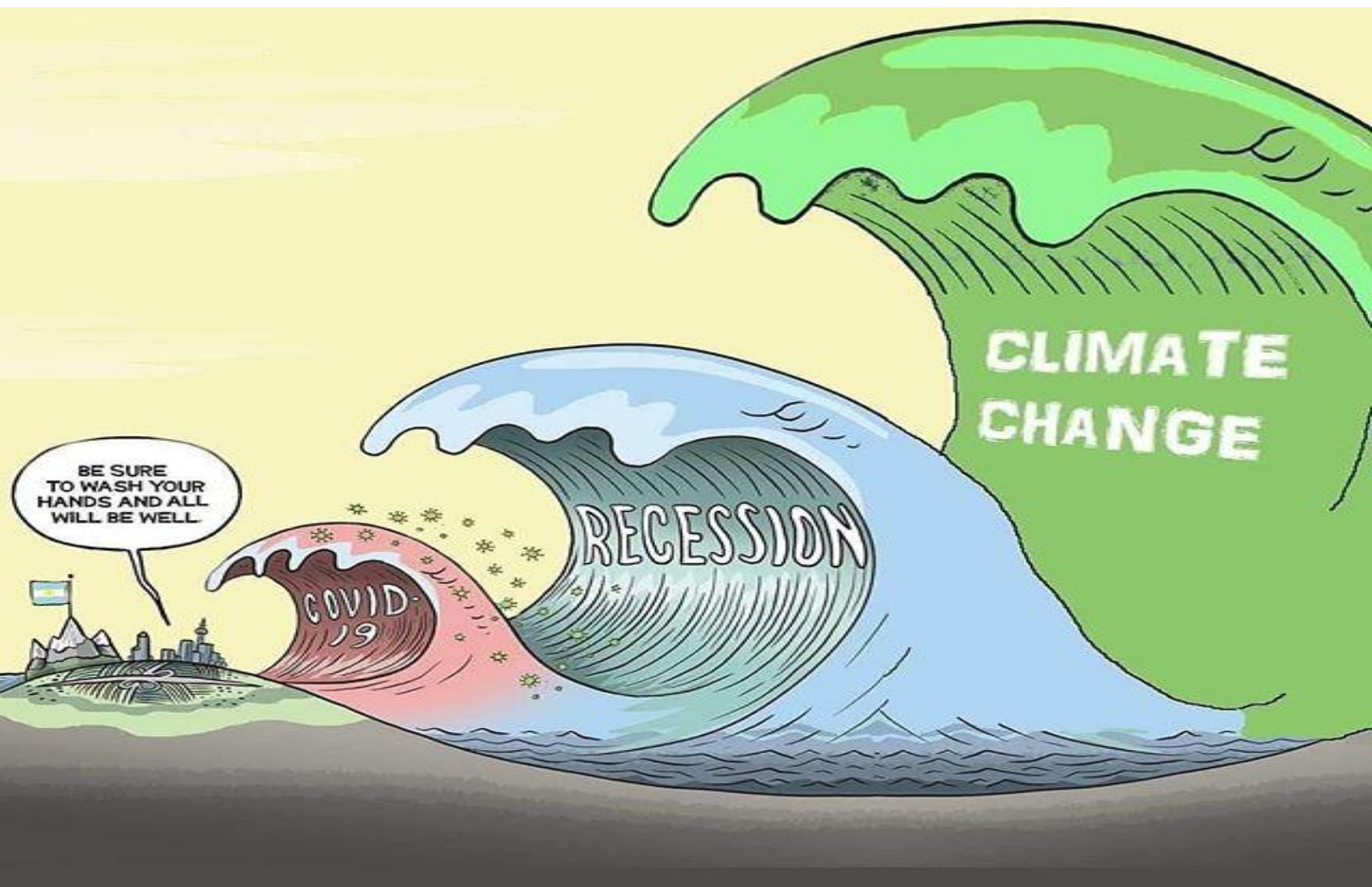


Integrated climate smart agricultural technologies

**Mission Taiwan (ICDF)
in Nicaragua**



BE SURE
TO WASH YOUR
HANDS AND ALL
WILL BE WELL

COVID-
19

RECESSION

CLIMATE
CHANGE

EFFECTOS DEL CAMBIO CLIMÁTICO



AUMENTO DEL NIVEL DEL MAR

Cuando la temperatura de la superficie se calienta, se produce la fusión del hielo de los glaciares y aumenta la cantidad de agua que desemboca en los océanos de todo el mundo y pone en peligro a numerosas ciudades que se sitúan bajo el nivel del mar.



TORMENTAS ASESINAS

Si la temperatura de los océanos se vuelve más cálida, las tormentas son más intensas. En los últimos 30 años, la gravedad y número de ciclones, huracanes y tormentas han aumentado y se han casi duplicado.



SEQUÍA

Existe una gran escasez de agua que disminuye la producción mundial de alimentos.



ESPECIES EN EXTINCIÓN

La desertificación, el aumento de las temperaturas de los océanos, así como la deforestación, ponen en peligro a varias especies, que pronto podrían extinguirse. El oso polar pasa a ser el primer ejemplo.



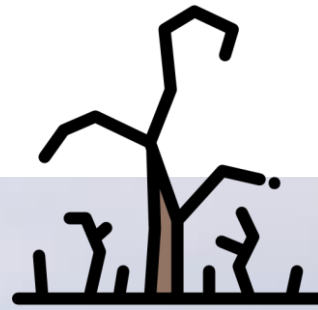
ENFERMEDADES

Las temperaturas más cálidas, inundaciones y sequías, se combinan y crean las condiciones adecuadas para que las ratas, mosquitos, así como otras plagas que son portadoras de enfermedades prosperen.



