

Agriculture 2.0

Bram Govaerts

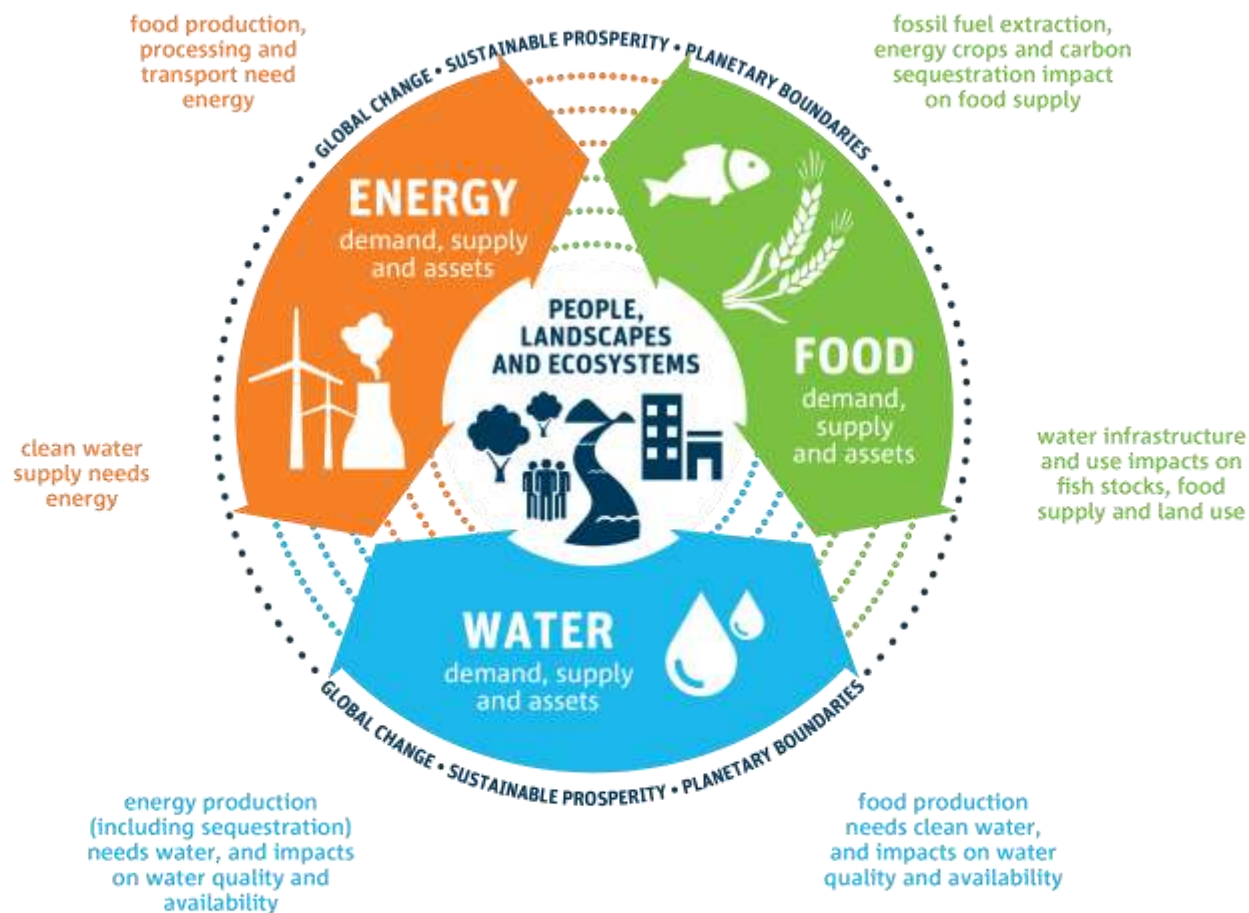
Regional Representative LatAm

Centro Internacional de Mejoramiento de Maíz y Trigo (CIMMYT)

Contributions: Bruno Gerard, Jens A. Andersson; Jordan Chamberlin;
Francelino Rodrigues; Ivan Ortiz-Monasterio

