

CGIAR Efforts to Accelerate Climate Resilience in the Global Drylands with Digital Augmentation

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INITIATIVE ON
Climate Resilience



INITIATIVE ON
Fragility to Resilience in Central
and West Asia and North Africa

Expert Group Meeting on Harnessing Innovative Technologies to Advance Green Transformation for Sustainable Development in North and Central Asia
26-27 March 2024 Almaty, Kazakhstan and Online



A Systemic Crisis in the Global Drylands

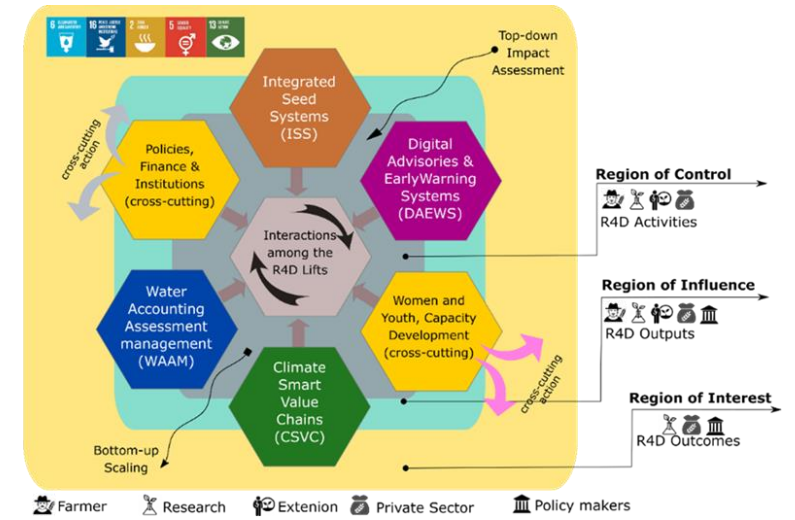
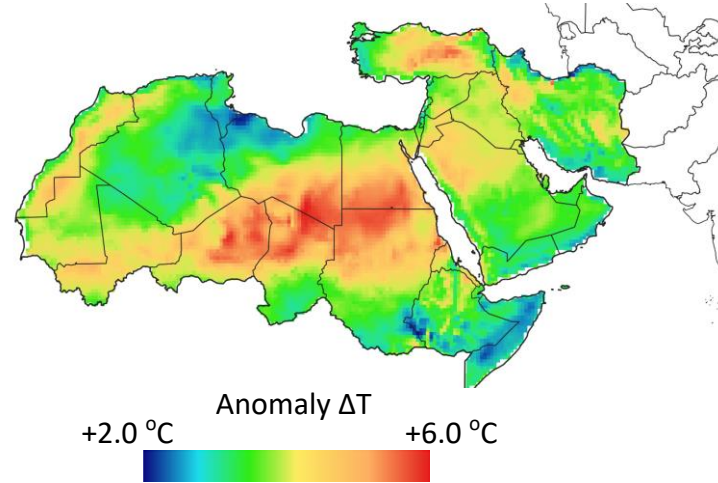
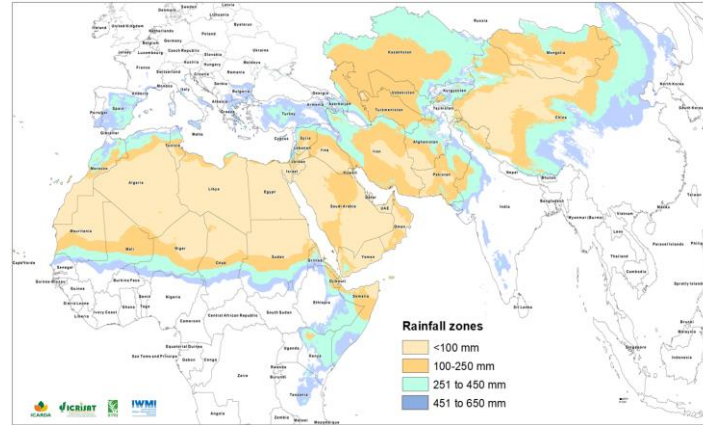
Urbanization

Climate Change

Land Degradation

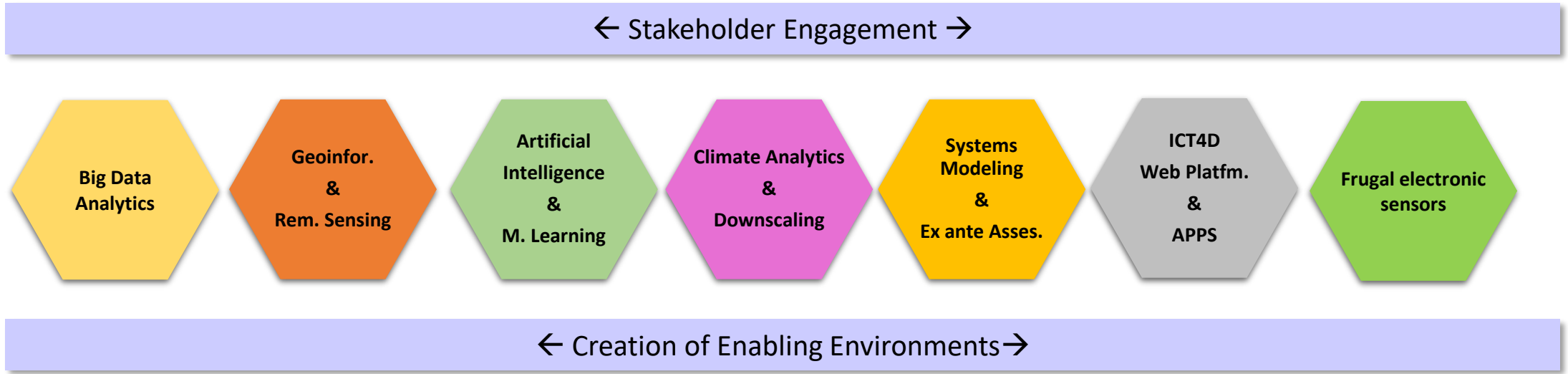
Conflicts and Instability

Population Growth

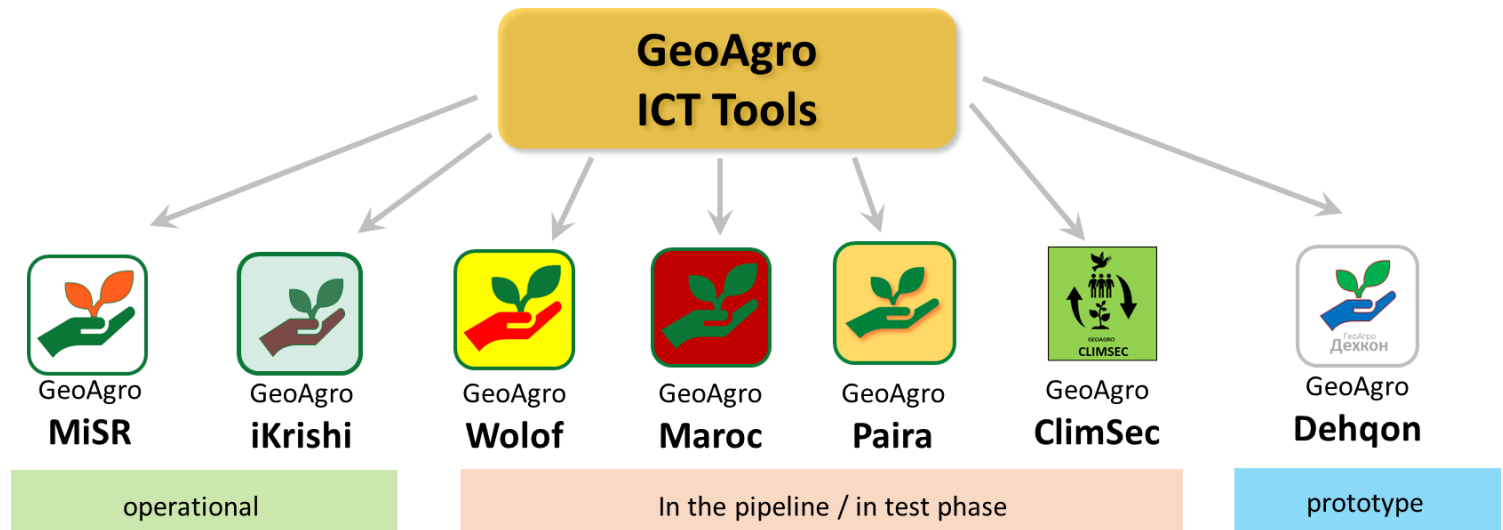


THE CGIAR PORTFOLIO
CGIAR #OurInitiatives
Transforming Food, Land, and Water Systems in a Climate Crisis

Digital Actions of ICARDA



The GeoAgro team develops a cohort of digital solutions to enhance climate resilience and sustainability of agriculture. We also engage in policy dialogues for digital transformation. GeoAgro develops ICT tools in addition to other R&D products.



