

# **The Current state of Precision Agriculture in Côte d'Ivoire, Opportunities and challenges.**

**Dr Akanvou René,  
Statistician, CNRA Côte  
d'Ivoire**

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- **Introduction**
- **Overview of Agriculture sector in Côte d'Ivoire**
- **The practice of precision agriculture**
- **The challenges and opportunities**

# Introduction

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- Côte d'Ivoire is a small country with an area of 322 416 square kilometers and a population of 16.4 million inhabitants growing at 3.8 percent per annum
- The country has three agro-ecological zones: a humid and dense forest in the South making half of the total area; a sudanian-guinean zone, providing a transition between the forest and the savannah in the centre with 19 percent of the total area; and a sudanian zone with a humid savannah in the north with 31 percent of the total area.

# Introduction

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- The economy of Côte d'Ivoire like most African countries relies on the agriculture sector, The country's economy is 50% based on agriculture

# Overview of Agriculture sector

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- Indeed, the country is positioned as the world leader in cocoa, cashews and rubber.
- Côte d'Ivoire is the world's largest producer of cola nuts, with a total production of 65,200 tons.
- Côte d'Ivoire is the largest African mango exporter on the European market and the third largest in the world, after Peru and Brazil,

# Overview of Agriculture sector

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- In the north of the country, cotton cultivation is the most practiced, with 40-50% of the land exploited in cotton
- Other important agricultural productions are banana, palm oil, etc...

# Overview of Agriculture sector

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- Agricultural activities are undertaken almost completely on small-scale farms with an average area of 4 ha
- The techniques used on the farms are traditional, as most 72% of the farm heads are illiterate; only 0.95% of farms use tractors, 4.4% use animal traction
- Farming is highly land and labor-intensive.

# The state of precision agriculture

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- ▶ The success in Cash crop production is mainly due to precision nutrient management



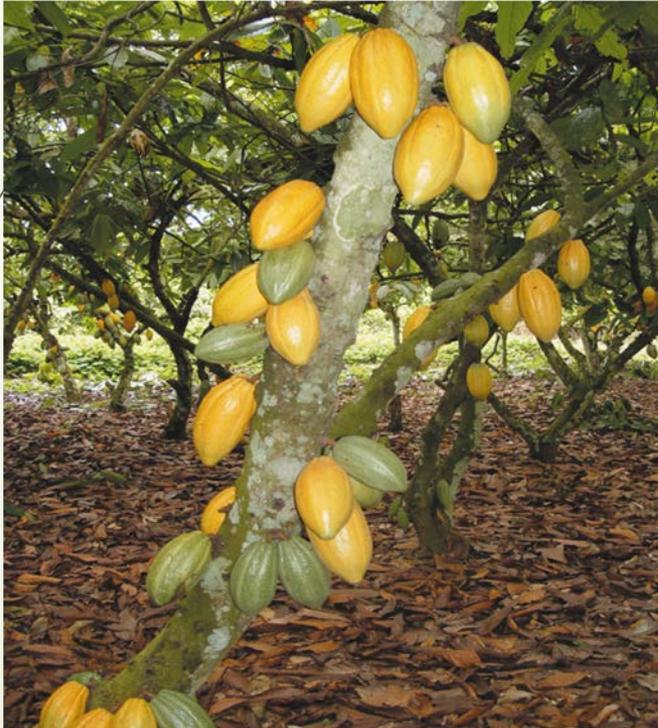
Rond de 1,5 à 2 mètres

There is a precise amount per tree for young trees and also for productive trees

# The state of precision agriculture

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- Also for cocoa a precise nutrient management is based on age of the plant and on a tree basis and depending on the agro ecological zone



# The state of precision agriculture

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- ▶ for sugarcane production, companies are putting in place advanced irrigation systems and technologies for site-specific irrigation to improve water use efficiency or reduce water usage for sustainable crop production