 @BramACCIMMYT

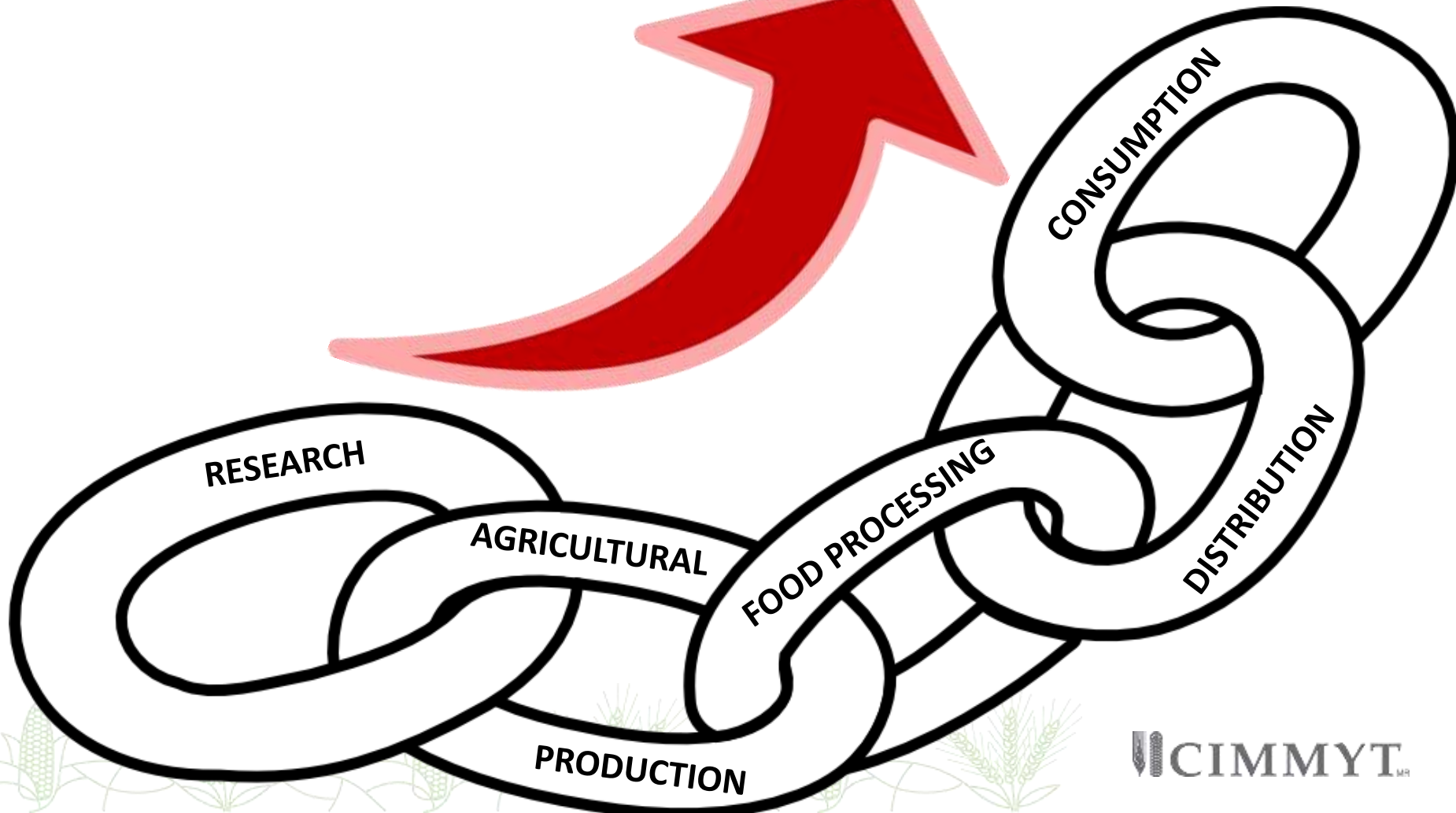
The energy, water and food nexus

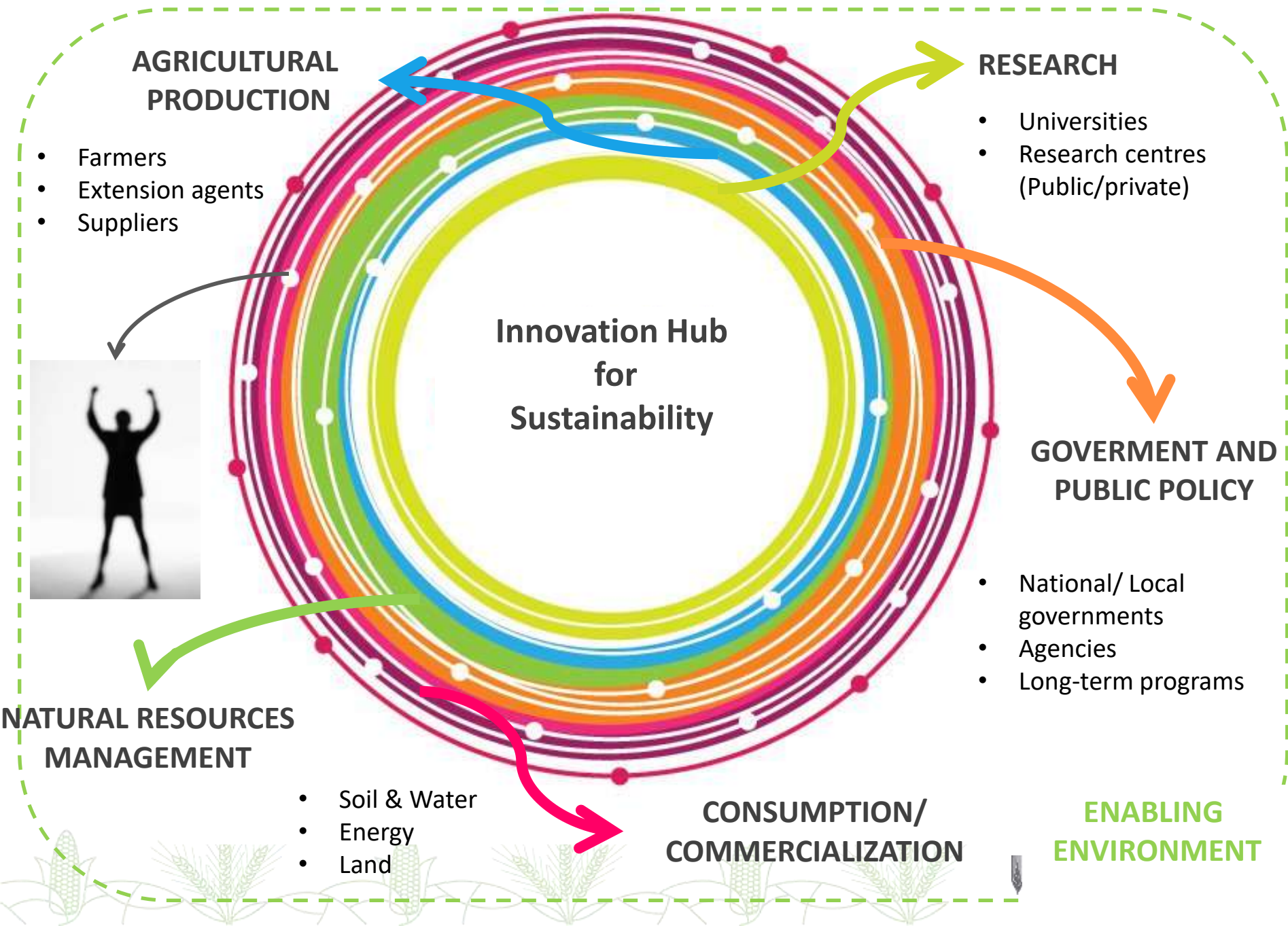


Agricultural Value Chain

TRADITIONAL

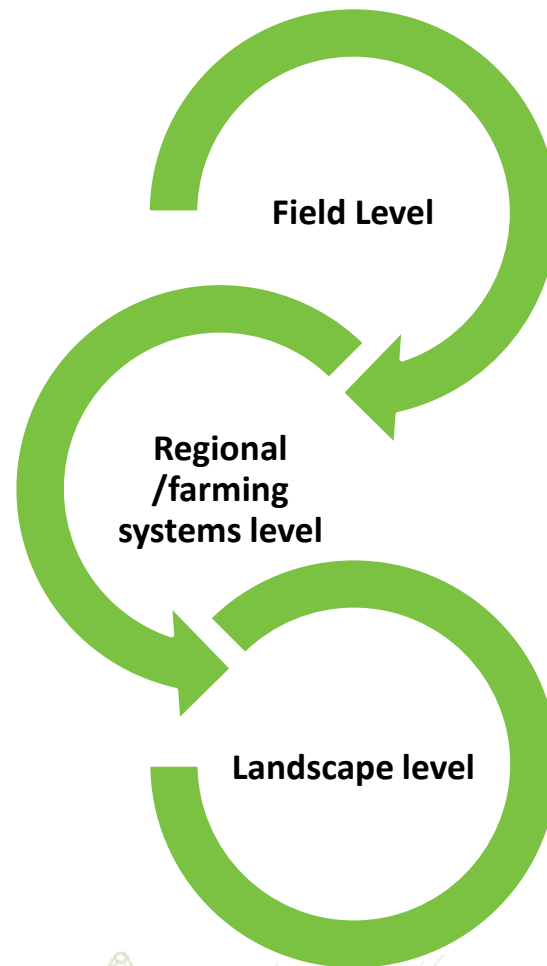
PRODUCTIVITY



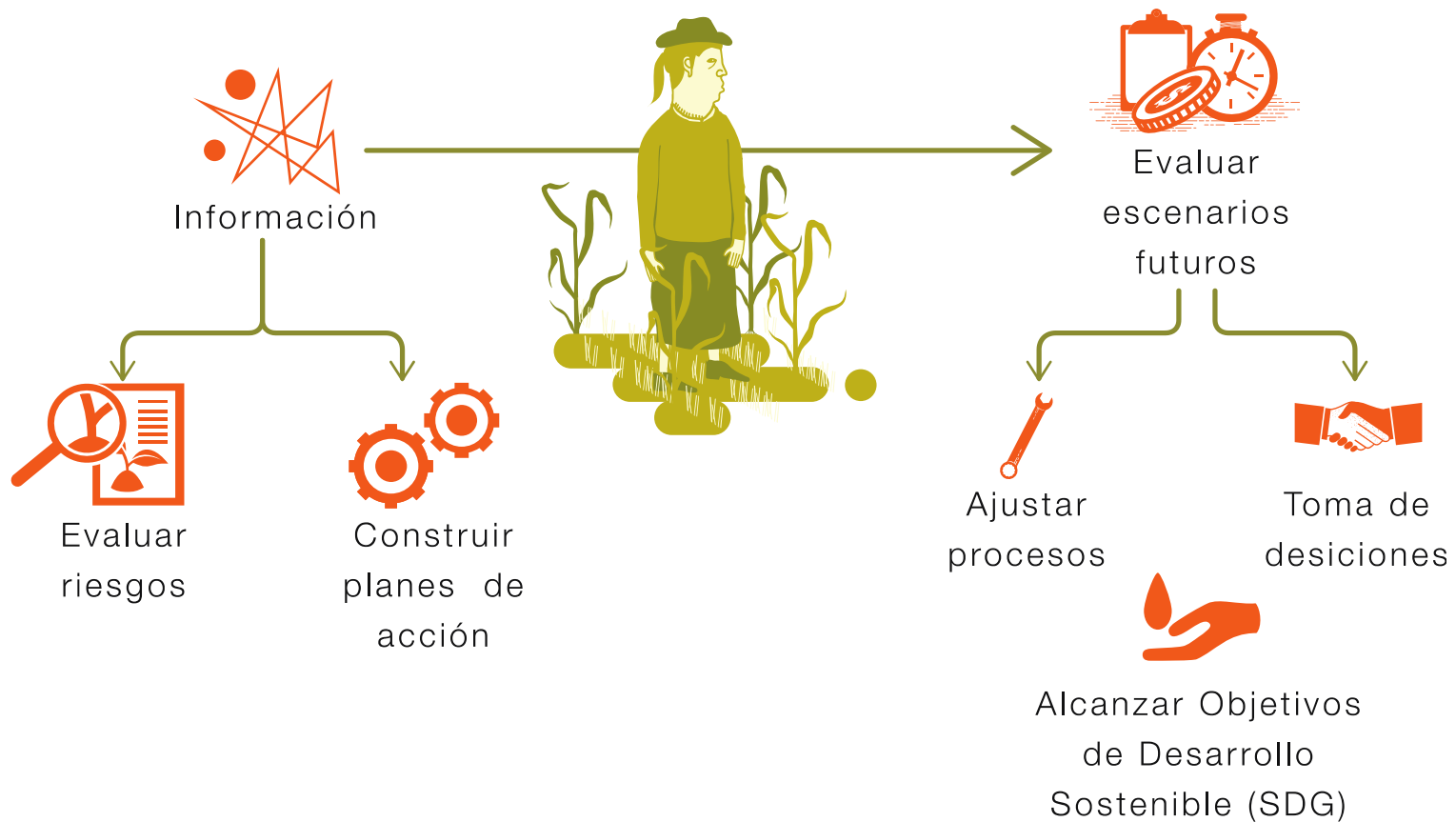


MEAL?