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Fragility to Resilience in Central and West Asia and North Africa

Geoinformatics-based Digital Actions



Yield and Yield gap distribution in the Irrigated Systems of Egypt

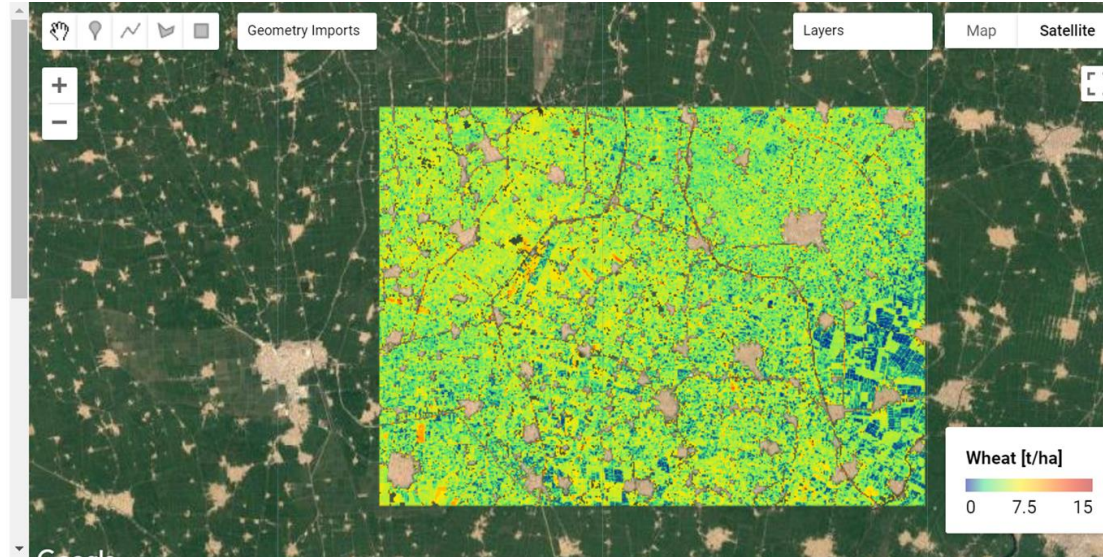
Select the harvesting Year

2018

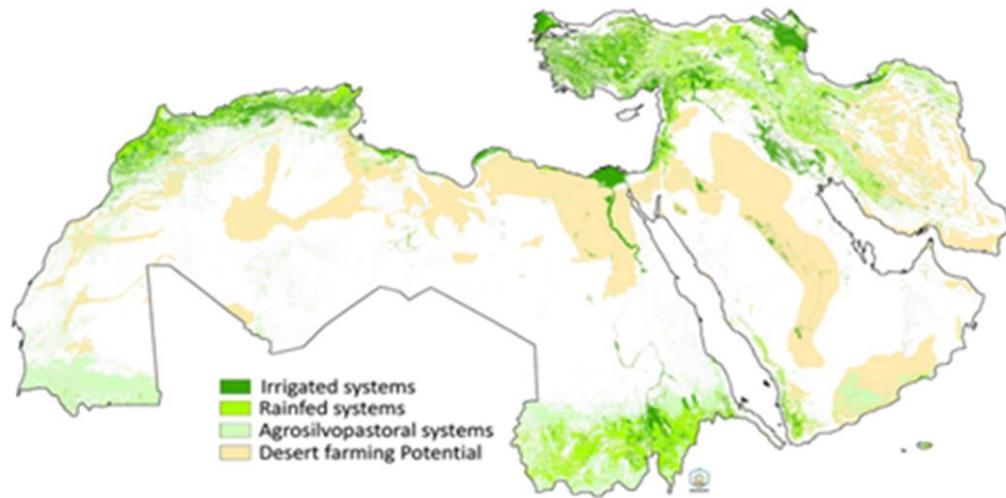
Select the Crop & Create an AOI

Wheat

Polygon Rectangle

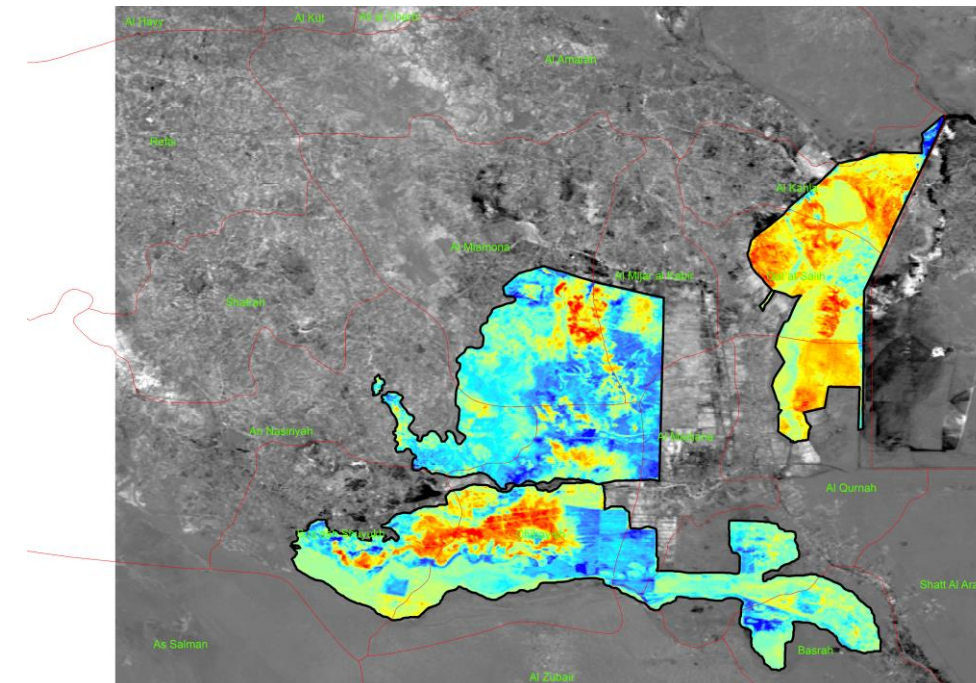


Crop Yield Gap Mapping with decametric RS data , ML and ground observations

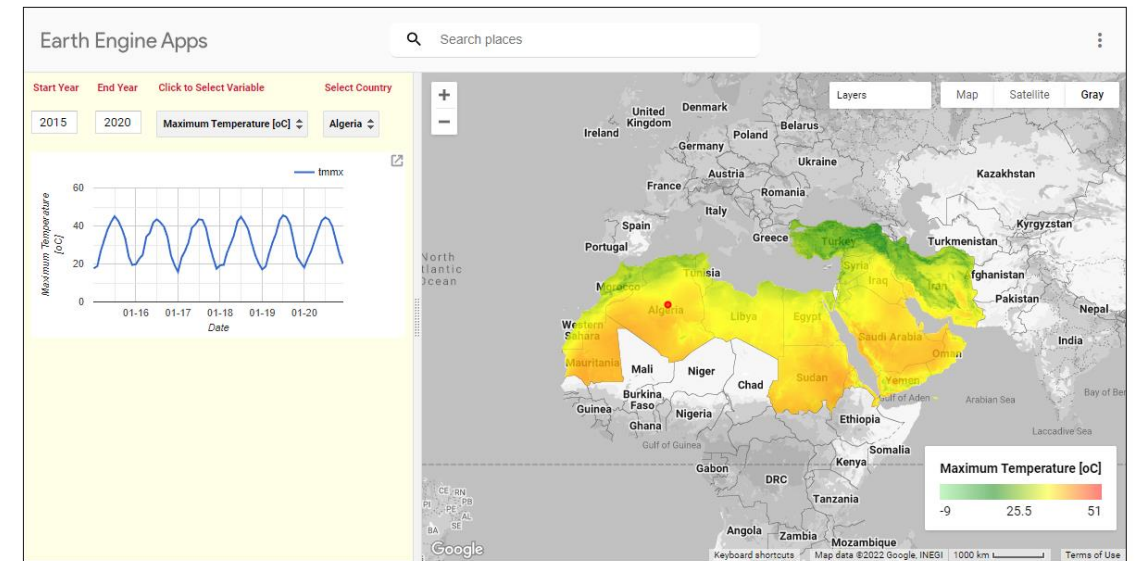
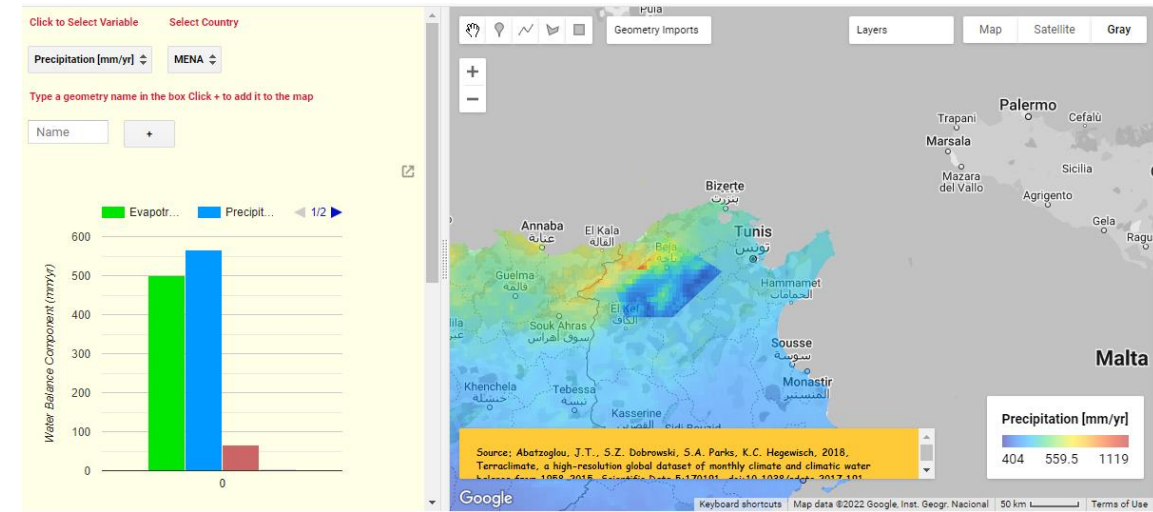