DESTRUCCIÓN DE ECOSISTEMAS

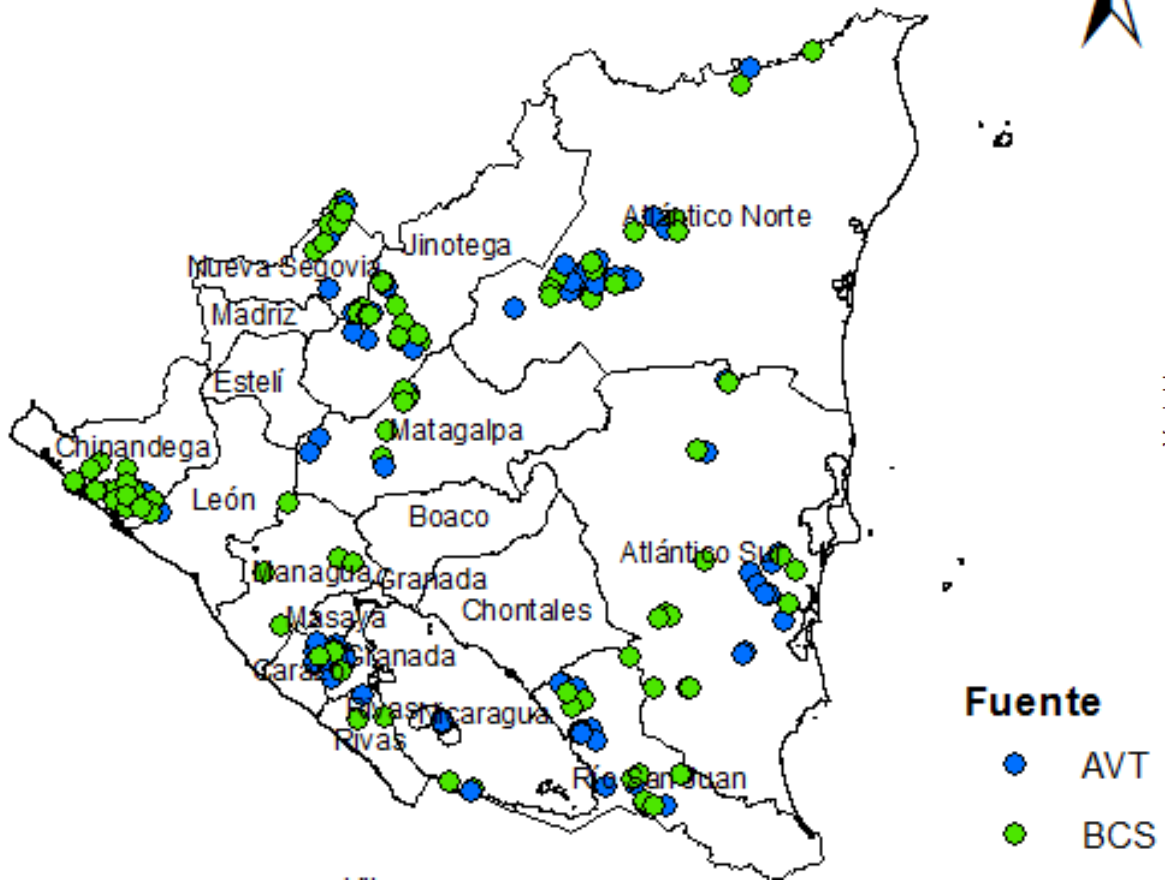
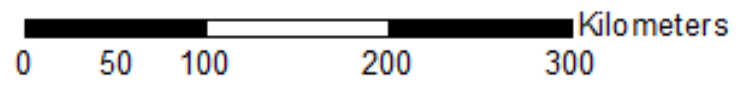
Plantas y animales mueren o se trasladan a otros hábitats (no nativos), cuando los ecosistemas de los que dependen para sobrevivir (como los arrecifes de coral) se ven amenazados.



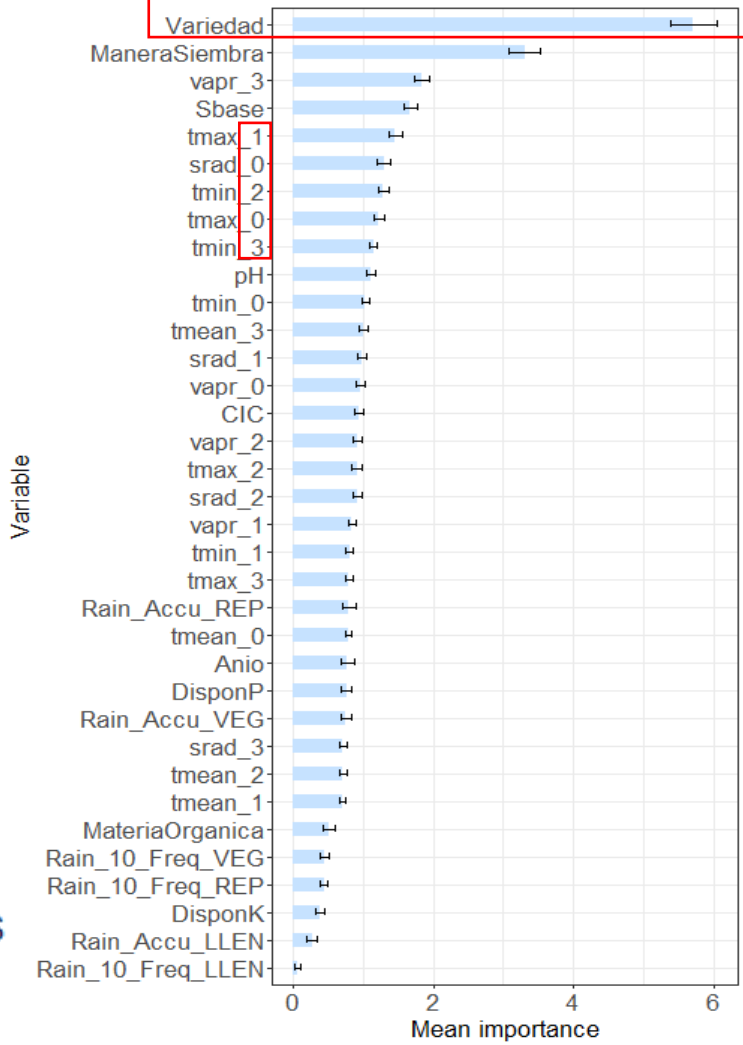
Effects of Climate Change



Big Data Analysis on Community Seed Bank Production



Importance of variables (with a mean R2 of 39.9 %)



