Nature helps nature: Use AI to improve global farming through nature-powered innovation

START Hack Case

St Gallen, 19 March 2025

One of the global challenges is to feed a growing population with the same amount of land and resources available
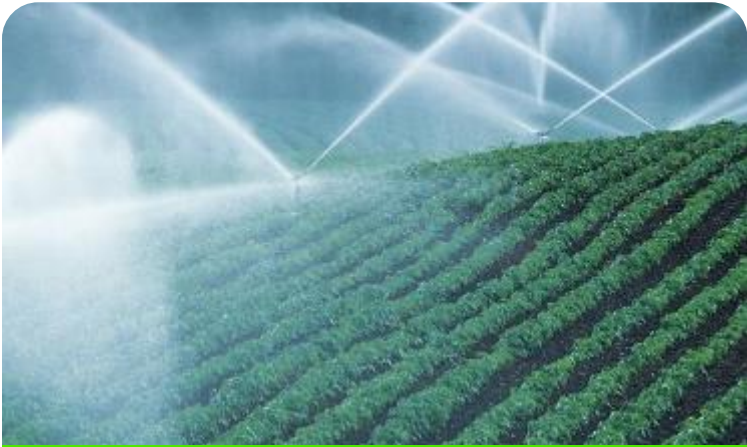
LAST 70 YEARS

NEXT 30 YEARS

Agriculture has fed
a further 5bn people
on almost the same
amount of land

+2bn
people

+50%
more food needed

Source: UN, FAO, IntechOpen

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We need more sustainable ways to feed the world

IMPROVE WATER USE EFFICIENCY

70% of global fresh water is used in agriculture

INCREASE PRODUCTIVITY FROM DEGRADED LAND

33% of the earth's arable land has been lost in the last 40 years

INCREASE CARBON STORAGE IN SOIL

23% of greenhouse gas emissions are caused by agriculture, forestry and other land use

Source: UNESCO; UN; IPCC

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Farmers need more sustainable ways to grow their crops

By 2050, farmers will need to grow 50% more crops, in a sustainable way, to ensure enough safe and affordable food for everyone.

Farmers face several challenges in a bid to achieve this goal

1 **Limited crop protection tools due to a stringent** regulatory environment

2 Food chain and public pressure further limits farmer options

3 Reduced efficacy due to resistance and pest shifts

4 Lower yield attributable to climate change

5 Poor economics and increasing cost of input such as fertilizers

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Our ambition

To be the global leader in **biological plant and soil health technologies**, helping farmers improve farm productivity, while creating a sustainable future for **people** and **nature**

Our purpose

Centered on **customers**

Inspired by **nature**

Powered by **science**

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What is the current problem?

Biologicals help farmers to protect yields, improve soil health and feed a growing population. However, a lack of understanding, a crowded marketplace and data unavailability lead to suboptimal outcomes.

## What is the expected final product?

Help farmers with an AI-enabled product recommender through
i.   visualizing the climate, soil and disease risks facing their crops
ii.   recommending the best biological products for their fields and when to apply
iii.   tracking outcomes during the season and use the data to improve recommendations for the subsequent year

Who are the users of the solution?

Primary users will be farmers in India and Brazil. The teams are free to choose one of the locations of the farmer.
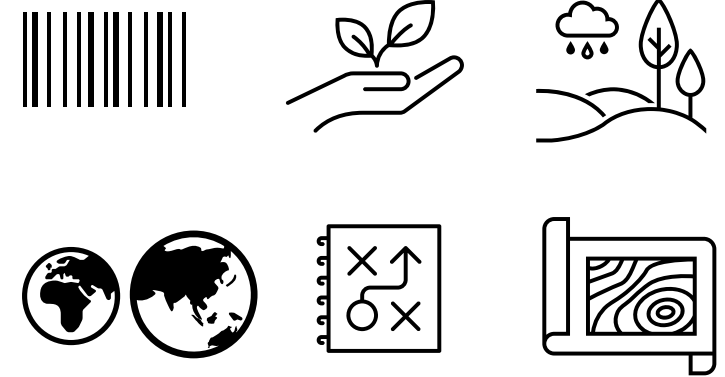
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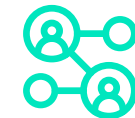
Hack development tools

Provides a central access point for environmental data associated with time and geographical coordinates. Through well-defined APIs, it is possible to obtain historical weather data, vegetation health information, soil characteristics, land use, and topography.

- Illustrative biological product data cards

- Crop information data cards

- Publicly available climate and soil data of Brazil and India

- Agronomy algorithm logic of stresses

Classification: PUBLIC

The prize: A trip to Atessa, Italy

The winning team will receive a trip to Atessa, Italy, nestled between the mountains and the Adriatic sea. Atessa is the **core of Syngenta Biologicals' research** and manufacturing. The trip includes the opportunity to **pitch to Syngenta leaders**, get a unique glimpse into **biological innovation** and try **delicious Italian food and wine**, in the breathtaking setting of the **Trabocchi Coast**!

Flights, accommodation and meals will be provided.

Classification: PUBLIC

The Syngenta hack team

Come and meet us at our booth for popcorn, and delicious rice (produced by our customers) to take home!

Marco Issenmann
Head of Branding &
Digital Marketing

Kiran Joseph
Head of IT & Digital Biologicals

Conor Marsh
Digital Innovation &
Strategic Partnerships Lead

Pradeep Kethireddy
Digital Platform Manager

Paolo di Lernia
Head of Biologicals
Communications

Elisabetta Castrucci
Communications Specialist

Helping farmers feed the world with safe, nutritious and tasty food