Regional mapping of Agroecosystem Production Type using RS

Vegetation dynamics of Iraqi Marshlands using multi temporal RS

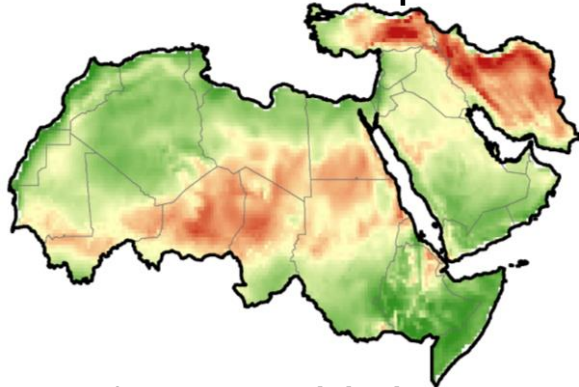


The Web-based Platform for RWH Potential Mapping

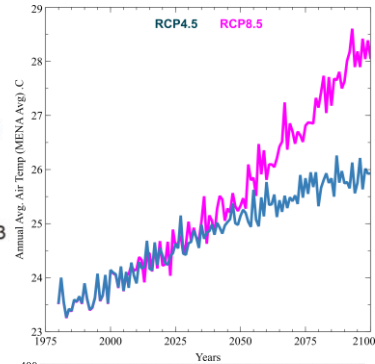


Climate Analytics as a Digital Action

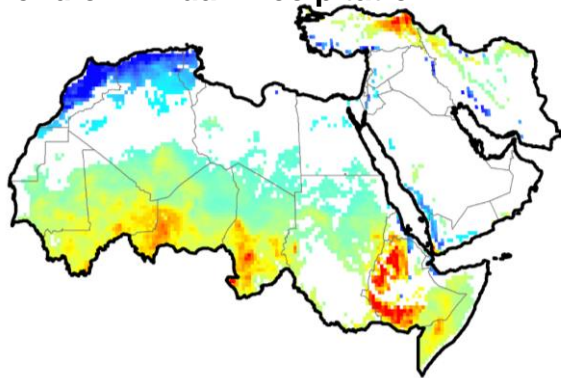
Trend of Mean Annual Temperature



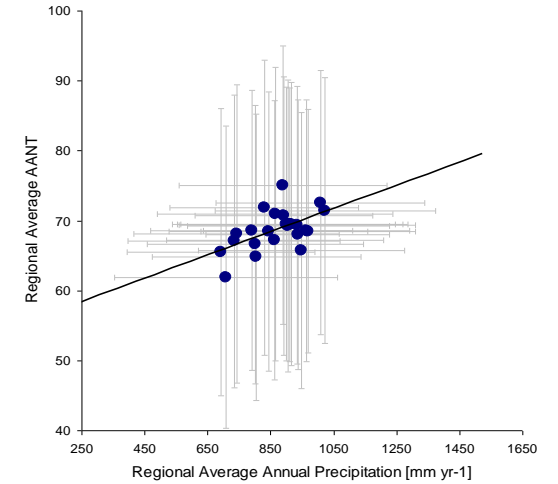
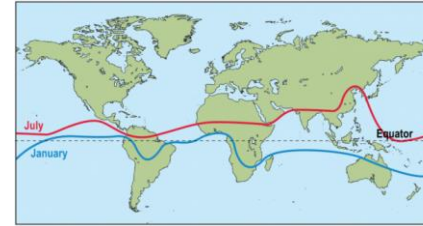
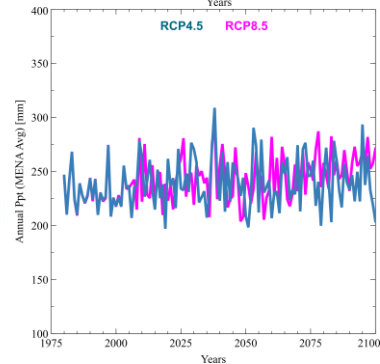
High : 0.04
Low : 0.013



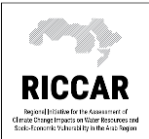
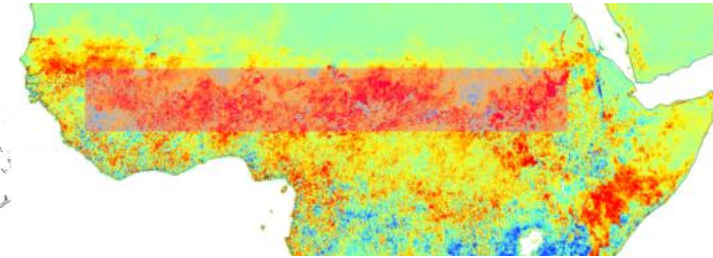
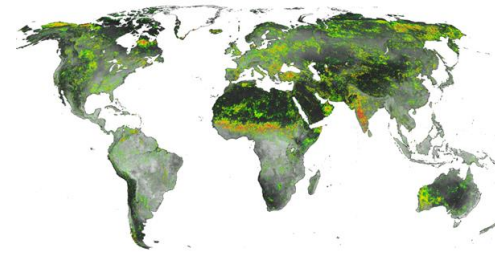
Trend of Annual Precipitation



High : 3.4
Low : -3.1

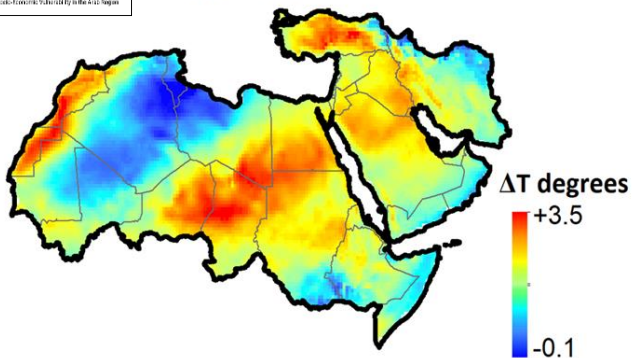


Trend of Vegetation Dynamics

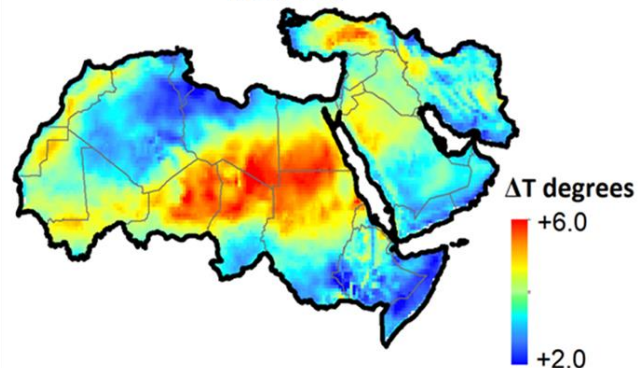


MAT change (2100-2000)

RCP4.5



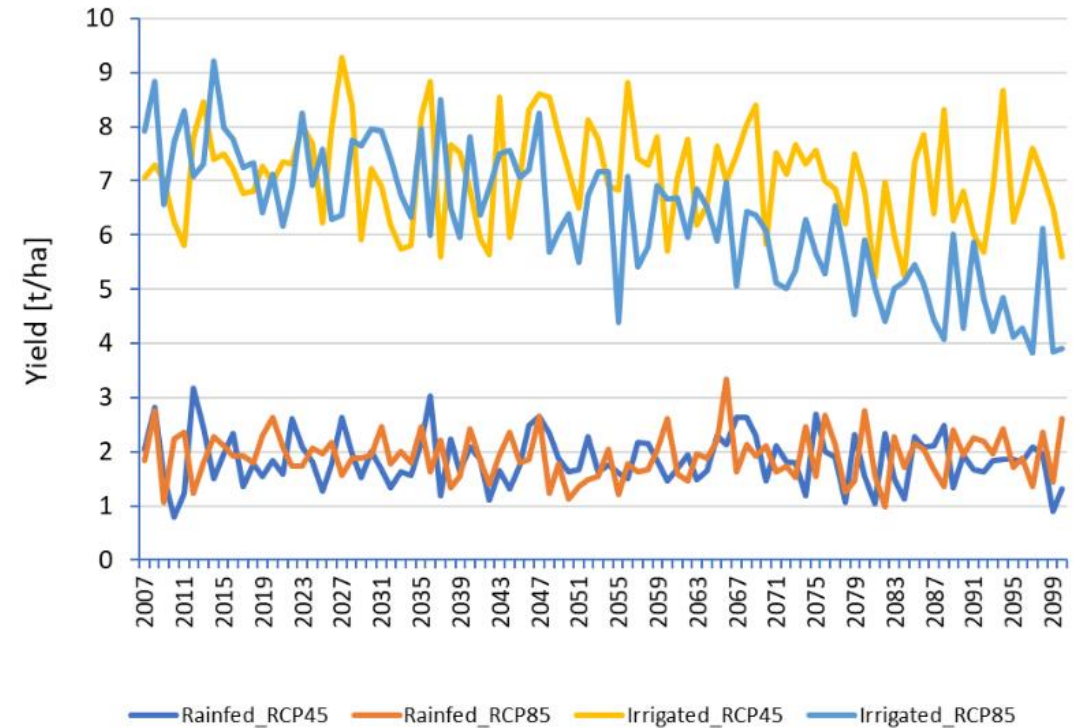
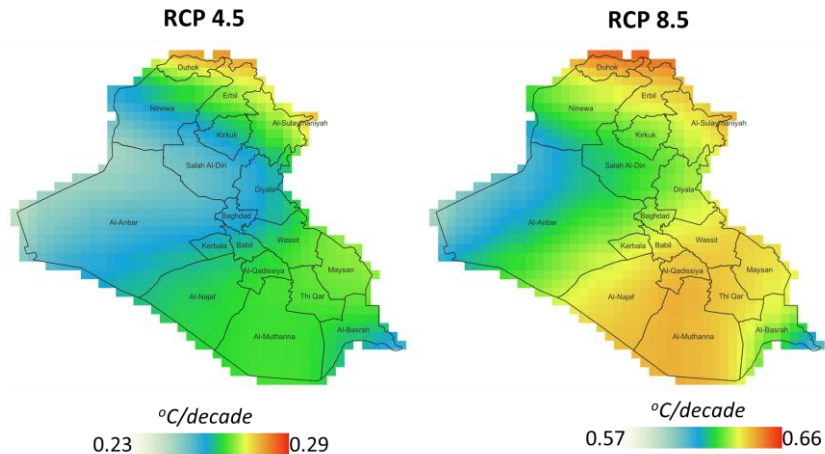
RCP8.5