Dataset Persistent ID	doi:10.7910/DVN/GUEFFE
Publication Date	2020-06-05
Title	Bean crop cycle records from technology validation areas and seed banks
Author	Huang, Si-Dun (International Cooperation and Development Fund - ICDF, Taiwan) Kuo, Chin-Chien (International Cooperation and Development Fund - ICDF, Taiwan) Peng, Yuan-Ching (International Cooperation and Development Fund - ICDF, Taiwan) Aguilar, Andrés (International Center for Tropical Agriculture - CIAT) - ORCID: https://orcid.org/0000-0001-8179-9931 Siles, Pablo (International Center for Tropical Agriculture - CIAT) - ORCID: https://orcid.org/0000-0001-5850-6539 Rivera-Palacio, Juan Camilo (International Center for Tropical Agriculture - CIAT) - ORCID: https://orcid.org/0000-0002-1423-3396 Dorado, Hugo (International Center for Tropical Agriculture - CIAT) - ORCID: https://orcid.org/0000-0002-0103-7505
Contact	Use email button above to contact. Alliance Data Management (Alliance of Bioversity International and CIAT)
Description	This dataset contains 721 crop cycles of community banks of seeds for beans in 9 departments of Nicaragua that were collected with INTA (Instituto Nacional de Tecnología Agropecuaria) in the period 2016 – 2019. Each location was georeferenced. Variables such as cultivar, planting practices, harvest date, region, and precipitation were also recorded. The weather and soil variables were extracted from INETER (Instituto Nicaragüense de Estudios Territoriales), GLDAS (Global Land Data Assimilation System) and Chirps
Subject	Earth and Environmental Sciences; Agricultural Sciences
Keyword	Beans (AGROVOC) http://aims.fao.org/aos/agrovoc/c_331566 Weather (AGROVOC) http://aims.fao.org/aos/agrovoc/c_15292 Crop yield (AGROVOC) http://aims.fao.org/aos/agrovoc/c_10176 Agriculture (AGROVOC) http://aims.fao.org/aos/agrovoc/c_203 Latin America and the Caribbean (Research Region) Digital Inclusion (Research Lever) Multifunctional Landscapes (Research Lever)
Topic Classification	Beans (AGROVOC) http://aims.fao.org/aos/agrovoc/c_331566
Language	English; Spanish, Castilian
Producer	International Cooperation and Development Fund, Nicaragua (ICDF) https://www.icdf.org.tw/mp.asp?mp=2 International Center for Tropical Agriculture (CIAT) https://ciat.cgiar.org Nicaraguan Institute of Agricultural Technology (INTA) https://inta.gob.ni Nicaraguan Institute for Territorial Studies (INETER) https://www.ineter.gob.ni

- ### Links
- <https://doi.org/10.7910/DVN/IBDWAV>
 - <https://doi.org/10.7910/DVN/H0HUSY>
 - <https://doi.org/10.7910/DVN/ZGXBMT>
 - <https://doi.org/10.7910/DVN/UP0JKM>
 - <https://doi.org/10.7910/DVN/GUEFFE>
 - <https://doi.org/10.7910/DVN/CKRZTT>

Feedback

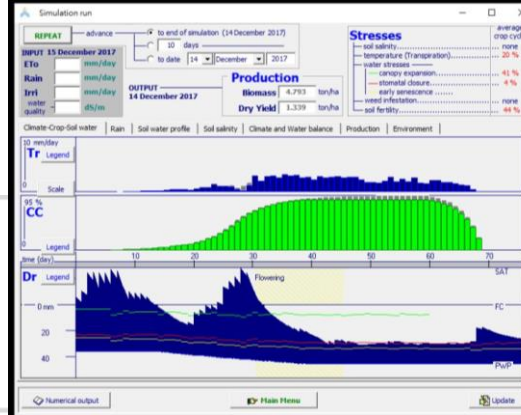


INETER

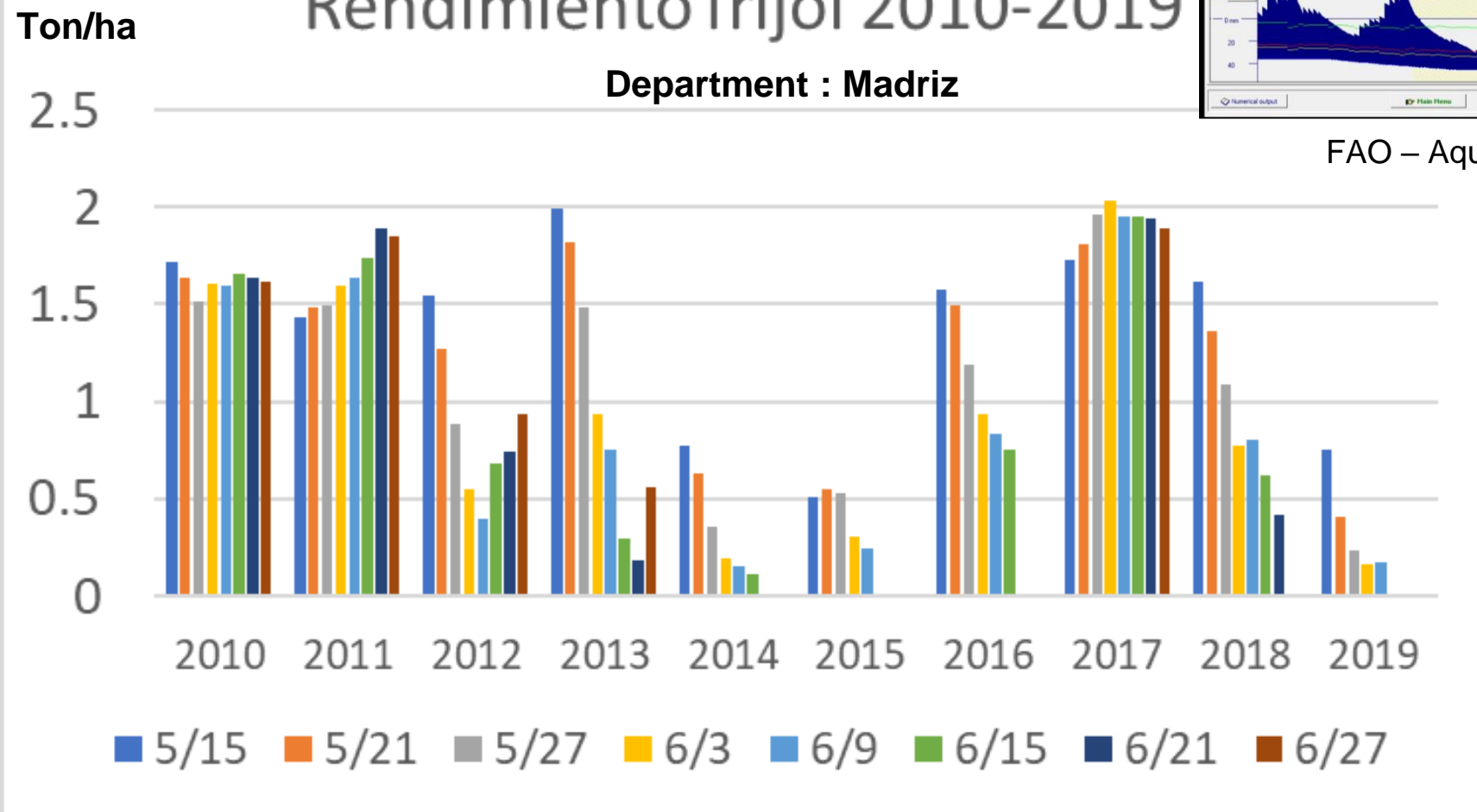
Crop modeling to define optimal sowing date