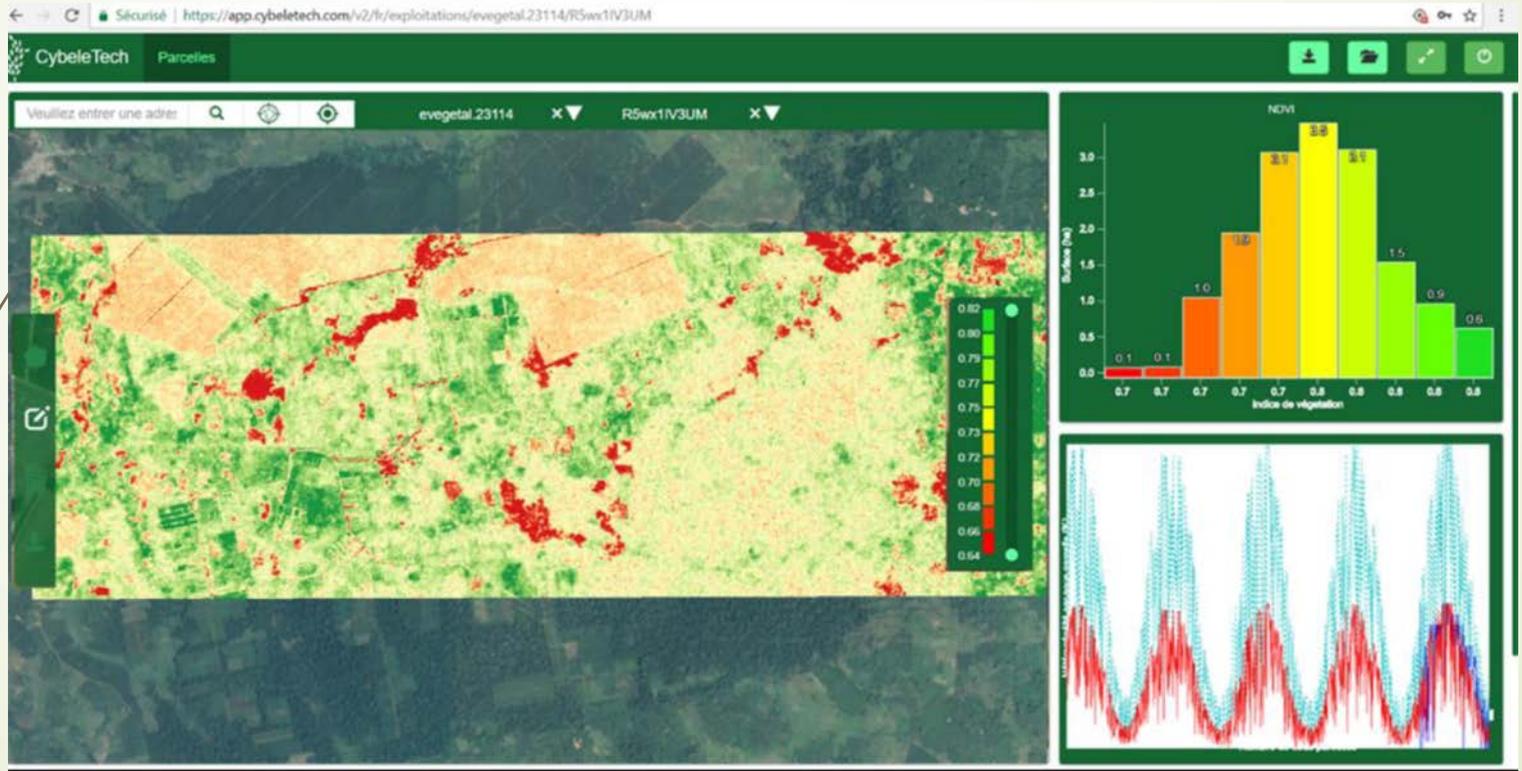
## **sate of precision agriculture**

- The use of new technologies in precision agriculture in Côte d'Ivoire is a recent activity  
(such as GPS guidance, control systems, sensors, robotics, drones, autonomous vehicles, variable rate technology, GPS-based soil sampling, automated hardware, telematics, and software.)



## The state of precision agriculture

- ▶ At CNRA we are developing operational tools that will enable to perform research in a short and medium term (mapping land area, monitor soil fertility )
- 



## **Current state of precision agriculture in Côte d'Ivoire**

- ▶ Variable rate technology are being tested (fertilizers) that enables the variable application of inputs and allows farmers to control the amount they apply in a specific location

## Current state of precision agriculture in Côte d'Ivoire

- In the private sector companies like Investiv use mainly Drones. They are involved in :

Aerial Mapping

Aerial Spray

Analysis of Fertilizer Needs

Disease Detection

## Current state of precision agriculture in Côte d'Ivoire

- ▶ In the private sector companies like WeFly Agri provides user-friendly, drone-enabled technologies

Interactive Mapping

Remote management activities

communication with employees and alert system

360° virtual tour of the land from computer or smartphone

## Current state of precision agriculture in Côte d'Ivoire

- Côte d'Ivoire Drone provides user-friendly, drone-enabled technologies for:

Fertilizer Needs Analysis

Disease Detection

Detection of crop density - Tree Counting

# The challenges and Opportunities

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- The agricultural sector has remained insufficiently diversified preventing from moving toward higher value-added activities.
- Agriculture faces the challenge of feeding a growing population with limited or depleting resources.
- Identification of ways to increase productivity with greater environmental constraints (less and different inputs). While optimizing the use of inputs and profitability and enable the industry to respond to market opportunities.

# The challenges and Opportunities

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- Slow adoption because of poor infrastructure, lack of farmer inclination to take risks
- The small size of landholding can limit economic gains from available PA technologies
- high capital costs
- Technologies are still under development
- Difficult task in collection and analysis of data

## Current state of precision agriculture in Côte d'Ivoire

- Precision agriculture is everything that makes the practice of farming more accurate and controlled when it comes to the growing of crops and raising livestock.
- A key component of this farm management approach is the use of information technology and a wide array of items (such as GPS guidance, control systems, sensors, robotics, drones, autonomous vehicles, variable rate technology, GPS-based soil sampling, automated hardware, telematics, and software.)

# Opportunities and challenges for precision agriculture

- ▶ more control over a production system by recognizing variation and managing different areas of land differently
- ▶ Train farmers on landscape variability and productivity. Farmers have known this for as long as they have been growing crops, but without methods for observing or reacting to this variation

# Opportunities and challenges for precision agriculture

- Possibility to collect large amounts of data on crop or animal performance and the attributes of individual production areas (for example, fields, and blocks) at a high spatial resolution.



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