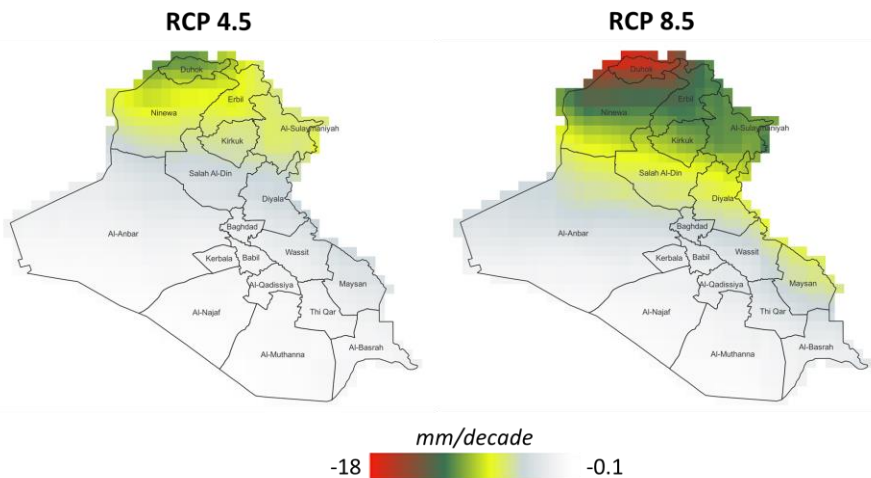
- Temperature is more dynamic than Precipitation under Climate Change.
- Hot Spots of Temperature Increase: Turkish and Iranian highlands, Niger, Chad, South Egypt
- Hot Spots of Ppt Decline: Highlands of Maghreb region (NW Africa)..Morocco, Algeria, Tunisia

Prioritizing Climate Action and CSA Agenda in Iraq

Temperature Trends (2006-2100) based on long term Climate Projections (Average of 21 models)



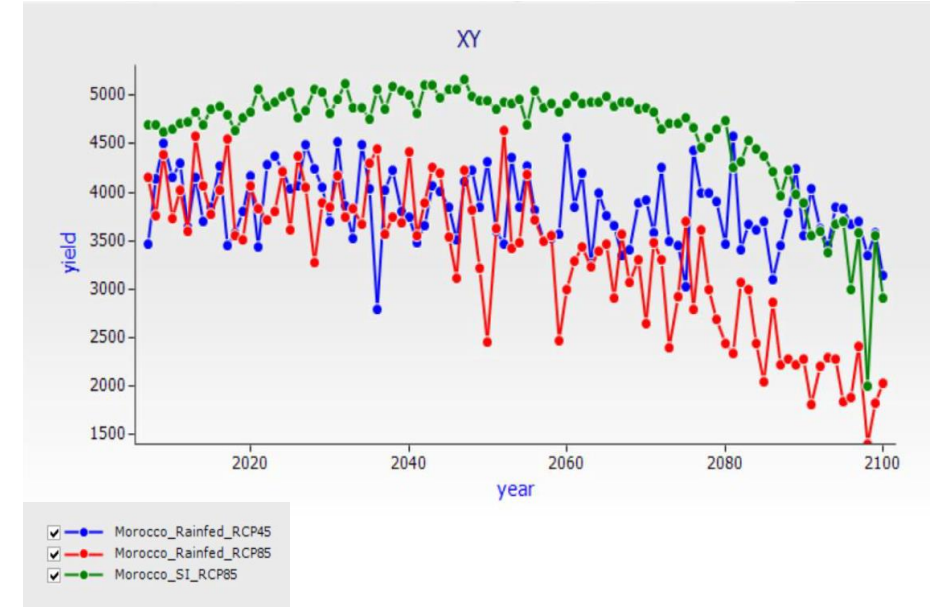
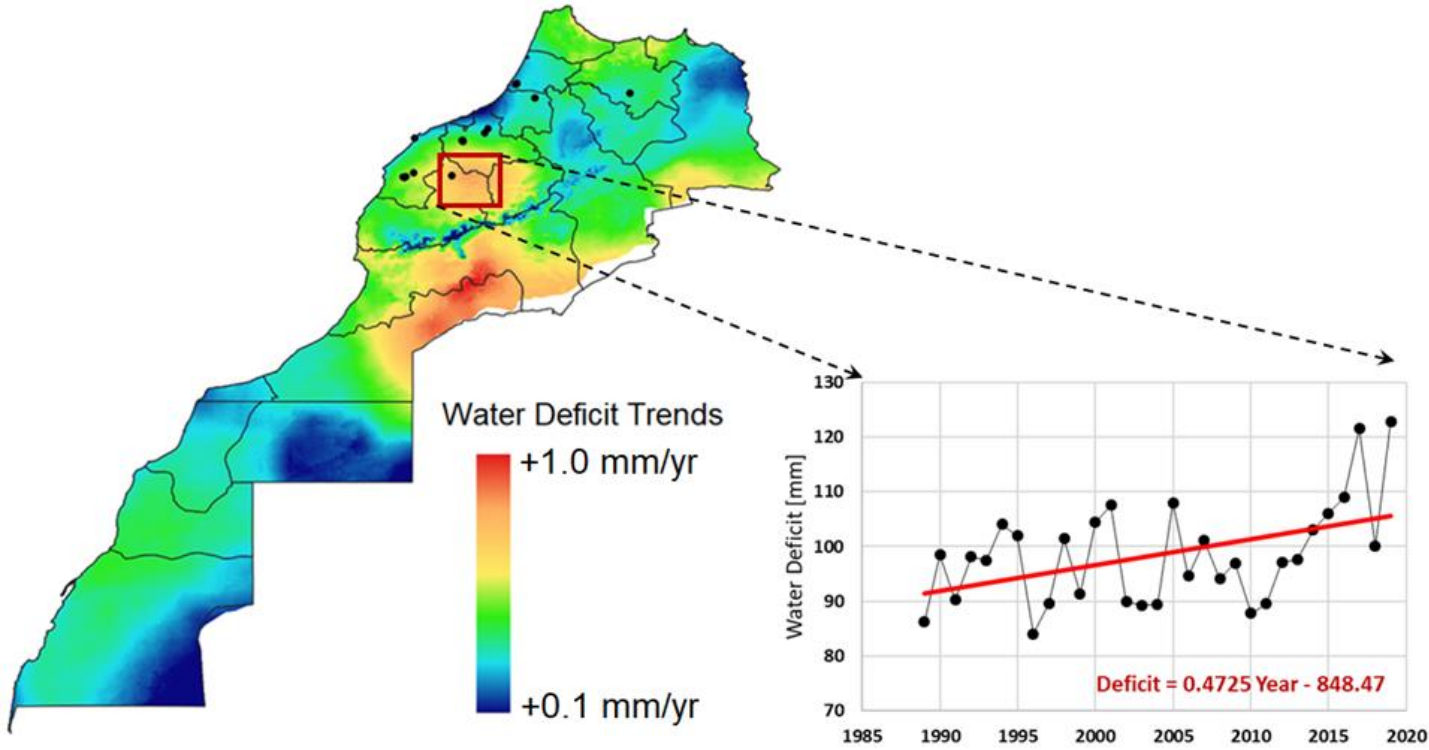
Precipitation Trends (2006-2100) based on long term Climate Projections (Average of 21 models)



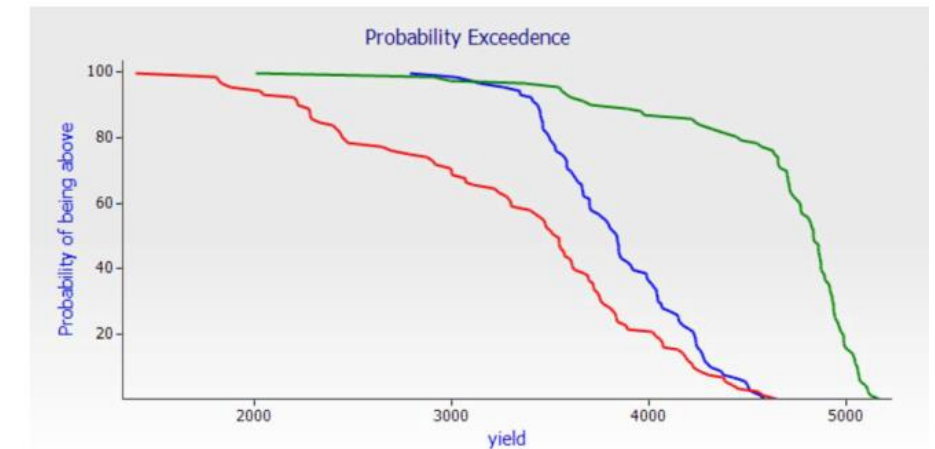
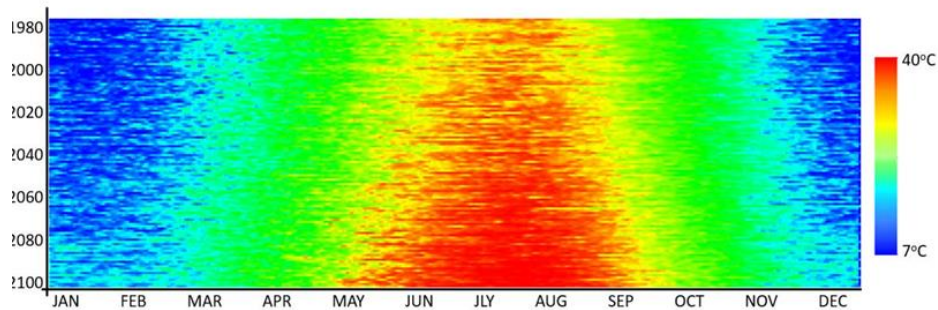
Performance of Rainfed and Irrigated Wheat are drastically different. Simulations show that in Rainfed Systems the climate impact is subtle, whereas in the Irrigated Systems, the climate impacts are critical