Yield Analysis for common bean Rendimiento frijol 2010-2019

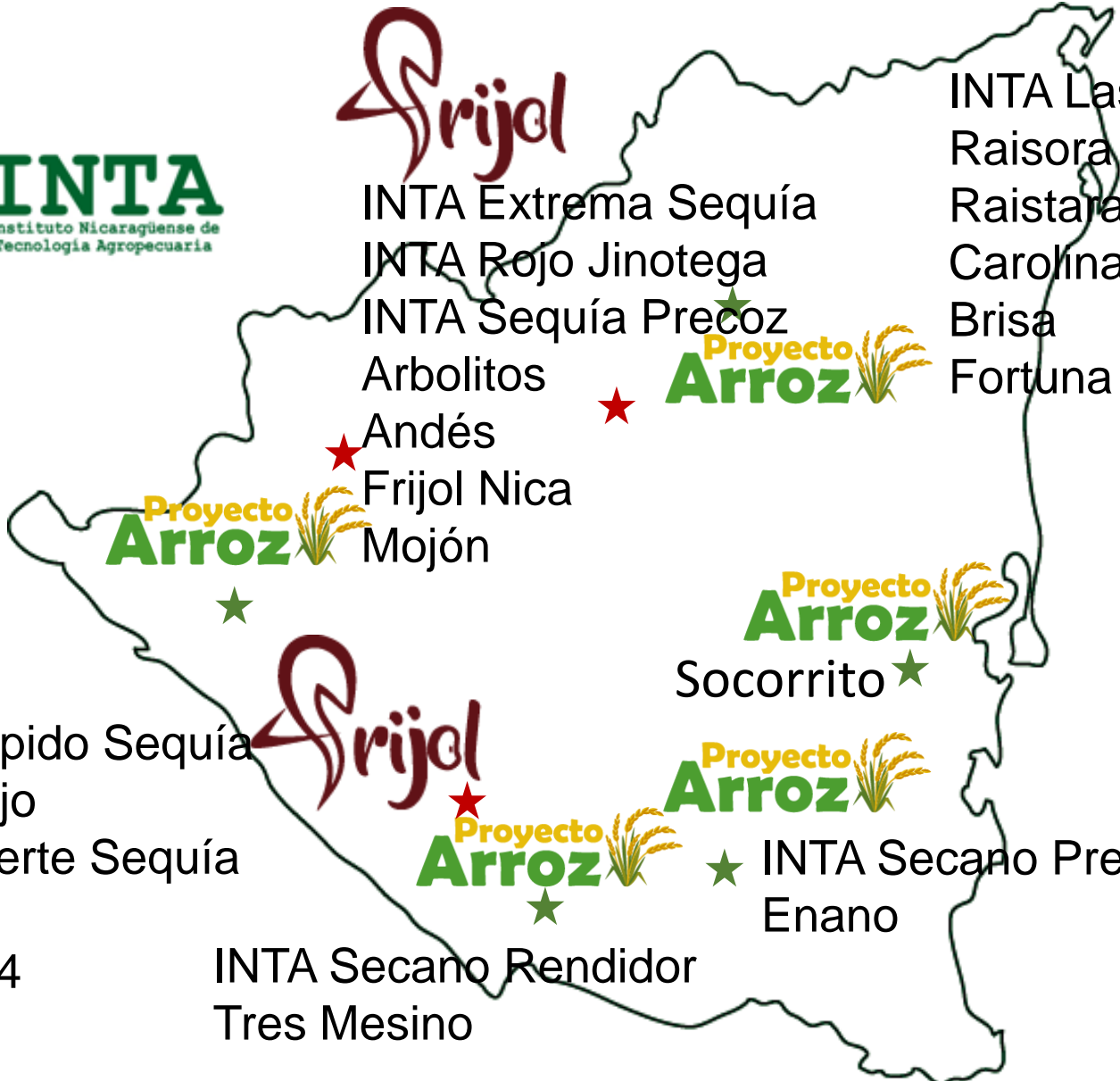
Department : Madriz



FAO – AquaCrop



Varieties adapted to climate change



INTA Las Minas
Raisora
Raistara
Carolina
Brisa
Fortuna

INTA Extrema Sequía
INTA Rojo Jinotega
INTA Sequía Precoz
Arbolitos

INTA NutreZinc
Bluebonnet

Andés
Frijol Nica
Mojón

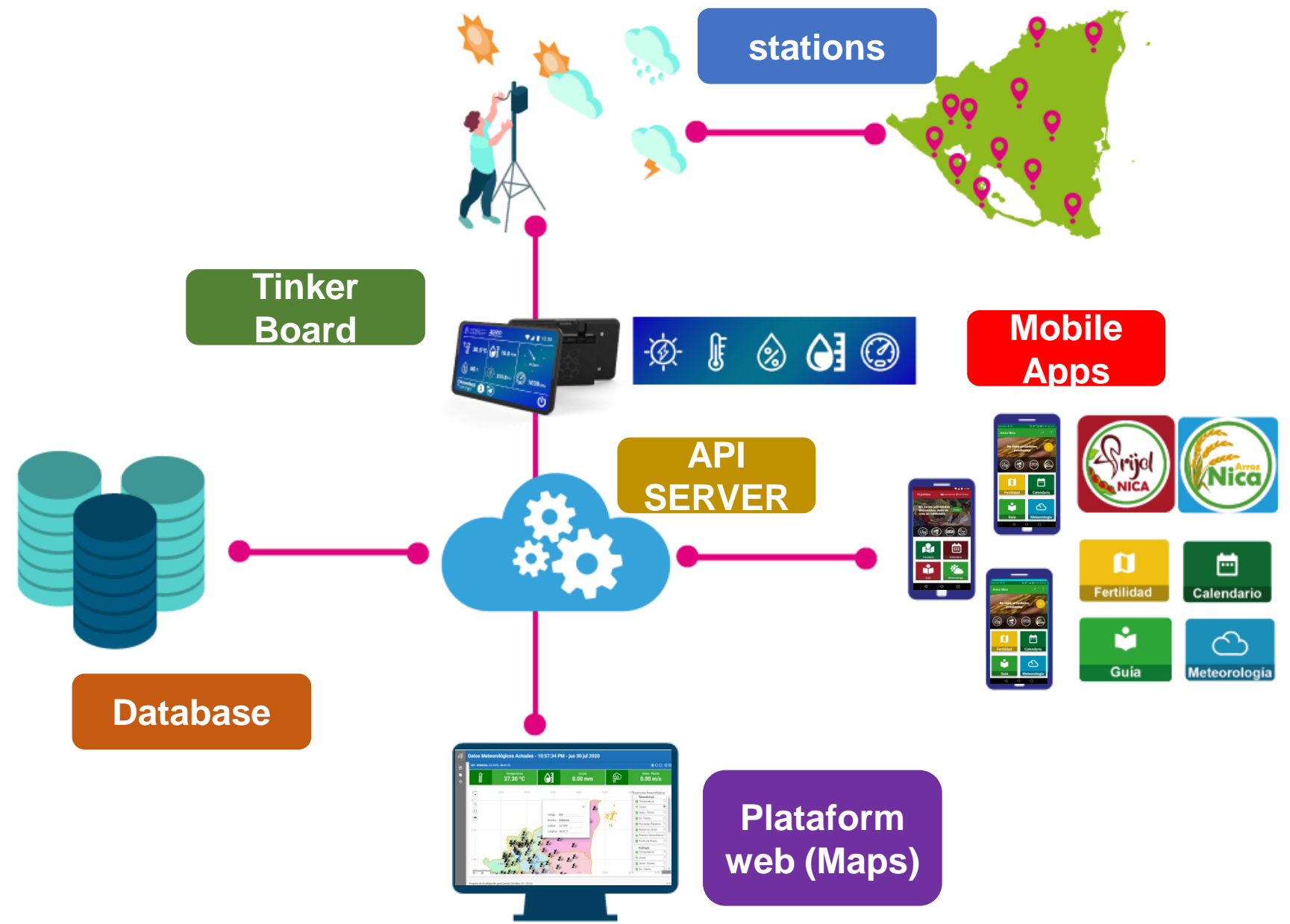
Socorrito

INTA Rapido Sequía
INTA Rojo
INTA Fuerte Sequía
RT-390
DOR 364

INTA Secano Rendidor
Tres Mesino

INTA Secano Precoz
Enano

Integrated Climate Smart Agricultural Technologies



A Scientific study

The rapid spread of mobile phones creates the potential to sustainably increase agricultural productivity for the 2 billion people who live in the households of small farmers.

Meta-analyses suggest that providing agricultural information through digital technologies increased yields by 4% and the odds of adopting 22% recommended tickets.



REVIEW

AGRICULTURE

Realizing the potential of digital development: The case of agricultural advice

Raissa Fabregas¹, Michael Kremer², Frank Schilbach^{3*}

The rapid spread of mobile phones creates potential for sustainably raising agricultural productivity for the 2 billion people living in smallholder farming households. Meta-analyses suggest that providing agricultural information via digital technologies increased yields by 4% and the odds of adopting recommended inputs by 22%. Benefits likely exceed the cost of information transmission by an order of magnitude. The spread of GPS-enabled smartphones could increase these benefits by enabling customized information, thus incentivizing farmers to contribute information to the system. Well-known distortions in markets for information limit the ability of such systems to reach the socially efficient scale through purely commercial means. There is a clear role for public support for digital agricultural extension, but messages designed by agricultural ministries are often difficult for farmers to understand and use. Realizing the potential of mobile communication systems requires feedback mechanisms to enable rigorous testing and continuous improvement.