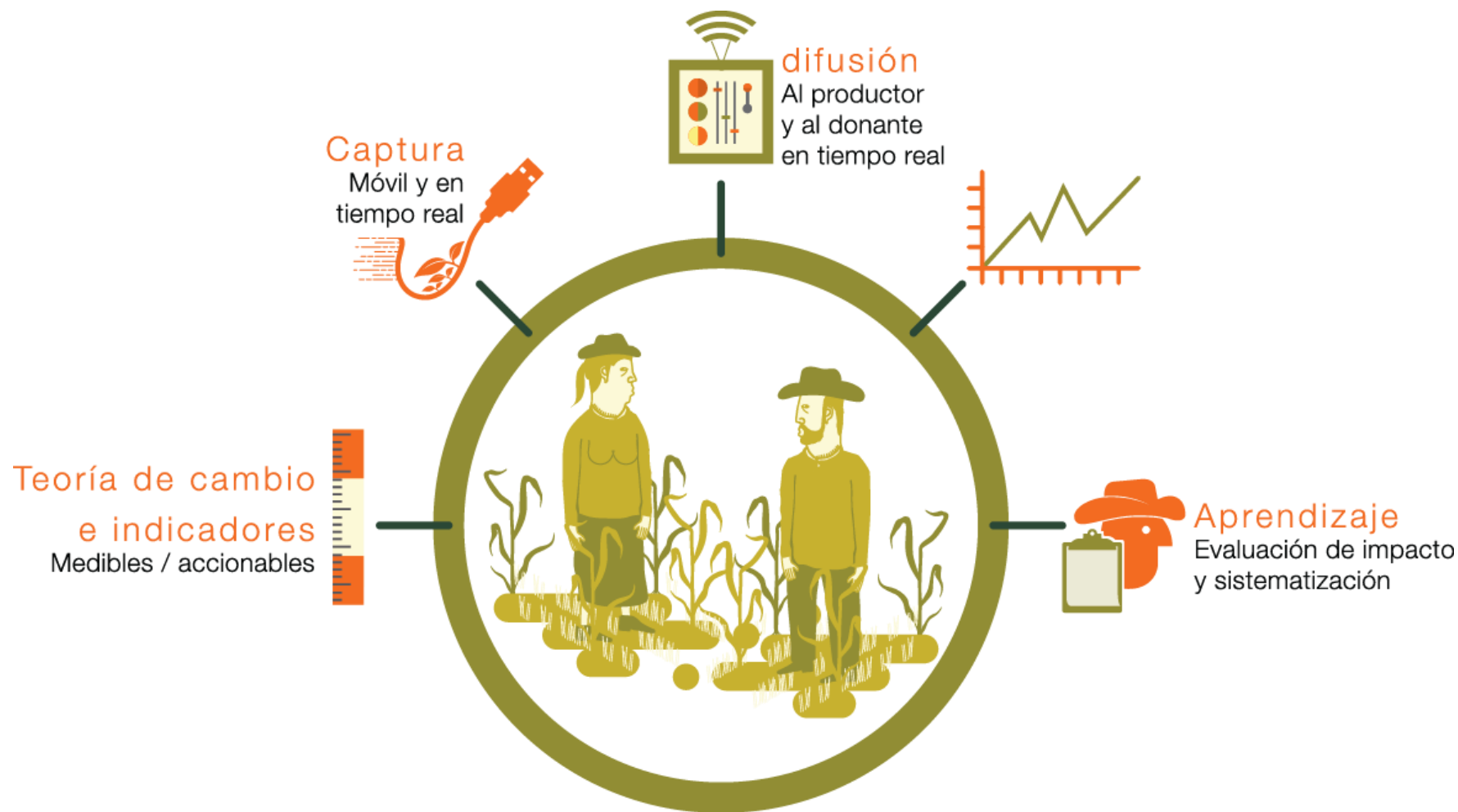
- Support agricultural decision making for:
 - Farmers
 - Extension agents
 - Local value chain actors
- Monitor and evaluate activities for investors
- Measure innovation, sustainability and long-term impacts
- Be sure that we learn, incorporate and change!



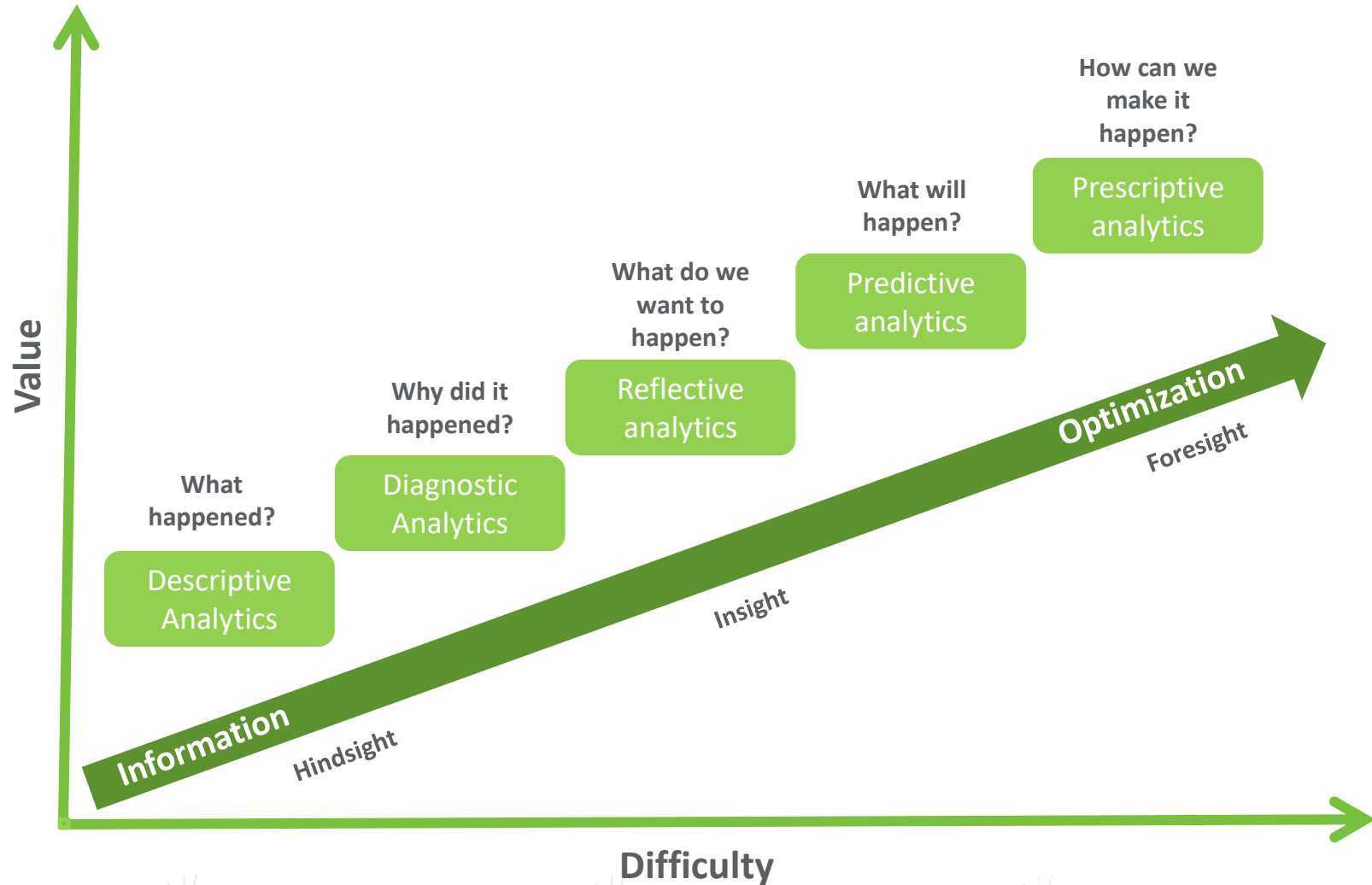
Go digital



Multidimensional MEAL



Dimensional Analysis



*Adapted from Gartner (2015).