Climate Vulnerability and Plausible Adaptation Options in Morocco



Change of Seasons with CC



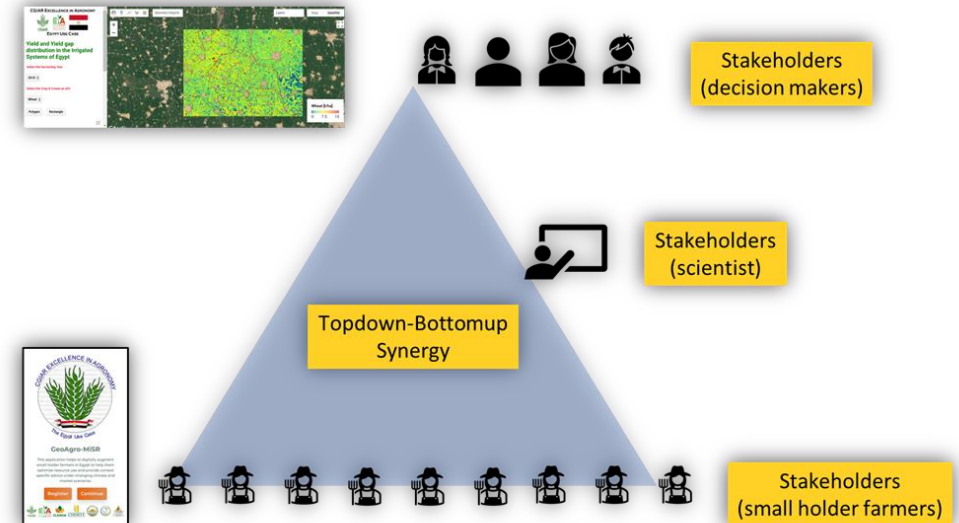
Digital Augmentation for Smallholder Farmers In Egypt

Problem

One of the main reasons for Egypt's lower wheat production is poor agronomic practices by the farmers who do not have access to information about the best context-specific agronomic practices. The agricultural extension system is also not fully developed.

EiA Solution

EiA will develop and validate digital advisory tools that will offer farmers crucial agronomic information. This digital augmentation will also serve the extension system and will also increasingly engage women and youth



The MVP for Egypt- GeoAgro Web App

CGIAR EXCELLENCE IN AGRONOMY



EGYPT USE CASE

Yield and Yield gap distribution in the Irrigated Systems of Egypt

Select the harvesting Year

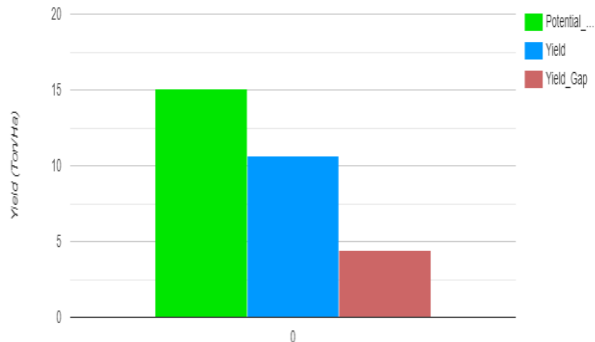
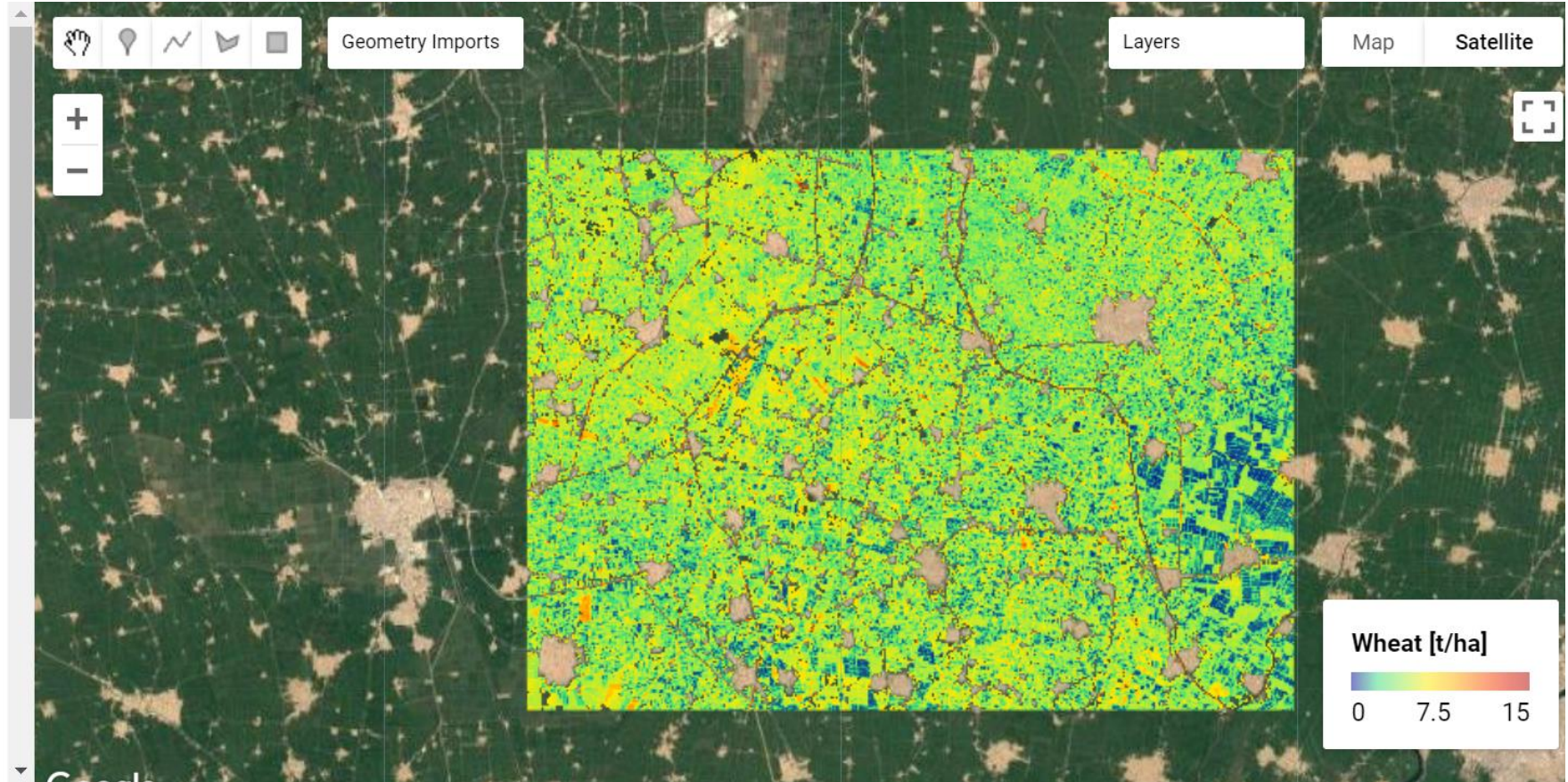
2018

Select the Crop & Create an AOI

Wheat

Polygon

Rectangle



GeoAgro-MiSR



التميز في إنتاج المحاصيل CGIAR مبادرة

ترجمة حالة لحد

جيو أجرو-مصر

يساعد هذا التطبيق مزارعي الحيازات الصغيرة في مصر من خلال التحول الرقمي على الاستخدام الأمثل للموارد وتقديم النصائح الإرشادية في ظل سيناريوهات تغير المناخ والسوق.