Fabregas et al., Science 366, 1328 (2019) 13 December 2019

4 main functions in APP: Nica Bean

The screenshot displays the Nica Bean app interface, divided into several functional sections:

- Top Navigation:** Three panels are visible: 'Pronóstico del tiempo' (Weather Forecast), 'Macuelizo' (Crop Cycle Guides), and 'Fertilidad' (Fertility). The 'Macuelizo' panel includes the text: "En estas guías se presentan las principales recomendaciones y actividades para el ciclo de cultivo de frijol desde el momento de la siembra hasta finalizar el ciclo." (In these guides, the main recommendations and activities for the bean crop cycle are presented from sowing to harvest.)
- Weather Forecast (Left Panel):**
 - Period: **mié. 19 ago. 2020 - dom. 23 ago. 2020**
 - Map: Shows precipitation accumulation with a 5 mm scale.
 - Pronóstico de hoy (Today's Forecast):**
 - Location: **Pacif. Cental**
 - Temperature: **23 / 25**
 - Weather: Cloud with rain icon
 - Wind: **5 / 15**
 - Rachas (Gusts): **50**
 - Dirección (Direction): **NE**
 - Forecast: **Lluvias y tormentas eléctricas de ligeras a moderadas; lluvias fuertes en varias partes** (Light to moderate rains and electrical storms; heavy rains in several parts)
- Crop Management Tasks (Center Panel):** A vertical list of red buttons:
 - Siembra (Sowing)
 - Fertilización (Fertilization)
 - Preparación del terreno (Soil preparation)
 - Control de maleza (Weed control)
 - Plagas y enfermedades (Pests and diseases)
 - Cosecha / Postcosecha (Harvest / Post-harvest)
- Fertility Map (Right Panel):**
 - Ubicación (Location):**
 - Coordenadas: **13.243703, -85.824624**
 - Municipio: **Jinotega**
 - Map: Shows a fertility heatmap with a legend:
 - Buena (Green)
 - Media (Yellow)
 - Baja (Orange)
 - Muy Baja (Red)
 - Coordinates: Latitude from 13.1N to 13.45N; Longitude from -85.6W to -86.1W.
 - Buttons: **Navegar** (Navigate), **GPS**, **Digitar** (Digitize), and **Ver fertilización** (View fertilization).