Data gathering: Crowdsourcing

- Bitácora Electrónica de Campo
- GeoODK
- Fuentes secundarias: EMAs, análisis de suelos, etc.
- Herramienta de monitoreo de datos: Visualización en tiempo real



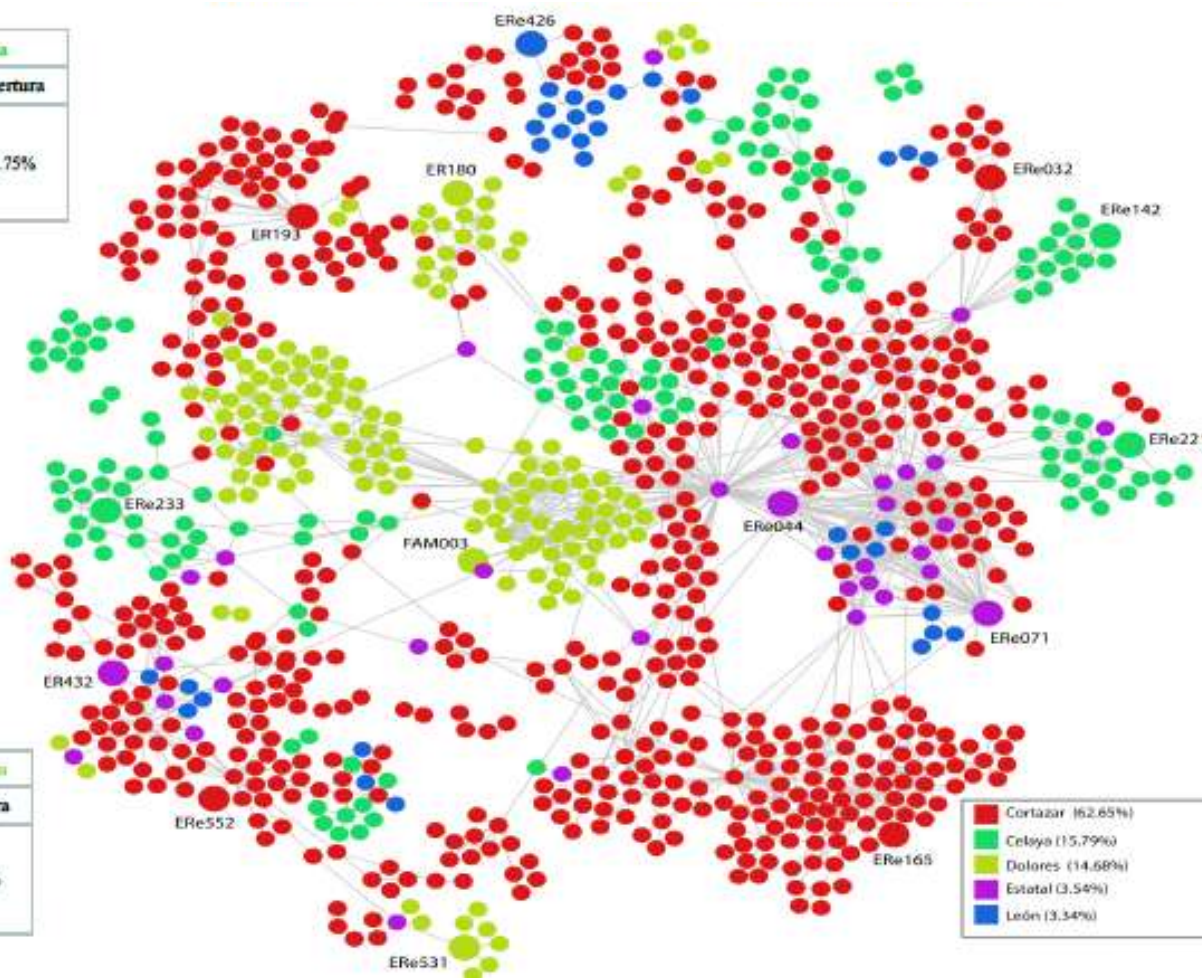
Innovation Networks

DDR Celaya	
ID	Cobertura
ERe142	9.75%
ERe221	
ERe233	

DDR Cortázar	
ID	Cobertura
ER193	7.25%
ERe032	
ERe044	
ERe165	
ERe552	

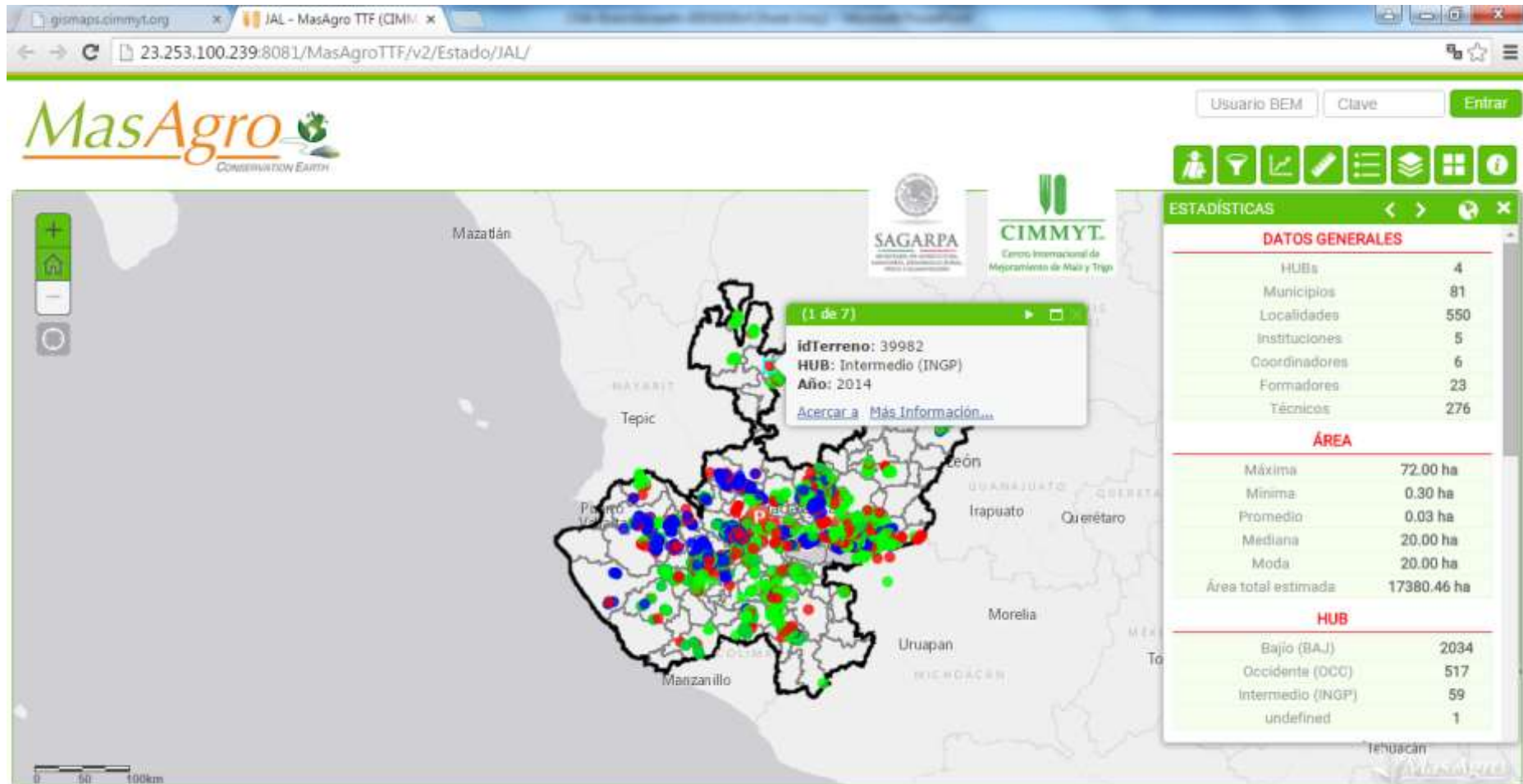
DDR León	
ID	Cobertura
ER071	11.53%
ER432	
ERe426	