تسجيل استمرار

CGIAR EIA ARC CIMMYT ICARDA



GeoAgro-iKrishi



GeoAgro i-कृषि

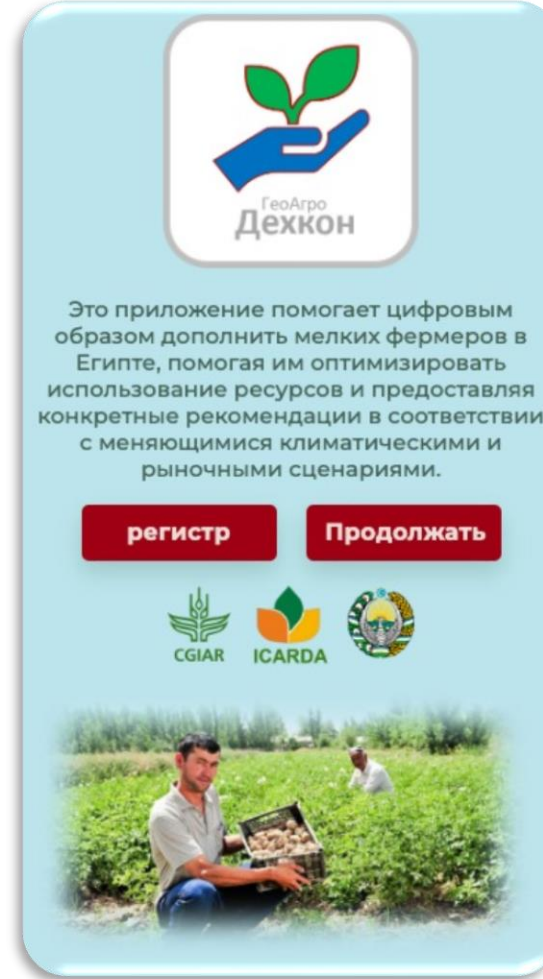
यह एप्लिकेशन छोटे धारक किसानों को डिजिटल रूप से बढ़ाने में मदद करता है भारत उन्हें संसाधन उपयोग का अनुकूलन करने में मदद करेगा और बदलती जलवायु के तहत संदर्भ विशिष्ट सलाह प्रदान करेगा बाजार परिदृश्य।

ICARDA CGIAR

पंजीकरण करवाना जारी रखना



GeoAgro-Dehqon




GeoAgro Дехкон

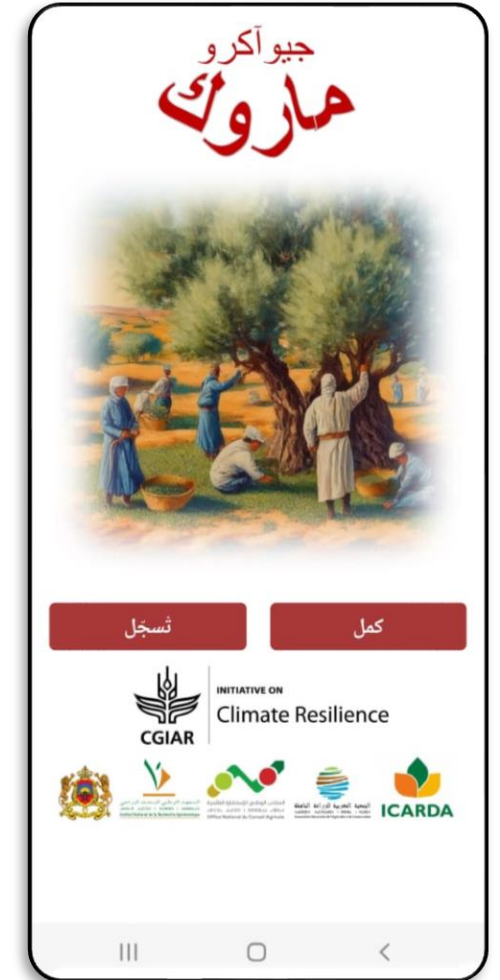
Это приложение помогает цифровым образом дополнить мелких фермеров в Египте, помогая им оптимизировать использование ресурсов и предоставляя конкретные рекомендации в соответствии с меняющимися климатическими и рыночными сценариями.

регистр Продолжить

CGIAR ICARDA



GeoAgro-Maroc




جيو آكرو ماروك

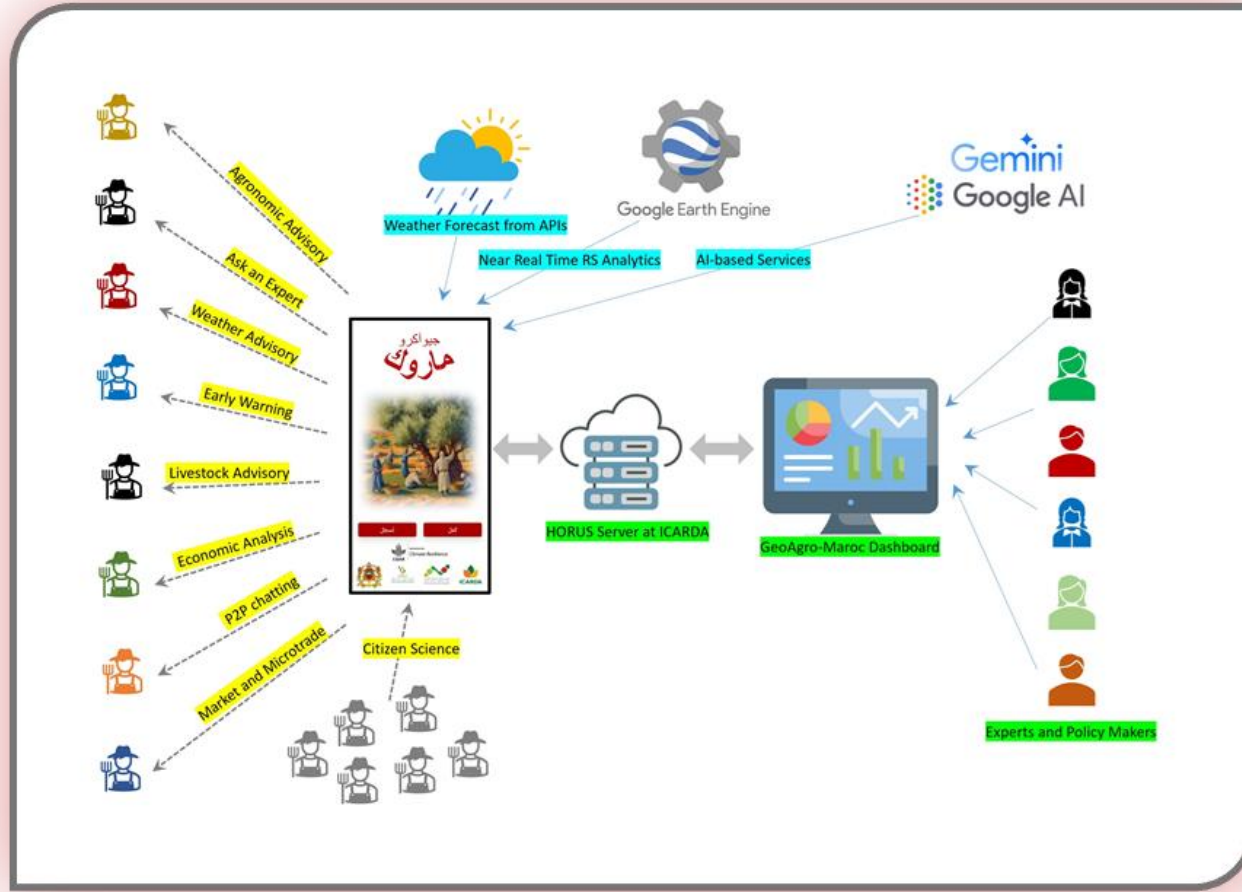
تسجيل كمل

CGIAR INITIATIVE ON Climate Resilience

ICARDA



Overview of the GeoAgro-Maroc System



Different Modules of the GeoAgro-Maroc Application

The image shows a mobile application interface with a grid of icons. Dashed lines connect callout boxes to specific icons on the screen. The callouts describe the following modules:

- Agronomy:** Package of Practices for 21 crops with recommendations classified to 10 agronomic sub-modules.
- Weather:** Module through which current local weather can be seen. A 6-day weather forecasts can also be obtained. Visualization of synoptic weather situation.
- Ask an Expert:** Module through which users can post questions (which pictures) to different subject matter specialists and receive response in real-time.
- Know Your Field:** Module through which users can see the biophysical status of their plots based on real-time remote sensing analytics, without much scientific jargon.
- Announcements:** Module through which announcements posted by experts can be viewed by all the users, e.g. information on subsidies, early warning etc.
- Geotagging:** Module through which users contribute data about his farm characteristics and agronomical situation, fostering citizen science.
- P2P Chatting:** Module through which various users can engage in chats with their peers either on a one-to-one basis or in a group.
- Market Place:** Module through which users can post advertisements on various categories of farm inputs, farm services and selling of produce.
- Expense Tracker:** Module through which various users can track expenses on various farm operations and analyse the cost-benefit. Also analyse long term economics.
- Livestock:** Module through which users can get information on the package of practices of raising different types of livestock, poultry and aquaculture.