Mechanism for more Feedback!

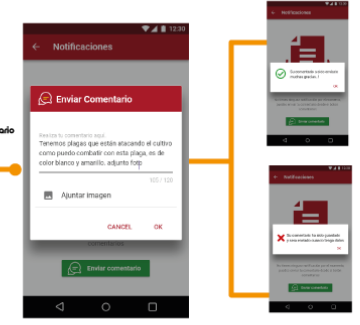


INTA Chat

Estado vacío si no hay ningún mensaje en la bandeja



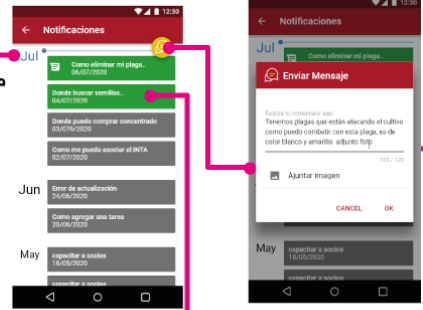
Realizar un comentario desde el botón de estado vacío



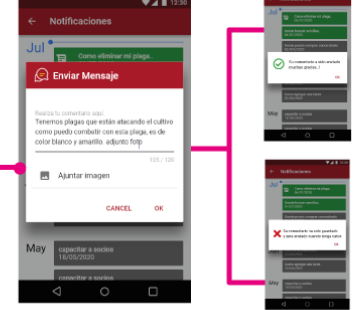
Online forum



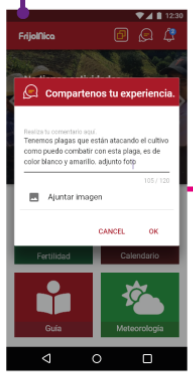
Bandeja de entrada notificaciones



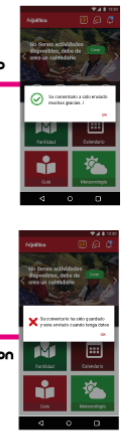
Realizar un comentario desde la bandeja de entrada



el usuario podrá comentar desde interfaz principal

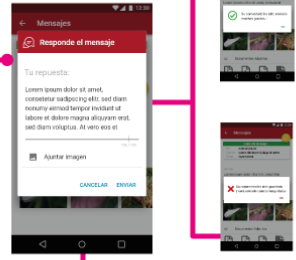


Enviado

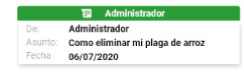
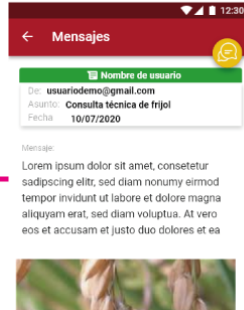


Error de Conexion

Podrá responder o preguntar mas acerca del mismo tema



Se mostraran de esta manera los mensajes



Message: Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea



El usuario podrá leer los mensajes tanto enviados como recibidos en el mismo hilo de conversacion



Asegúrese de que tu conexión a wifi o datos móviles estén activas.

Volver a intentar

Esta notificación se muestra cuando se produce un error de conexión o en el servidor



APPS : Nica Rice + Nica Bean = INTA INNOVA



Datos Meteorológicos Actuales - 10:57:34 PM - jue 30 jul 2020

205 - BISMUNA, (14.7479, -83.4117)