DDR Dolores Hidalgo	
ID	Cobertura
ER180	5.96%
ER397	
FAM003	



“Con los productores seleccionados en los DDR se alcanza una cobertura promedio del 8.6%”

M&E4L → SDG



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Predictive analytics for small holder farmers



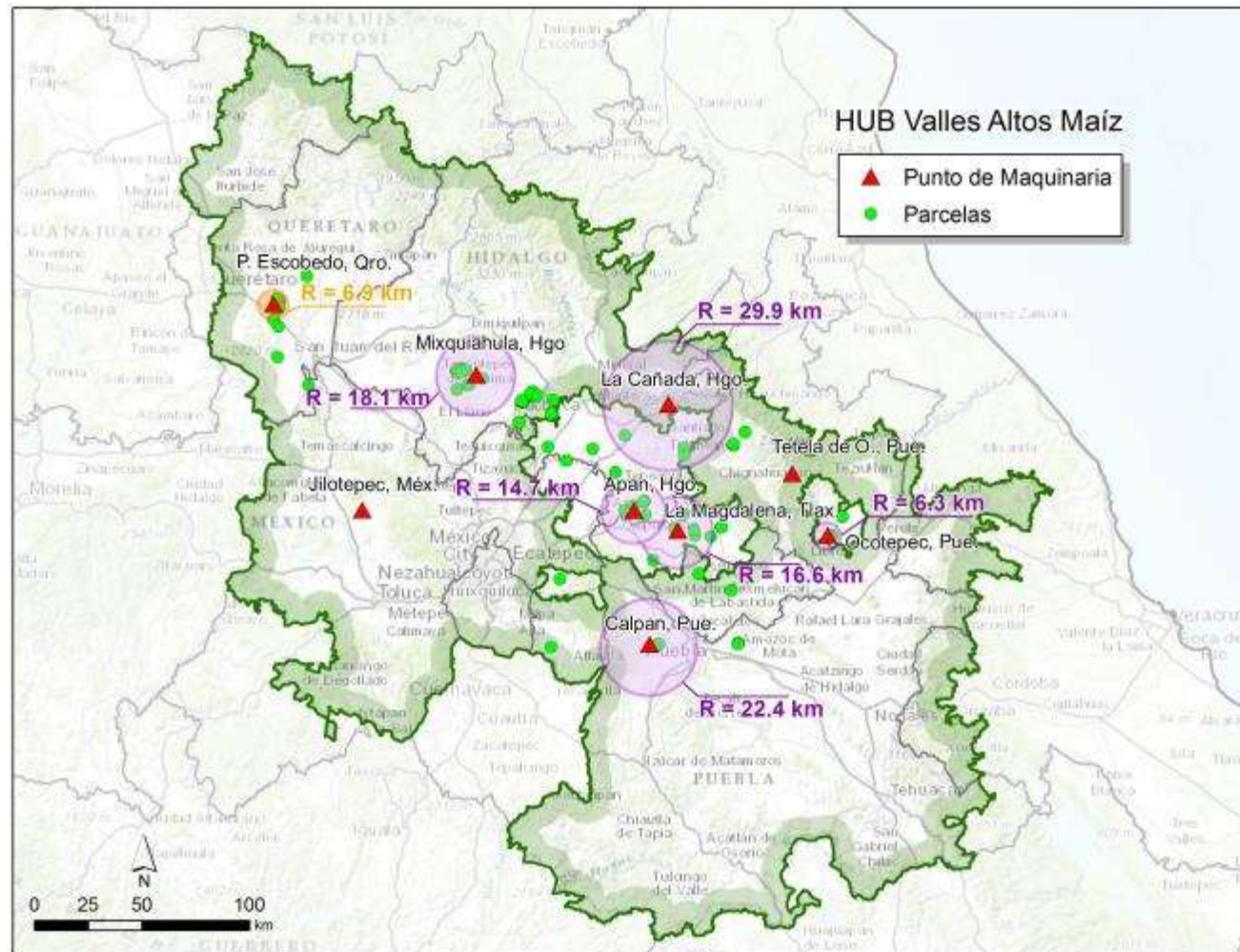
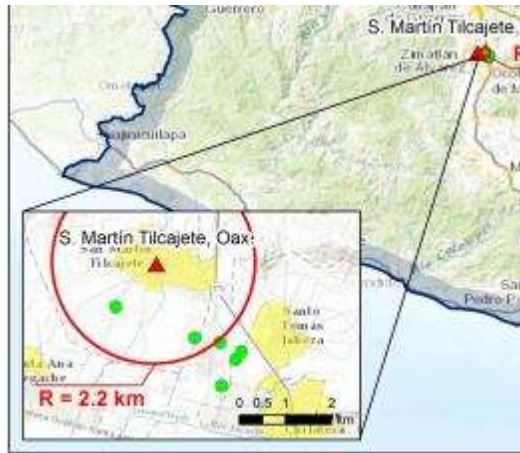
Kellogg's



Centro Internacional de Agricultura Tropical
Desde 1967 Ciencia para cultivar el cambio

CIMMYT

Uber for tractors



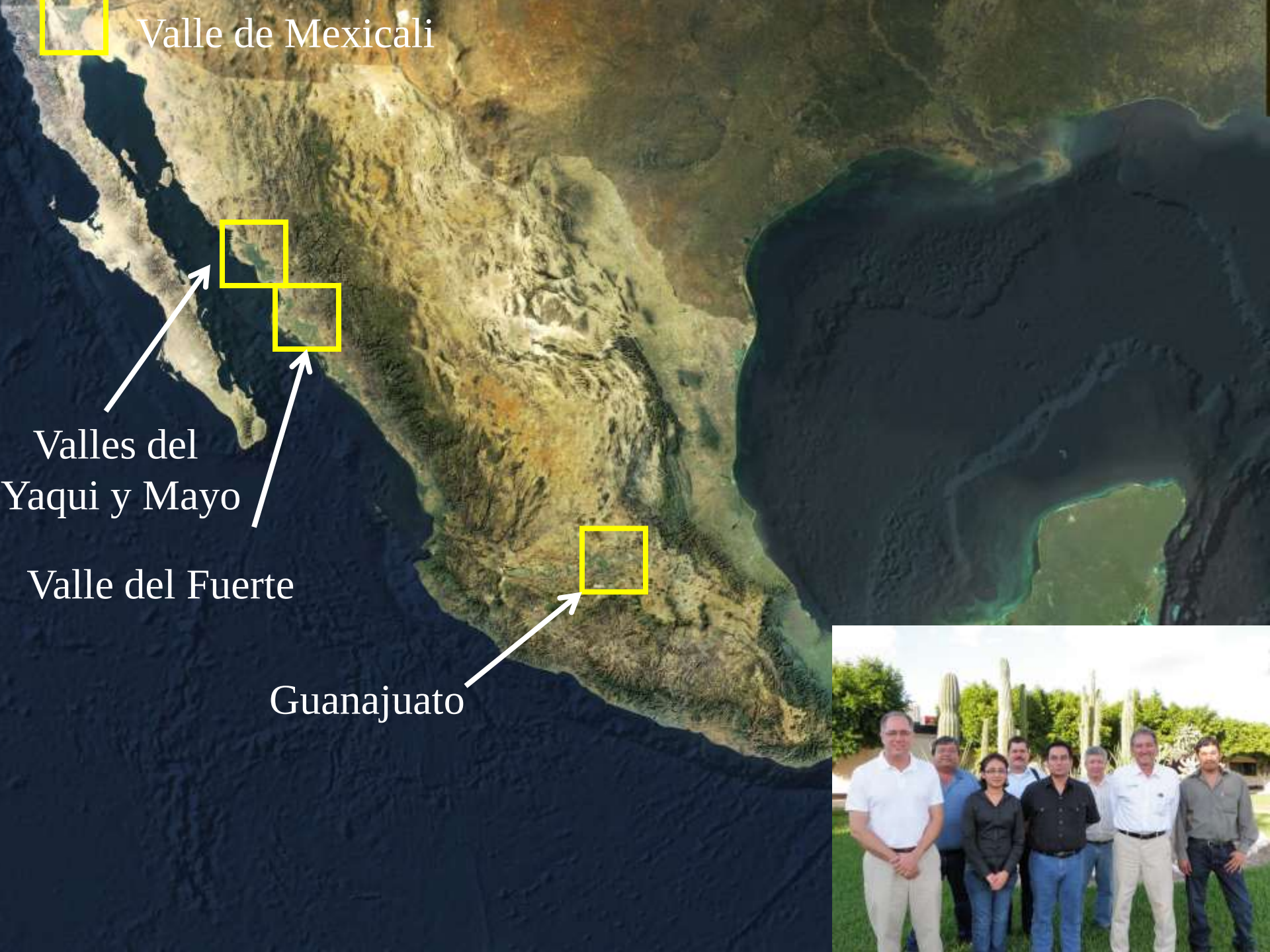
- 9 Centrals active
- 5 Hubs/Regions
- Different technological packages
- Impact assessment