Administrative Dashboard (Content Management in Real Time)



- Dashboard
- User Database
- Expert Database
- General Announcements
- Crop Package of Practice
- Responses to Questions
- Geo Tagging
- Livestock
- New Updates
- Posts
- Logout

Information

[Home](#) / [Information](#)

Add New Cases for Different Crop-Specific Agronomic Practices

List Of Information

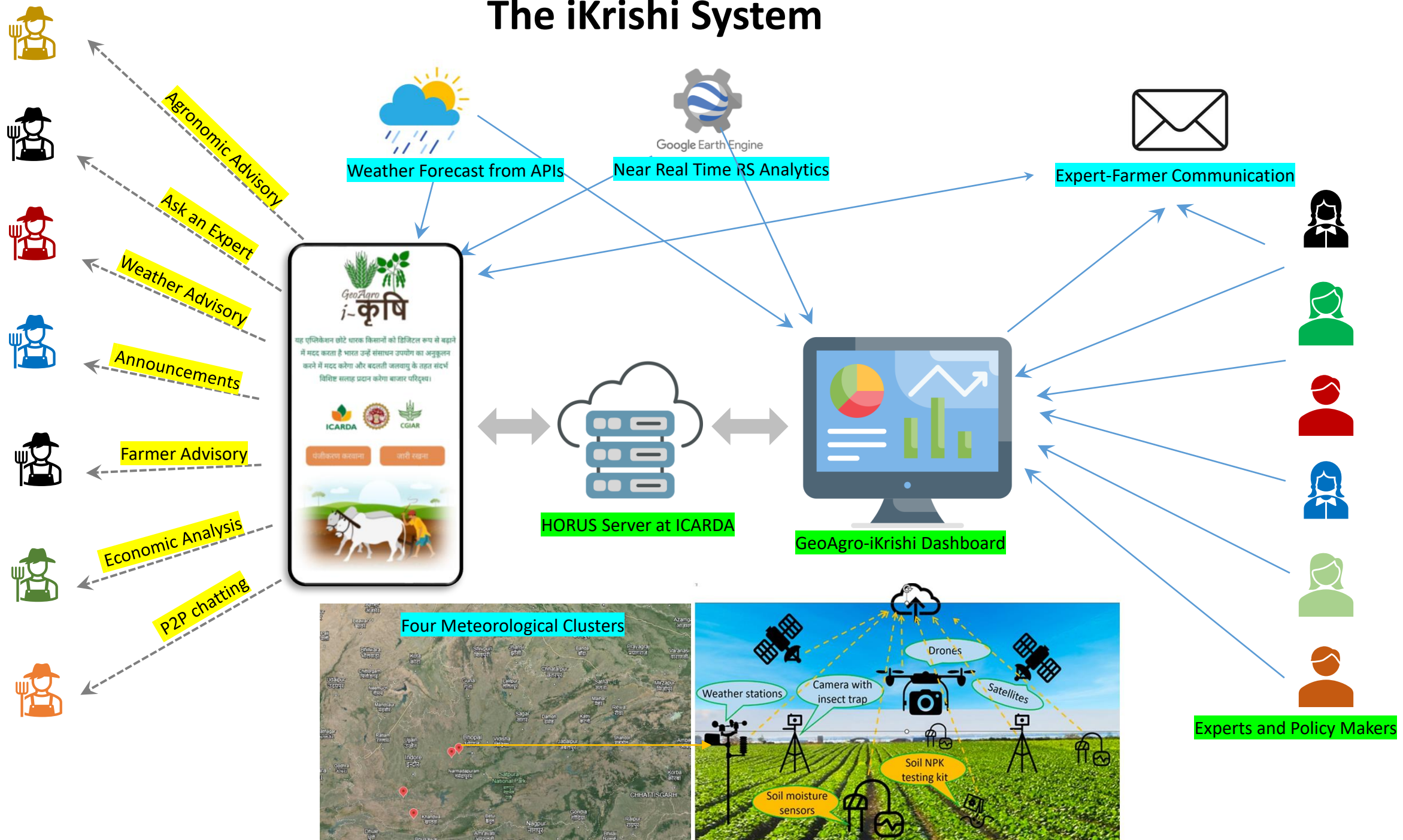
Customize Crops

Customize Agronomic Practice Types

Crops

#	Crop	Practices	Case Name	Title	Show	Image 1	Image 2	Action
1	كمح	الحرث	الزراعة المحافظة	البذر المباشر - زرع بلا متحرث				Edit Delete
2	كمح	الأعشاب	الأعشاب الضارة	مكافحة دبال الأعشاب الضارة	1			Edit Delete
3	كمح	زريعة	الأصناف	الصنف على حساب المنطقة	1			Edit Delete
4	كمح	الحرث	الحرث	توجد الأرض الفلاحية	1			Edit Delete
5	كمح	بصفة عامة	الزراعة	الوقت-المناخ-الصنف	1			Edit Delete
6	كمح	العناصر الغذائية	بوتاسيوم-K	لانكري-البوتاسيوم	1			Edit Delete

The iKrishi System



A Scalable Solution

APP for the Small Holder Farmer



Administrative Dashboard for Experts



Already Have Traction in Egypt and India



यह एप्लिकेशन छोटे धारक किसानों को डिजिटल रूप से बढ़ाने में मदद करता है भारत उन्हें संसाधन उपयोग का अनुकूलन करने में मदद करेगा और बदलती जलवायु के तहत संदर्भ विशिष्ट सलाह प्रदान करेगा बाजार परिदृश्य।

पंजीकरण करवाना जारी रखना



मुख पृष्ठ

- नौसाम
- अपने क्षेत्र को जानें
- एक विशेषज्ञ से पूछें
- मार्गदर्शक
- पोषण
- विशेष सलाह
- आप ट्रेकर
- कृषिविज्ञान

< फ़िल्ड विवरण

Geometry Imports

Crop Stress
High Low
-0.01 0.13 0.26
28-Apr-2023

< वर्तमान फसल

वर्तमान मासम का फसल क लिए व्यय

Ajiti

अपने फार्म को अनुकूलित करें नया बर्च जोड़ें

व्यय (अतिम 3)	तारीख	Amt(₹)
Income	2023-05-04	30890
Labourers Field Work	2023-05-02	-1050
Investments	2023-05-02	-2800

Budget as of Today 2 May 2023

- Agrochemicals 17.9%
- Investments 34.2%
- Labourers Field Work 47.9%

आज तक के खर्च ₹-5850
आज की आय ₹ 30890
आज की शुद्ध आय ₹25040

< पूर्वानुमान

6 दिनों का पूर्वानुमान

सोमवार	☀️	22.1°C
मंगलवार	☀️	17.2°C
बुधवार	☀️	18.3°C
गुरुवार	☀️	19.4°C
शुक्रवार	☁️	26.2°C
शनिवार	☀️	19.1°C

< विशेष सलाह

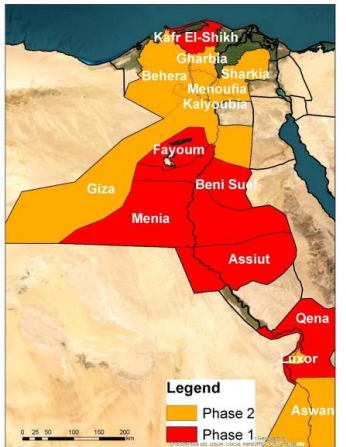
लोकेंद्र जी

हमारे विश्लेषण से पता चला है कि आपके सोयाबीन के खेत में मिट्टी की नमी तेजी से घट रही है। कृपया अगले 5 दिनों में एक सिंचाई की व्यवस्था करें। आप ल गभग 30 मिमी सिंचाई करना चाह सकते हैं। तो आप को 40 लीटर/सेकंड प्रवाह दर पर 2HP का पंप मिल सकता है जिसे आप डीजल का उपयोग करके 4 घंटे तक चला सकते हैं।

लोकेंद्र जी

हमारे विश्लेषण से पता चला है कि आपके सोयाबीन के खेत में मिट्टी की नमी तेजी से घट रही है। कृपया अगले 5 दिनों में एक सिंचाई की व्यवस्था करें। आप ल गभग 30 मिमी सिंचाई करना चाह सकते हैं। तो आप को 40 लीटर/सेकंड प्रवाह दर पर 2HP का पंप मिल सकता है जिसे आप डीजल का उपयोग करके

Trans-Egypt Capacity Development



Agronomic Advisory Module



Weather Advisory Module

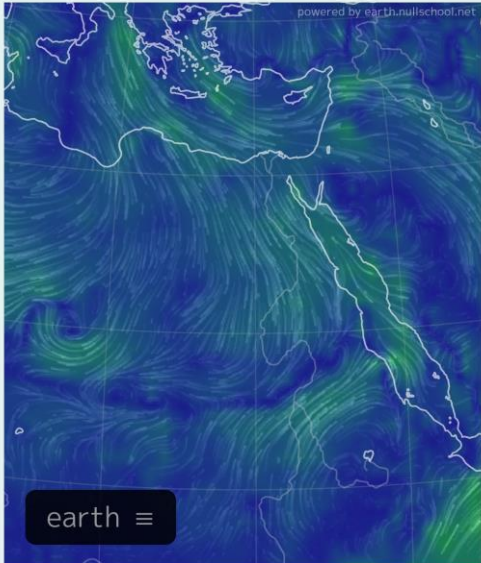
13:03 69%

الطقس <

الطقس الحالي توقعات ستة أيام

الطقس السينويوتيكي

powered by earthuniversityschool.net



earth ≡

الرئيسية حساب أسأل الخبير علم المحاصيل

13:03 69%

الطقس <

متوسط درجة الحرارة 31.14 °C

تشبه 31.14 °C

درجة الحرارة الصغرى 24.96 °C

درجة الحرارة العظمى 37.32 °C

مطر 0 mm

الضغط الجوي 1009 mb

الرطوبة النسبية 28%

الرؤية 10km

سرعة الرياح 3.96 m/s

اتجاه الرياح 324°

الرئيسية حساب أسأل الخبير علم المحاصيل

Expense Tracker

22:22 18%

المحاصيل الحالية <

P1

تخصيص مزرعتك إضافة مصاريف جديدة

المصاريف (آخر 3)	تاريخ	أمت(جنيه مصري)
الإيجارات	2023-04-12	-2600
الكيماويات الزراعية	2023-05-12	-6000
اسمدة	2023-05-03	0

Budget as of Today 7 July 2023

- اسمدة 12%
- العمل الميداني للعمال 36.1%
- الكيماويات الزراعية 36.1%
- الإيجارات 15.7%

المصاريف اعتبارا من اليوم -16600 جنيه مصري

الدخل اعتبارا من اليوم 30000 جنيه مصري

صافي الدخل اعتبارا من اليوم 13400 جنيه مصري

الرئيسية حساب أسأل الخبير علم المحاصيل

Announcements

14:37 62%

الاعلان <

احترس من دودة الحشد الخريفية ..إليك طرق المكافحة و الإجراءات الاحترازية



احترس انه موعد دودة الحشد الخريفية

إليك طرق المكافحة الزراعية لدودة الحشد الخريفية -الزراعة المبكرة -التحميل مع البقوليات يقلل الإصابة -استخدام أصناف ميكرة النضج -يمكن استخدام مصاد نباتية حديثة النمو -زراعة أصناف نباتية مقاومة قادرة على تحمل الإصابة