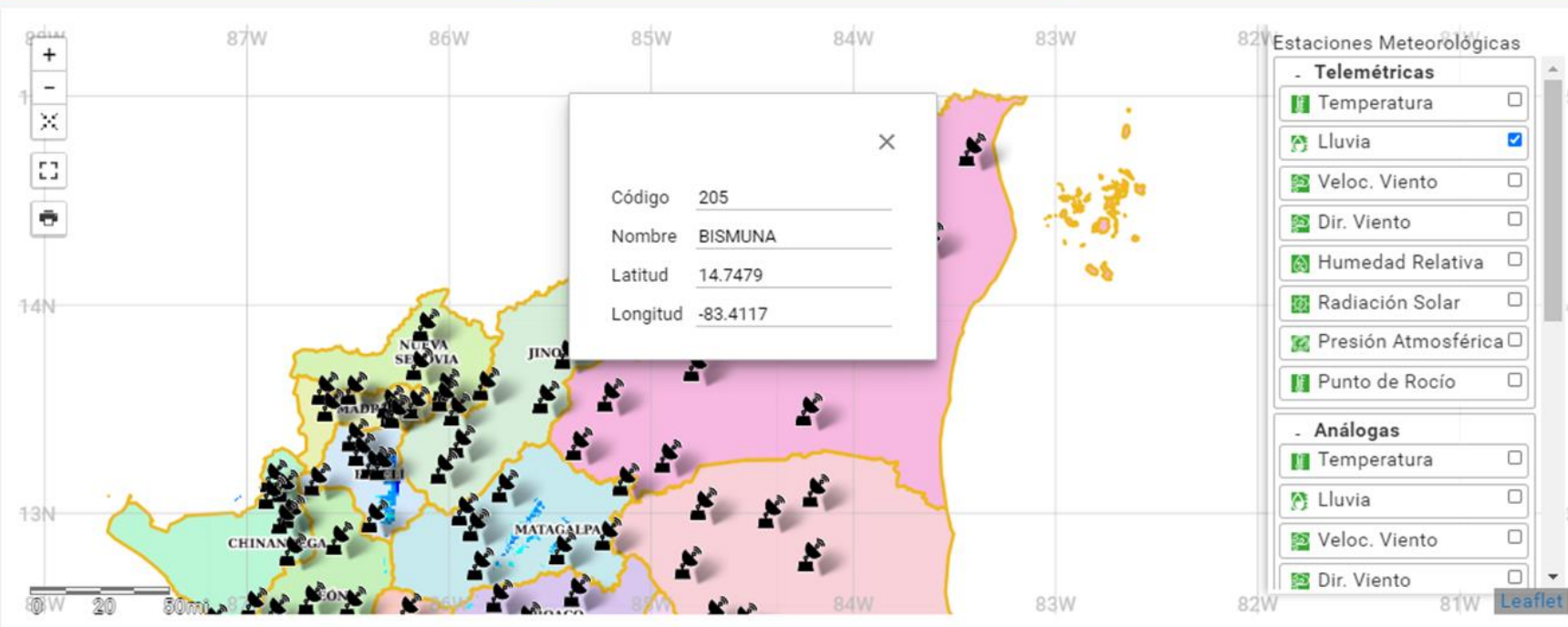
Temperatura
27.30 °C



Lluvia
0.00 mm



Veloc. Viento
0.00 m/s



INETER

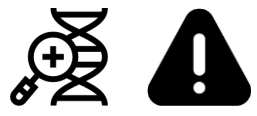
<http://icdfapps.ineter.gob.ni/ccp/>

New Project in Nicaragua: 5 Research Centers

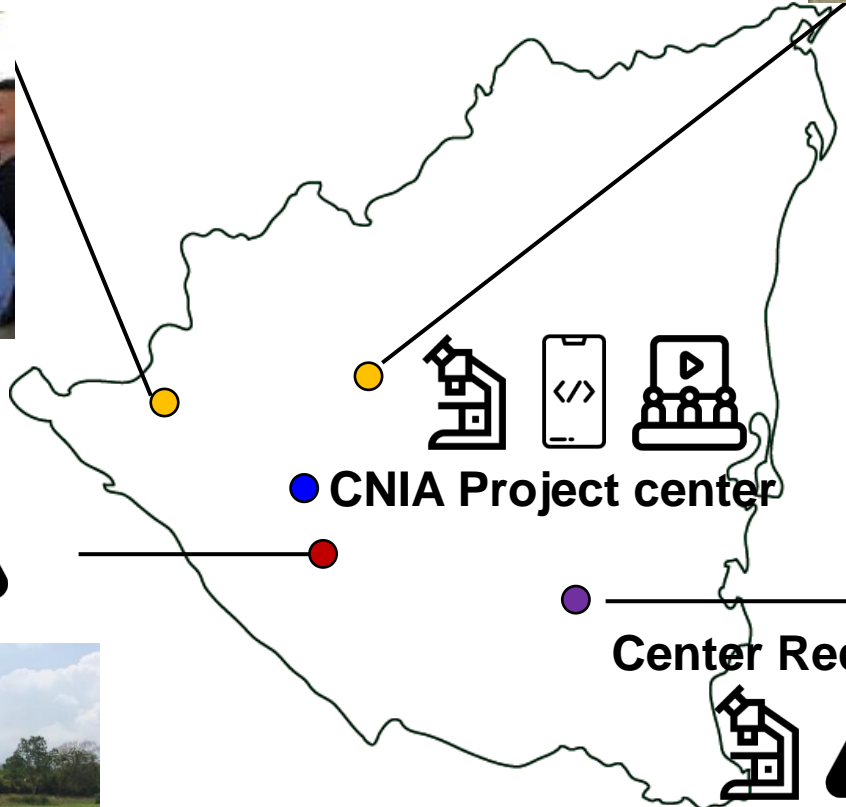
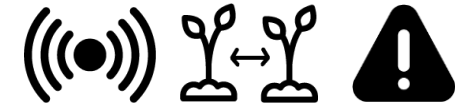
Gallopinto project



Center CEO Posoltega



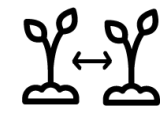
Center de Frijol – La Compañía



Center TAINIC



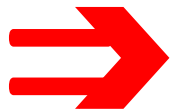
Center Recreo



(((•))) FENOTIPADO MODERNO

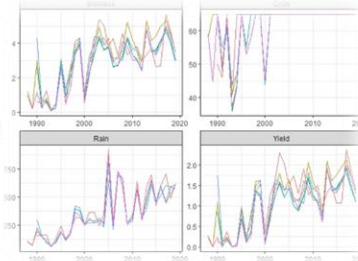
Implementa los equipos para modelación de cultivos.

