

(AACREA): It is an Argentine civil association that integrates the Regional Consortia of Agricultural Experimentation, known in Argentina and Uruguay as CREA Groups. They are work groups formed by agricultural producers to promote the technological development of production and efficiently coordinate the productive task (CREA, 2020).

- Agricultural Inter-Cooperatives Confederation Ltd. (CONINAGRO): It is an organization that brings together the agricultural cooperative sector of Argentina. It is an organization that brings together ten federations that, in turn, bring together 120,000 agricultural cooperative companies (CONINAGRO, 2020).

- Argentinean Rural Confederation (CRA): It is an organization formed by 14 confederations and federations (until 2013), which in turn are made up of more than 300 rural societies throughout the country (CRA, 2020).

- Argentine Agrarian Federation (FAA): It is an employer organization of rural producers in Argentina. Most of its members are small and medium rural owners (FAA, 2020).

- Argentine Rural Society (SRA): It is a civil association that brings together large landowners dedicated to agriculture and livestock in Argentina (SRA, 2020).

- Faculties of Agronomy from the National Universities (AUDEAS): It is an entity that brings together the officially recognized University institutions in the Argentine Republic (faculties, schools, departments, institutes) that offer higher education in agriculture and/or forestry (AUDEAS, 2020).

- Faculties of Veterinary from the National Universities (CONADEV): It is the Council that brings together the Deans of the Faculties of

Argentine National Universities with Careers of Veterinary Medicine (CONADEV, 2019).

In this way, INTA integrates representatives from all sectors, including small and medium producers, export companies, associations, federations, agronomy and veterinary universities, as well as government representatives. This gives the INTA BD a complete representation of the entire agricultural sector of the country supporting the triple helix concept.

The scheme shows the triple hélix complex in the INTA board direction (BD). The president, vice president and a member designed by the agricultural ministry, represents the government. Two delegates, one for the Faculties of Agronomy from the National Universities (AUDEAS) and one for Faculties of Veterinary from the National Universities (CONADEV) represent the Universities. Argentina Association of Regional Consortium's of Agricultural Experimentation (AACREA), Agricultural Inter-Cooperatives Confederation Ltd. (CONINAGRO), represents the private sector. Argentinean Rural Confederation (CRA) and Argentine Agrarian Federation (FAA) and, Argentine Rural Society (SRA).

From the beginning, the INTA BD include the three university, industry and government institutions on their structure. This relationship, described as the triple helix concept, describe the potential of STI and economic development has when they working together. It concept propose that a Knowledge Society lies in a more prominent role for the university and in the hybridization of elements from university, industry and government to generate new institutional and social formats for the production, transfer and application of knowledge (Triple-helix, 2020).

INTA's research and extension activities rely on its widespread presence across Argentina's 2.8 million square kilometers of territory (territoriality). It are composed by 6 research centers, 15 regional centers, 23 research institutes, 51 agricultural experiment stations and over 377 rural outreach units (Figure 2) (Nicora and Espina, 2016). INTA cogenerates knowledge on the agro sector via alliances with local communities international STI.

The traditional knowledge is collected through the contact on the field with local communities in order to relieve and protect the natural resources (James, 2019). Its function is possible due to the INTA territoriality. At the same time, INTA works in the territories to attend demands and opportunities with new knowledge and technologies, which paves the way to collaborating with other communities around the world that share similar problems. These two approaches of global collaboration, research and extension, respectively, enrich SD in a unique manner. The problems are flowing in a bottom-up sense, from the communities to the research centers and, the solutions found attend problems and need generated on the society itself. The science, technology and innovations generated by INTA are then spread through scientific publications, patents or products and, the public-public and public-private and, the local and international collaborations increase and enhance each other. To this end, the INTA BD has established 11 thematic axes that constitute the 2019-2022 work portfolio. Its axes include the themes of agroecosystems, renewable natural resources and climate change, pests and diseases of animals and plants, added value in productive systems, technologies applied to agriculture and institutional management of innovation.

INTA-driven Science for Diplomacy in Argentina

Within INTA structure there is a National Coordination for Technology Transfer and Institutional Relationships that handles INTA's relations with the public and private sectors, at regional, national and international levels. During the last four years period (2016-2019) INTA has done more than 200 international agreements with prestigious STI from more than 40 countries, including countries to promote the South-South cooperation (SSC) as India. These agreements include scientific cooperation, technology transfer, capacity building, trade and grants. Its work are in concordance with the five modalities of the development compact, supporting the development goals self-determined in a south country (Chaturvedi, 2016).

In addition, INTA articulates with State Ministries to provide technical assistance to third countries and to carry out joint projects generated by Argentinean needs. Besides, articulate with the five agricultural attachés of the Argentina embassy (one of those located in India) in an agricultural surveillance of common need to work on and to generate international collaborations. INTA also participates in the Argentine Fund for International Cooperation (FO.AR) of the Argentine Ministry of Foreign Affairs, contributing to missions in 31 countries with 56 ongoing projects and 18 project-ideas currently in process during the 2016-2019 period. From its beginning, INTA contributes to Argentina's a global insertion via strategic alliances with high reputation international STI from several countries around the world. Diplomat scientists are generated by INTA to interact with scientist diplomats in order to carry out science diplomacy (Turekian *et al.*, 2015). SD in INTA is a practice based on scientific activities that allowed building and strengthening relationships between countries. According to the institutional engagement described by Sutton and Lyons (2013), INTA SD accosts with the following topics: i) participating in government-sponsored international science activities; ii) impacting or advising on STI-relevant policy or capacity of other nations; iii) advising the Argentinean foreign policy objectives by working in priority countries, priority disciplines, and/or priority issues; iv) strengthening science diaspora connections between foreign STI personnel on their campus and INTA.

INTA aligns its science-related efforts with Argentina's agro sector needs, with a prospective focus in high tech innovation and global sustainability. Coexistence of scientists with focus in future technologies and researchers grounded in today's problems, allows INTA to promote SD in a singular innovative way. This is a bottom up approach pushed from researchers that undertake international collaborations with STI from priority countries, but also with different communities worldwide that struggle with the same problems.

However, scientists lack of politic and diplomatic practice and experience that needed for effective institutional relationships. On the other hand, traditionally trained diplomats have no scientific background (Moomaw, 2018). Last year's many

efforts have been made to improve scientists soft skills and diplomats scientific background, converging on what is called Science Diplomacy (SD) (Sutton and Lyons, 2013).

Finals remarks, INTA is a STI from Argentina that provides advice to inform and support foreign policy objectives (science in diplomacy). In addition, INTA promotes scientific cooperation, thus improving international agreements and collaborations that strengthen and boost institutional relations between countries (science for diplomacy) (Gluckman *et al.*, 2018). Considering scientists are the most common unknowingly ambassadors of the STI (Hoy, 2019), there is a need to strengthen their soft capabilities to improve Science Diplomacy.

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