Sensor technologies

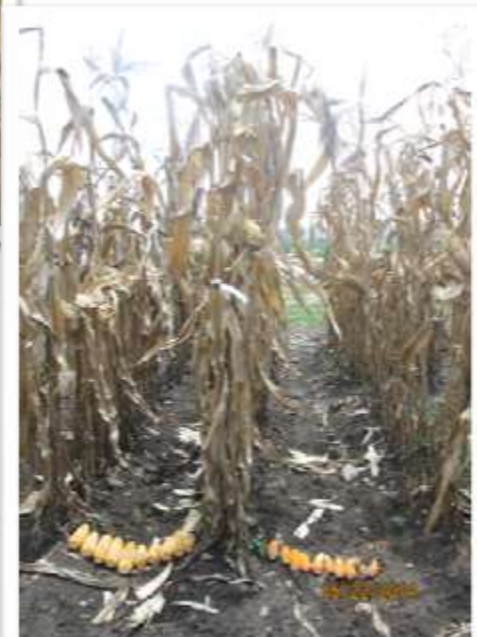
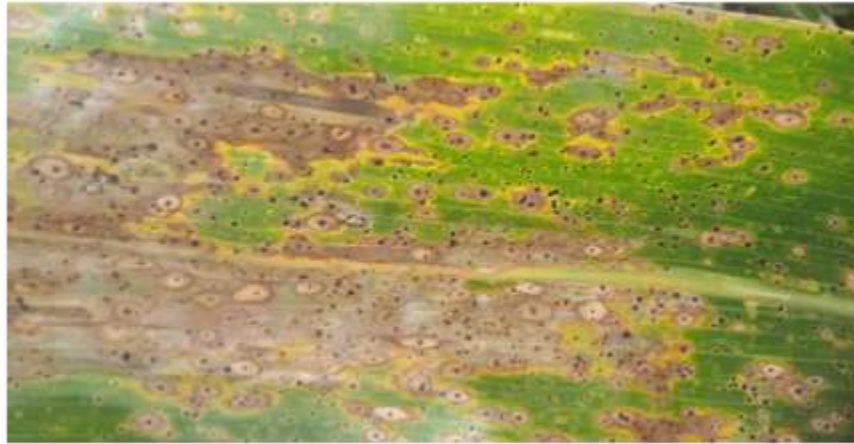
Diagnostic tools for fertilization optimization



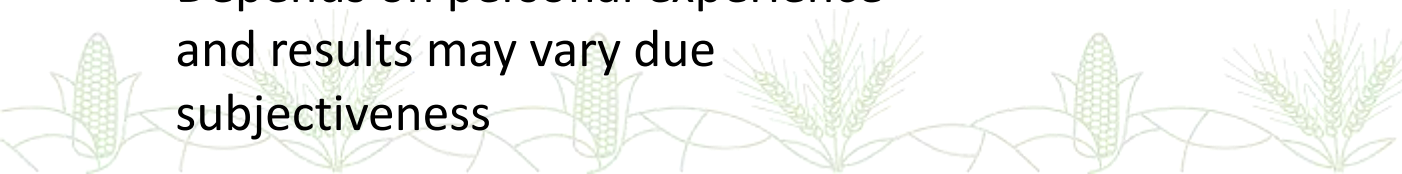
In collaboration with
Universidad Estatal de Oklahoma



High-throughput phenotyping for Tar Spot Complex (TSC)



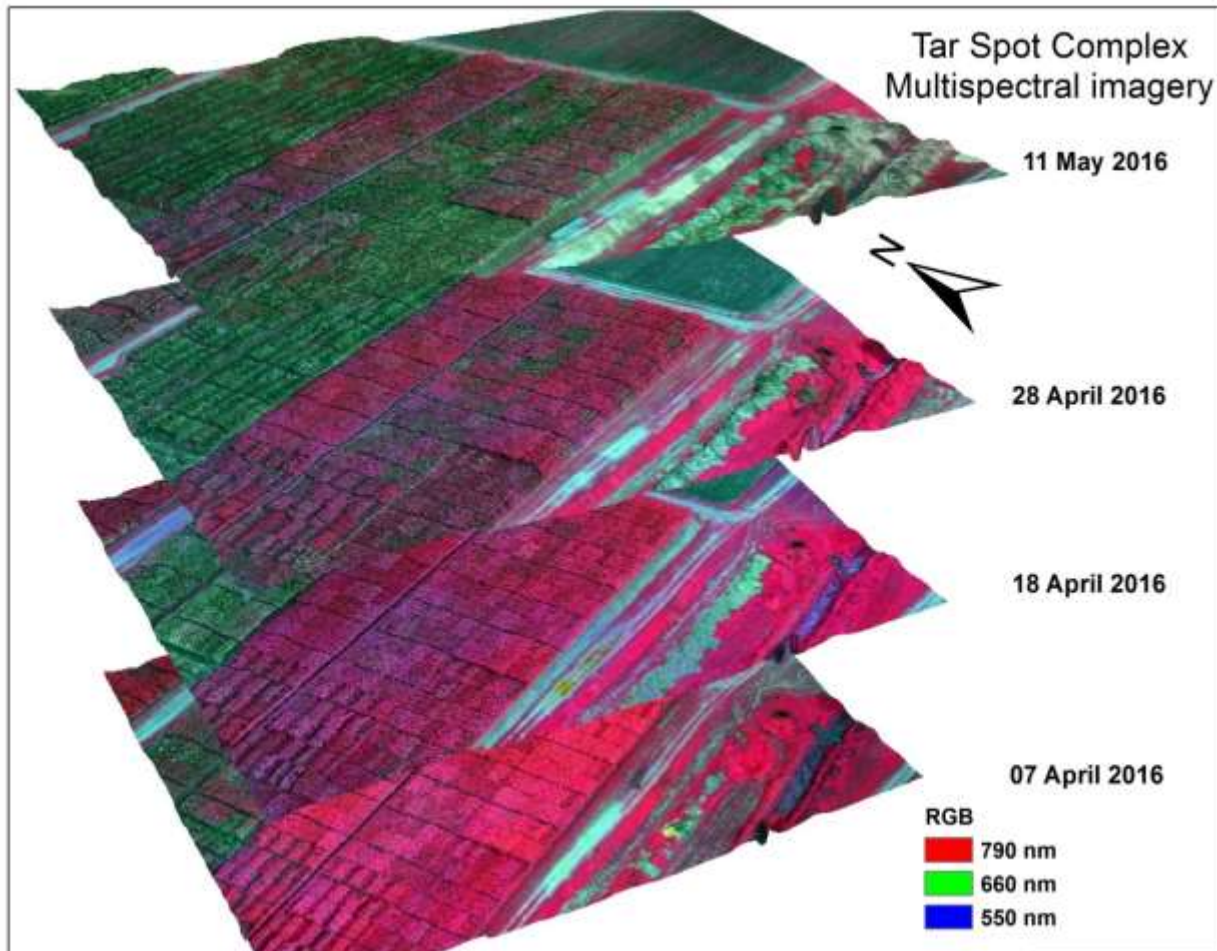
- One of the most important disease of maize in tropical areas
- Phenotyping for TSC is mostly conducted by visual observations by breeders/pathologists
 - Depends on personal experience and results may vary due to subjectiveness