1. Predicción de rendimientos.
2. Agricultura de precisión.
3. Monitoreo agroclimático



Agriculture 4.0

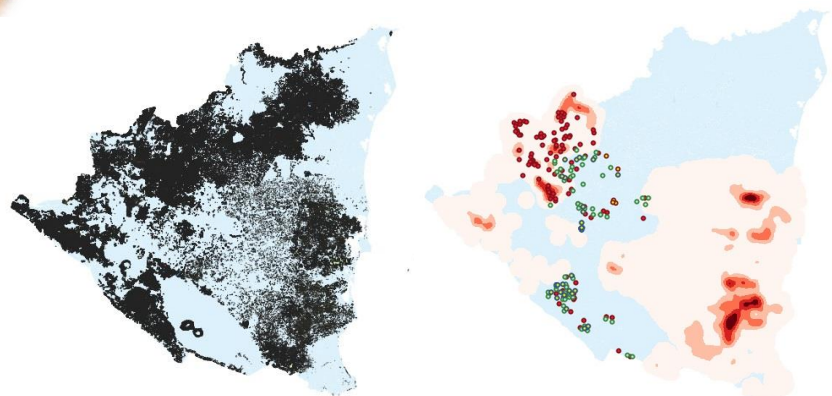
Modeling



Sensors



Experiment



Meteorological Data



Interpretation
Crop requirement
Pest knowledge



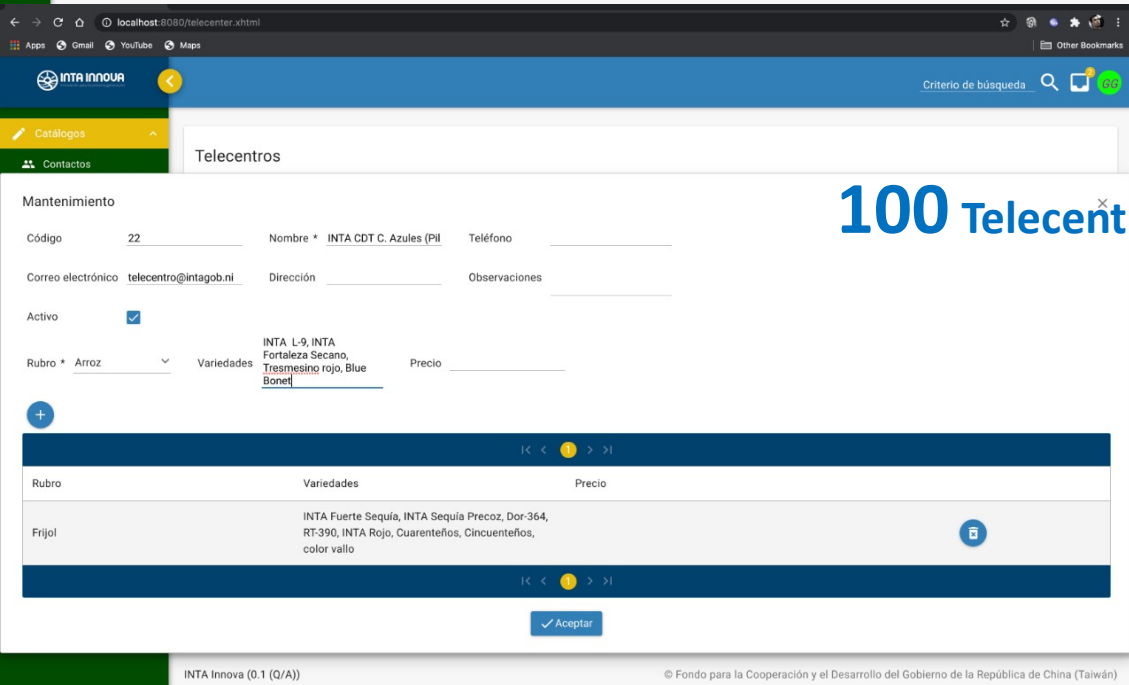
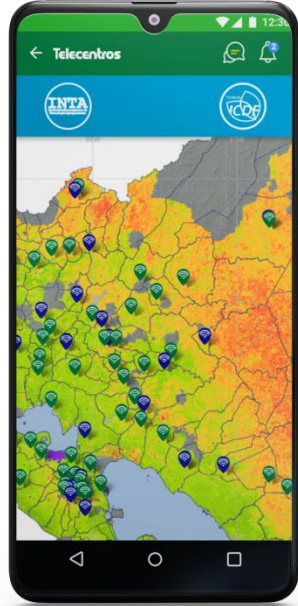
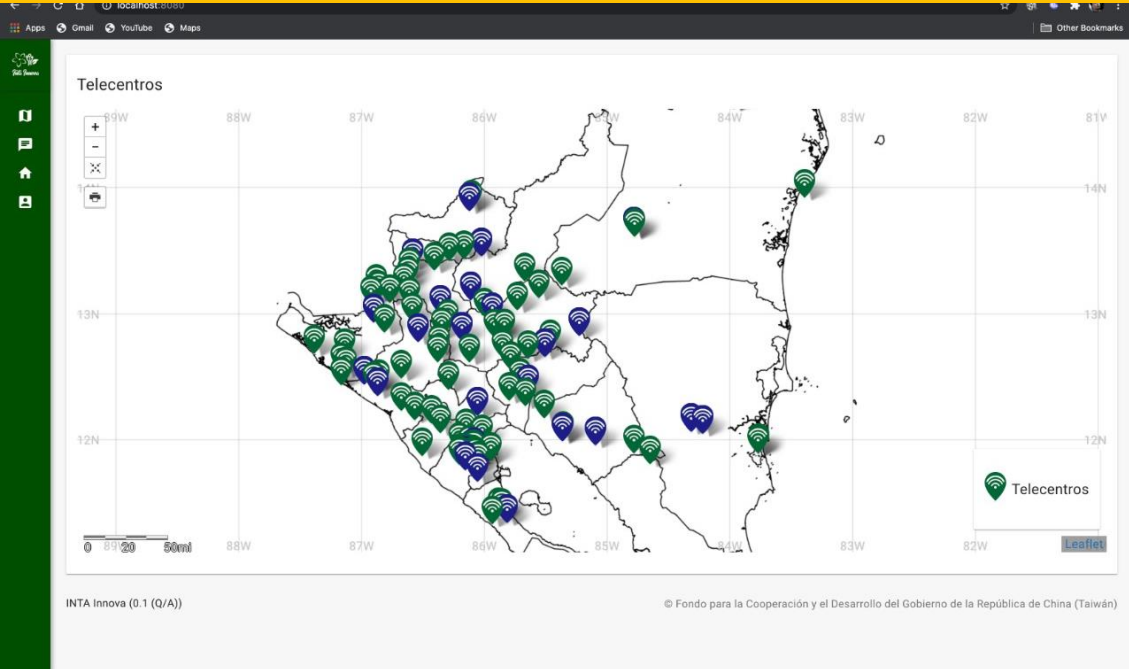
Agricultural Early Warning



➔ Producers

Telecentres
SMS
Whatsapp

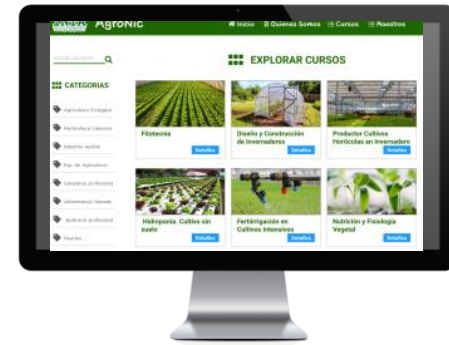
Collaboration with telecentres in Nicaragua



Collaboration with telecentres in Nicaragua



Telecentres get you the best Agricultural information!



Perspective: regional technology platform and alliance for agriculture



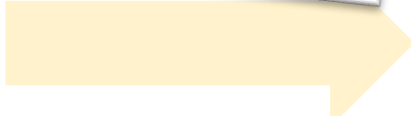
**Platform
for breeding**



**Climate
Service**



**App of Soil
Science**



**International
presentation**

ICDF team for Agri-Tech at this valuable meeting



Thanks for attention !