المكافحة الطبيعية ل دودة الحشد الخريفية جمع اللطع واليرقات والنباتات المصابة باليد والتخلص منها - الحرث العميق

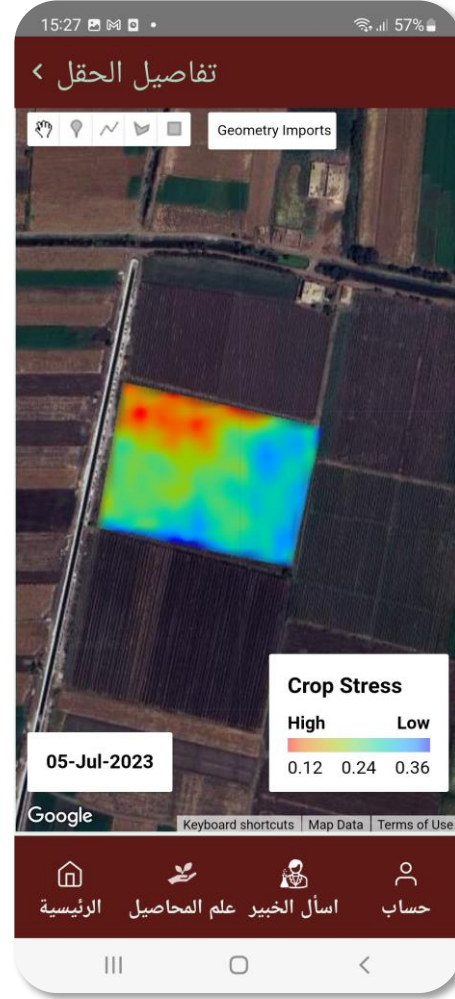
المكافحة الكيميائية المبيدات الحشرية في دورات (عند وصول الإصابة

الرئيسية حساب أسأل الخبير علم المحاصيل

P2P Chatting



Know Your Field

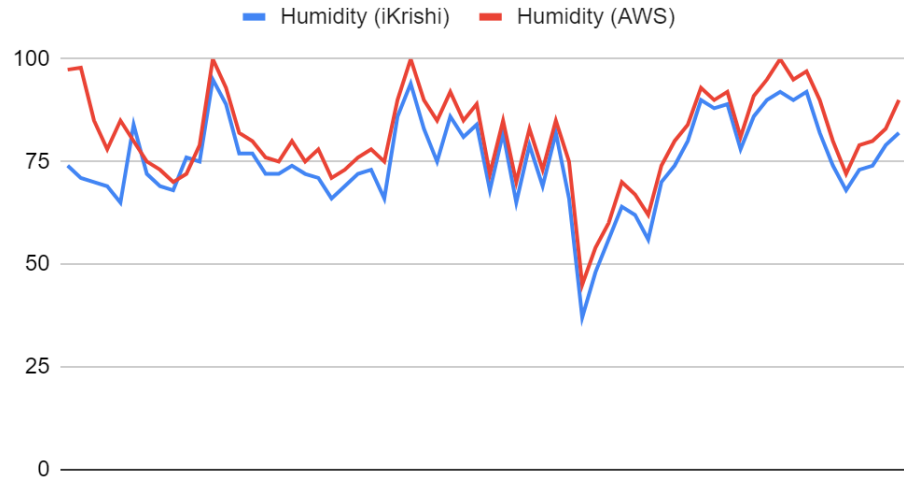


Ask an Expert

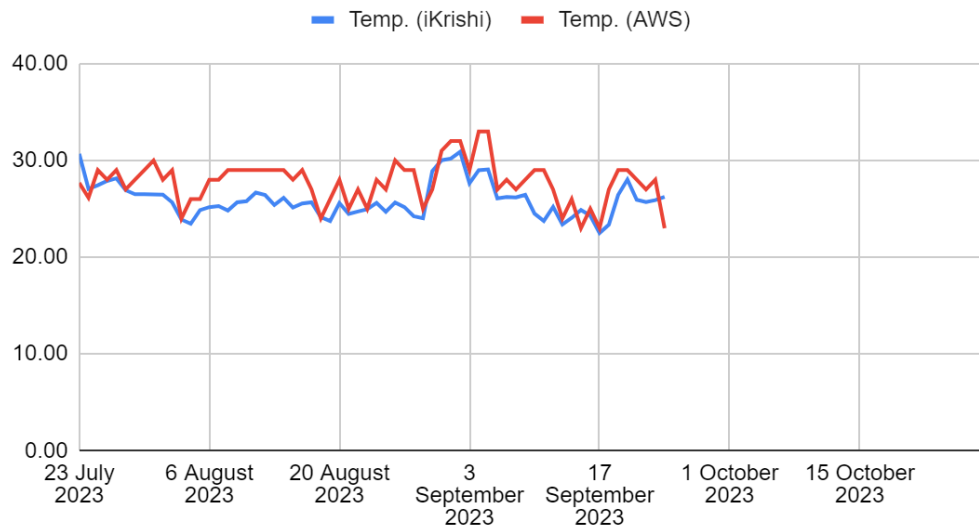


How good are our Meteorological Forecasts?

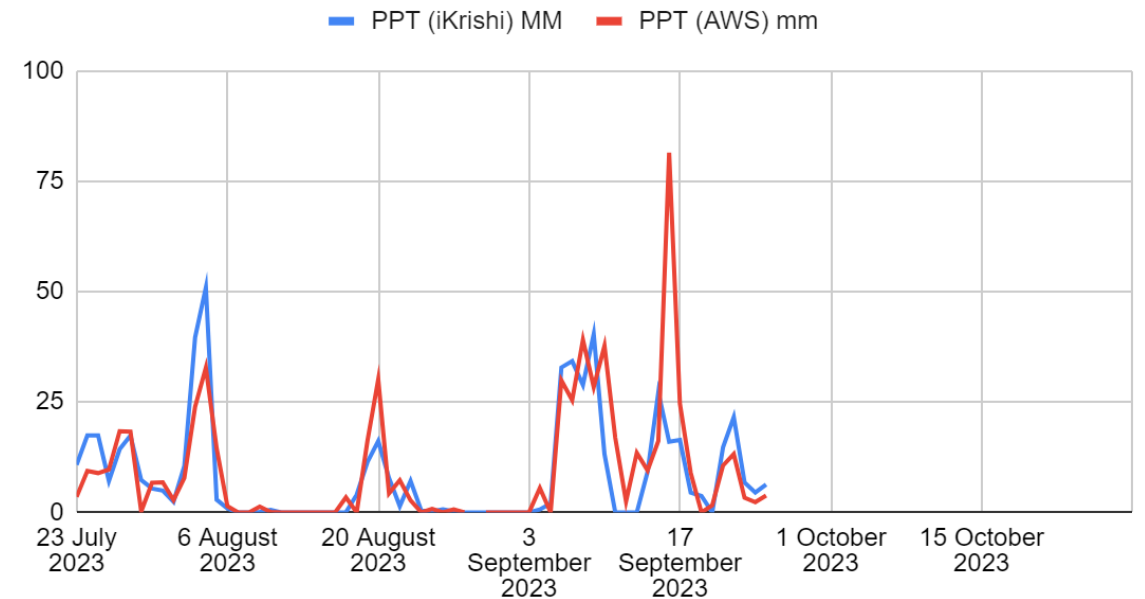
Humidity (iKrishi) and Humidity (AWS)



Temp. (iKrishi) and Temp. (AWS)



PPT. (iKrishi) and PPT. (AWS)



Farm Expense Tracker



GeoAgro-Dehqon Prototype is Ready for Central Asia



Это приложение помогает цифровым образом дополнить мелких фермеров в Египте, помогая им оптимизировать использование ресурсов и предоставляя конкретные рекомендации в соответствии с меняющимися климатическими и рыночными сценариями.

регистр

Продолжить



Дом



Агрономия



Погода



Спросите эксперта



Ваше поле



Объявления



Геотеггинг



Обсуждение



Рыночная площадь



Финансы



Животноводство



Начало



Агрономия



Вопрос эксперту



Расчетный счет

< Кноп-Поп



Хлопок



Пшеница



Ячмень



Картофель



Яблоко



Дыни



Овощи



Рис



Кукуруза



Конские бобы



ЛЮЦАЛЬФА



Корма



Помидор



Оливки



Перец чили



Чечевица



Лук



СОЯ



Начало



Агрономия



Вопрос эксперту



Расчетный счет

Concluding Statements.....

1. Climate Adaptation of the Agricultural sector of the global drylands should be multi-factorial, multidisciplinary and multi sectorial .
2. Digital augmentation is probably the only solution to accelerate and scale climate adaptation. This can be used to supplement extension activities, capacity development activities, and policy framing, all transforming the agrifood system rapidly.
3. Digital augmentation should have broad thematic diversities, different delivery platforms and different modes of action. It can range from smartphone advisory apps, web-based platforms, ex ante assessments and geomatics based estimates. Bundling of services-based approaches are better.
4. It is important to think about scaling the digital actions with the right enabling environments, policies and with a PPP spirit for sustainable digital augmentation.
5. Engagement with stakeholders is critical (it can be in the form of stakeholder consultations, or context-specific surveys to understand the challenges and prospects) and should be an essential part of digital transformation.

Thanks!

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