High-throughput phenotyping



CIMMYT's Agua Fria experimental station

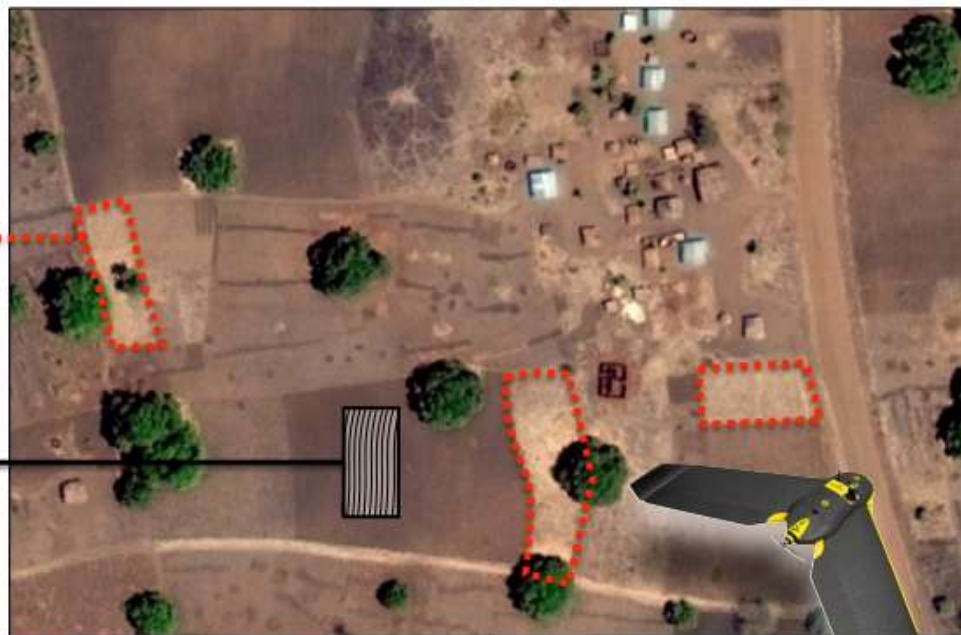
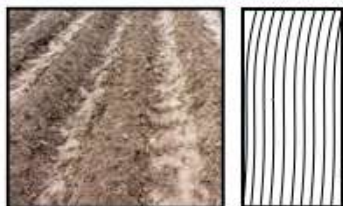


- MultiSpectral (550, 660, 735, 790 nm) images – 6 cm/pixel
- Thermal images – 12 cm/pixel



(1) Pre-/Early season UAV imagery

- Crop residue identification
- Tillage type identification (ridges)
- Area extent of CA practices
- Construct Digital Elevation Model (DEM)

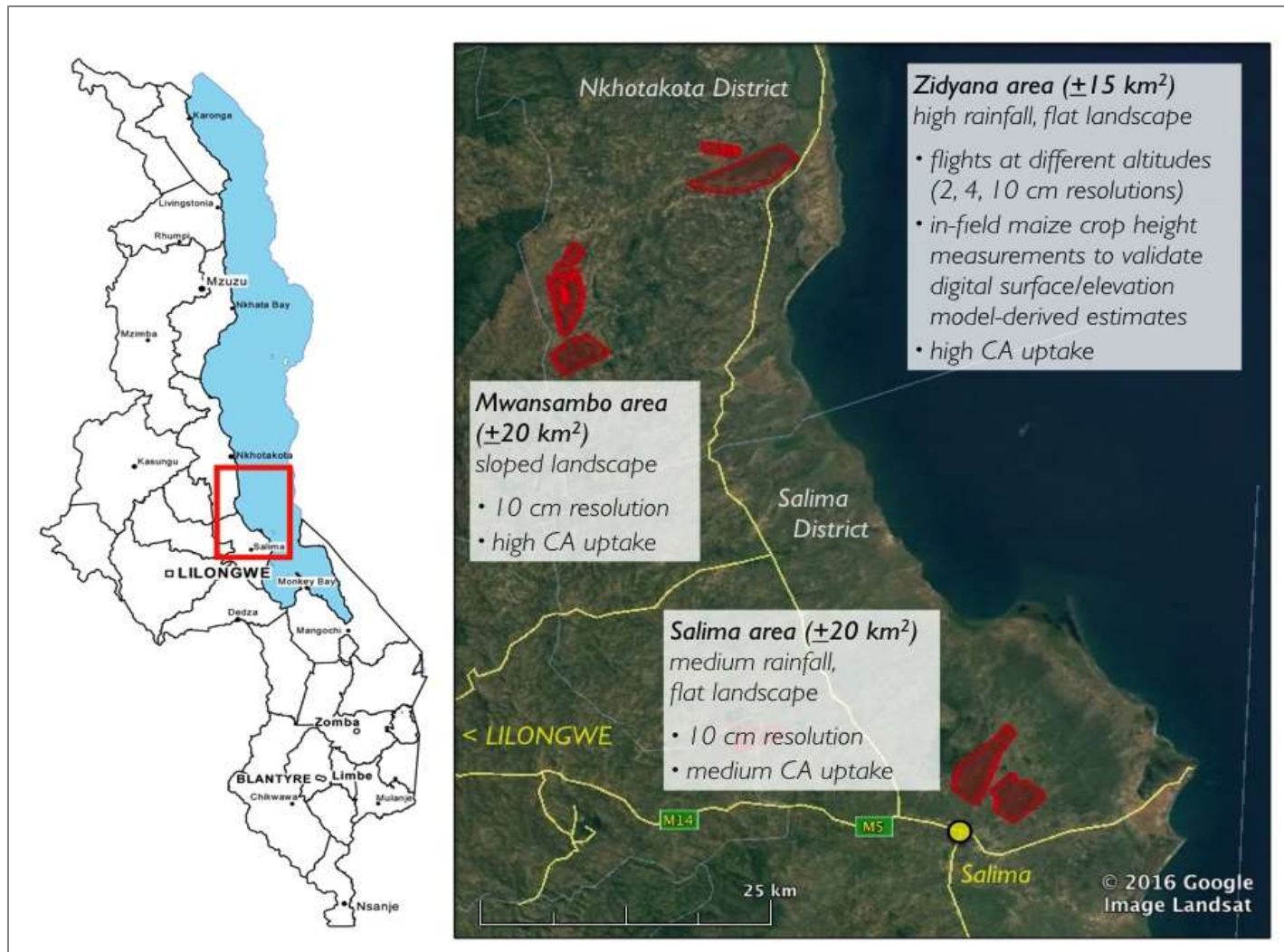


(2) Mid-season UAV imagery

- Crop type identification
- Construct Digital Surface Model (DSM)
- Measure vegetation indices (e.g. NDVI)
- Estimating maize yields through:
 - plant height measurement (DSM-DEM)
 - vegetation indices (NDVI)
- + Survey instrument to measure:
maize variety use, inputs, management



Figure 1: UAV-based methodology for identification of CA practices and impacts

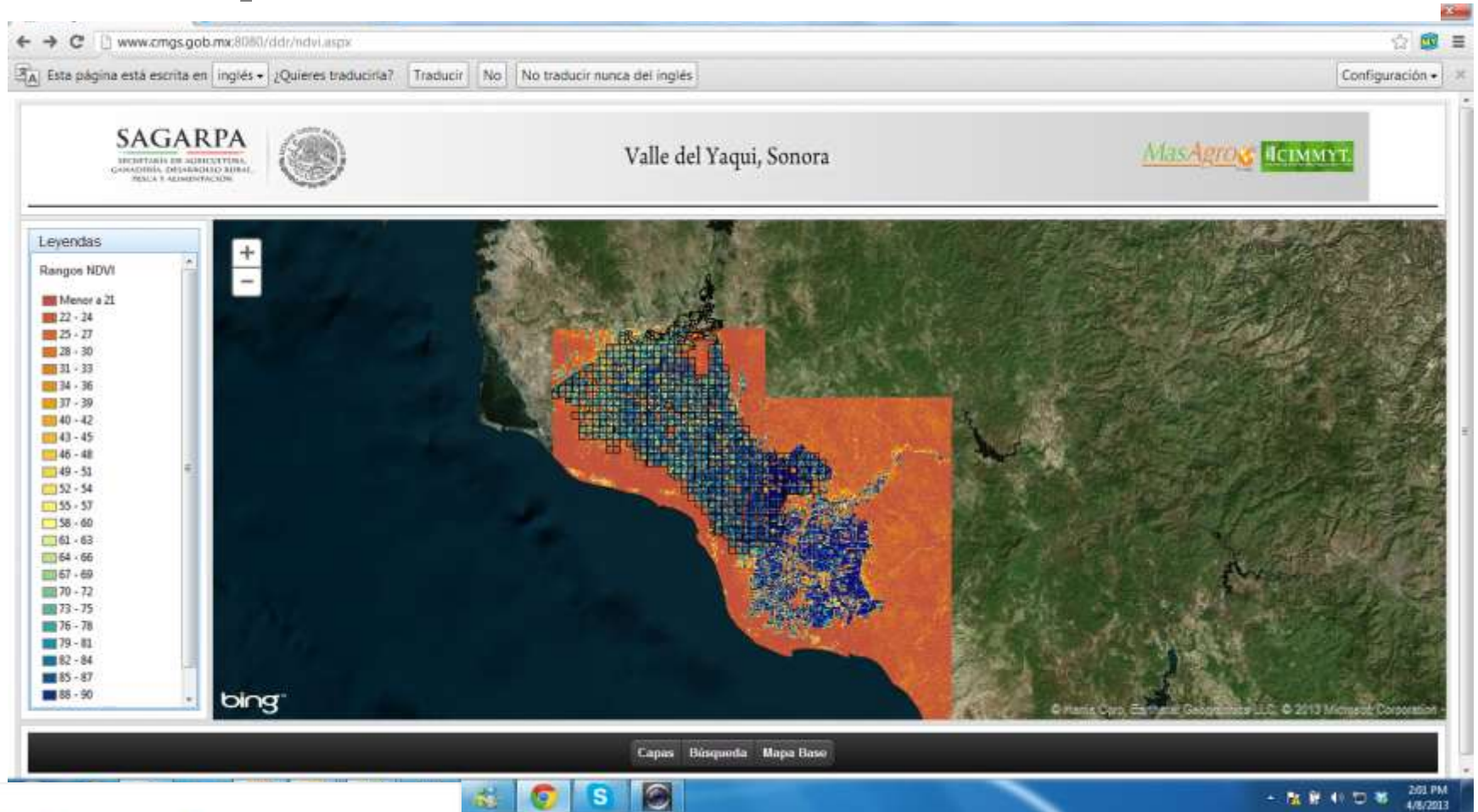


UAV-flight and farm household survey areas, in Central Malawi

The survey collects detailed information on:

- CA practices taken up, on-farm labour and input (seed, fertilizer, herbicides) allocations, CA implementation histories, CA programme participation (input support), CA impacts on labour hiring and crop residue management practices (carrying and burning), as well as farmer motivations and views on the (dis)advantages of CA.

GreenSat using Spot 6 y 7 for impact in collaboration with SIAP



MasAgro

<http://www.cmgs.gob.mx:8080/ddr/ndvi.aspx>



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404: archivo o directorio no encontrado N-rate Calculator Tool

www.cmgs.gob.mx:89/GreenSat/

gto IMPULSO A TU CALIDAD DE VIDA MasAgro GreenSat

CIMMYT Centro Internacional de Mejoramiento de Maíz y Trigo

SAGARPA SECRETARÍA DE AGRICULTURA, GANADERÍA, PESQUERÍA Y FOMENTO

SIAP SECRETARÍA DE INFORMACIÓN AGROALIMENTARIA Y PESQUERA

Calculadora de Nitrógeno

Región Valle Santiago Cultivo Trigo

Rendimiento Máx: (kg/ha)

Fecha de siembra 12-01-2015

Fecha, medidas ☒ 02-20-2016

Franja Rica con N

Práctica del Agricultor

NUE anticipado 0.35

Medir NDVI ☒ Automático ☐ Mapa de N

[Buscar parcela por coordenadas geográficas](#)

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12:12 PM 2/25/2016

<http://www.cmgs.gob.mx:89/GreenSat/>









1966 - 2016
CIMMYT
convertir la investigación en impacto

SAGARPA
SECRETARÍA DE AGRICULTURA,
GANADERÍA, DESARROLLO RURAL,
PESCA Y ALIMENTACIÓN



USAID
FROM THE AMERICAN PEOPLE

syngenta



Fundación Haciendas del Mundo Maya
Conocer y comprender para transformar

NAAT-HA



RESEARCH
PROGRAM ON
Maize



RESEARCH
PROGRAM ON
Wheat



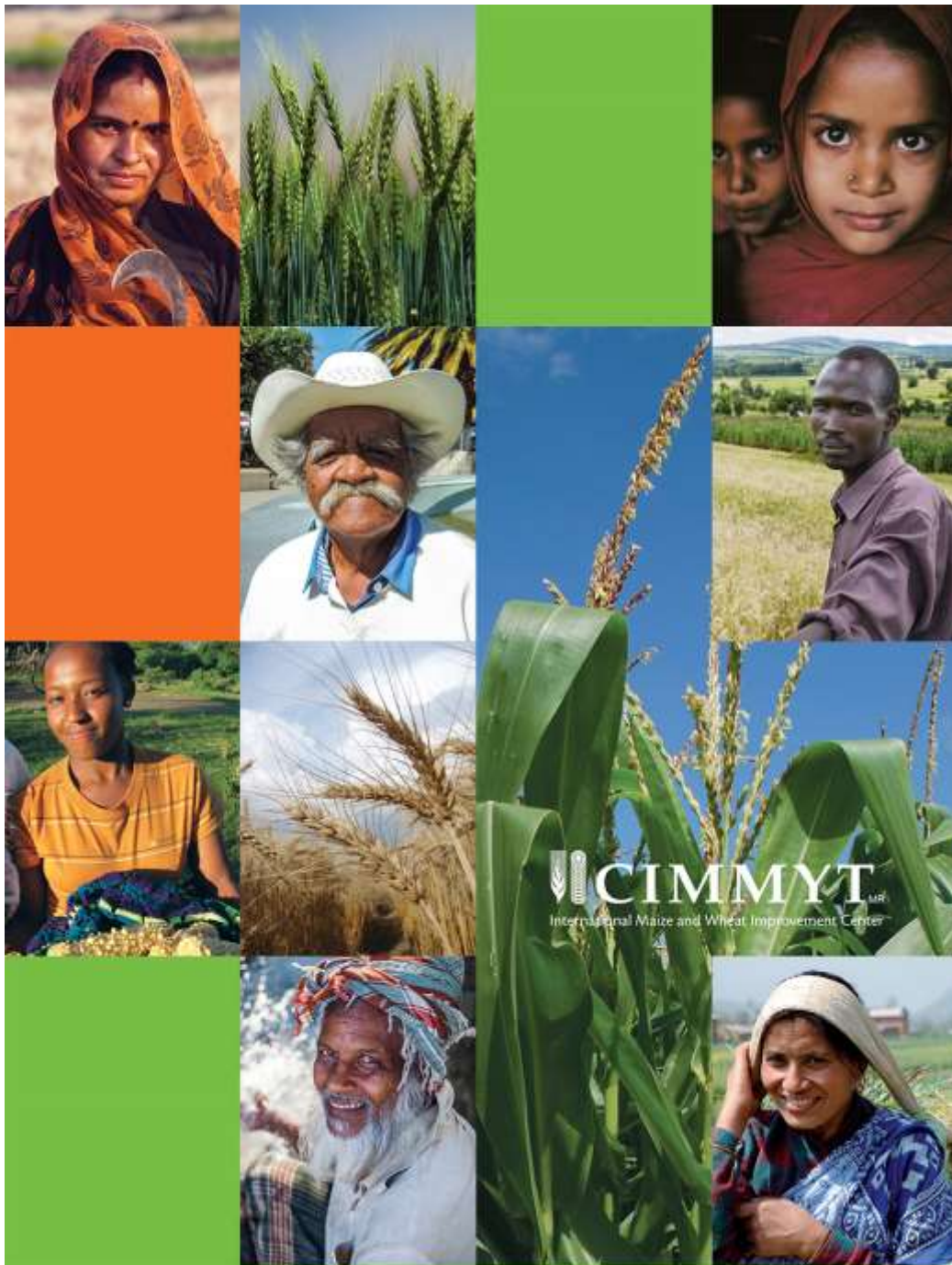
Research
Program on
Climate Change,
Agriculture and
Food Security

Kellogg's

OCRS
CATHOLIC RELIEF SERVICES



CIMMYT
MR



Thank you for your interest!



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