

DRONES FOR GUYANA AGRICULTURE AND FARMING



**Modern Agricultural Techniques and Smart
Farming Innovations**

 **www.cybermcbean.com**

Prepared By: Gordon M. Mcbean (CEH)



DRONES FOR GUYANA AGRICULTURE



Drones benefit Guyanese agriculture by increasing efficiency through tasks like precise crop spraying and mapping, improving crop yields by monitoring health and soil conditions, and providing valuable data for management decisions.

Drones help reduce costs, labor, and waste, while also supporting sustainable practices and disaster response.

IMPORTANCE OF AGRICULTURE

Agriculture is important because it serves as the foundation of human life, providing food, raw materials, and resources that support communities and economies.

It assures food security for rising populations, provides a living for millions of farmers, and promotes economic development, particularly in rural communities.

Food Production – Agriculture provides the primary source of food for humans and animals, ensuring global food security.

Economic Growth – It contributes significantly to national economies through employment, trade, and industry support.

Raw Materials – Agriculture supplies essential raw materials for industries such as textiles, biofuels, and pharmaceuticals.

TYPES OF AGRICULTURE

Soybean Farming

Rice Farming



Soybean farming in Guyana is a rapidly expanding agricultural initiative aimed at achieving national and regional self-sufficiency in livestock feed production. Soybean farming in Guyana has become a new frontier of large farming, primarily in the vast intermediate savannahs of Region Nine and Region Ten (Tacama Savannahs).

Soybean Farming



SOYBEAN FARMING IN GUYANA

- **Goal:** The primary objective is to reduce Guyana's dependency on imported protein sources and livestock feed, thereby enhancing national food security and potentially becoming a major exporter to the Caribbean region.
- **Expansion:** The government and private investors have collaborated on a significant development program, with targets to cultivate up to 30,000 acres of corn and soybeans by the end of 2025. Initial trial crops in 2021 were successful, leading to large-scale expansion.

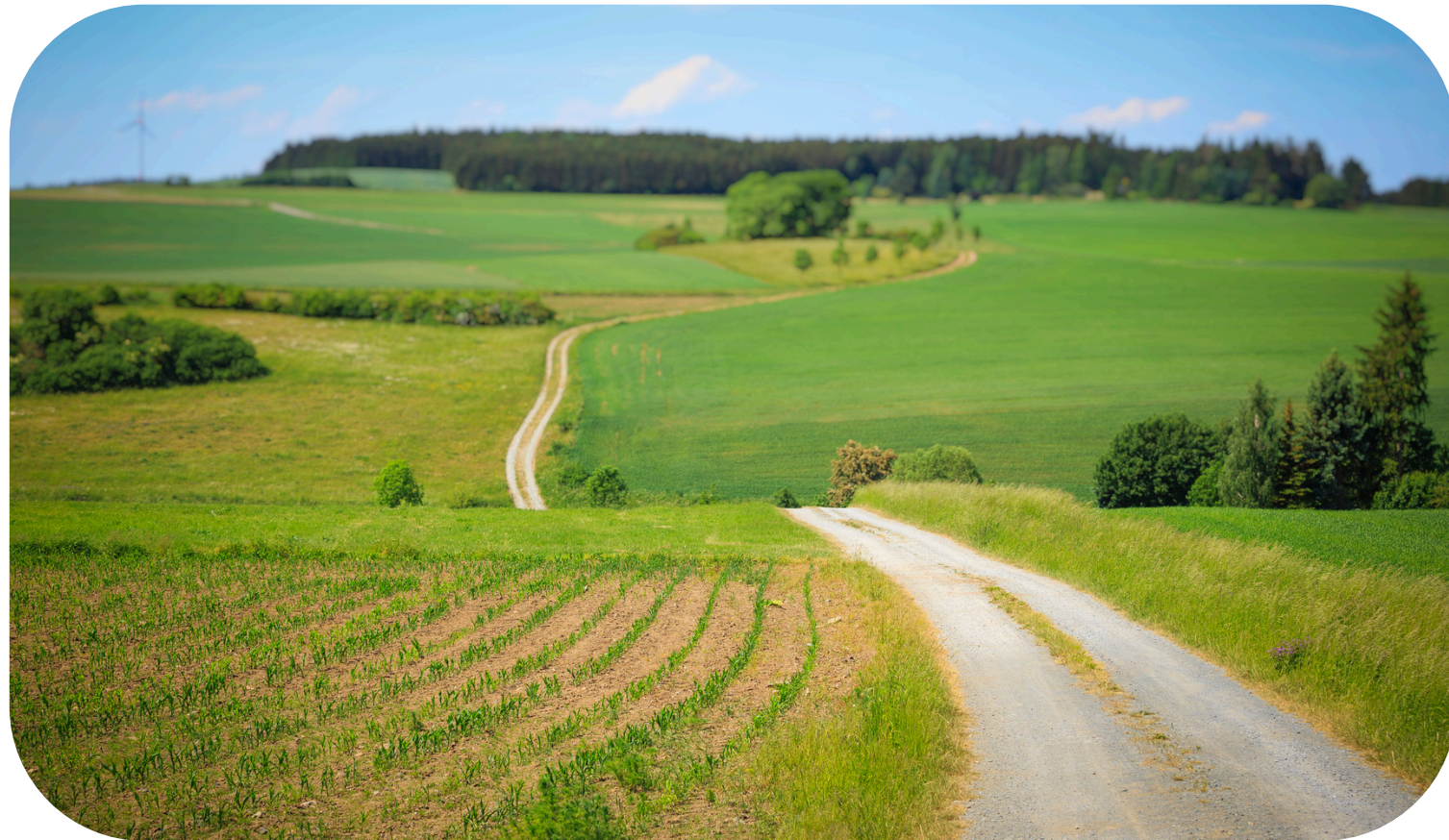
Soybean Farming



SOYBEAN FARMING IN GUYANA

- **Location:** Large-scale production is concentrated in the Intermediate Savannahs (Tacama area, Region 10, and Region 9), which were previously considered largely uncultivated but have potential for agricultural growth.

Soybean Farming



SOYBEAN FARMING IN GUYANA

- **Infrastructure Investment:** The government has invested hundreds of millions of dollars in developing critical infrastructure to support the Soybean industry, including:
- **Rehabilitation** of farm-to-market roads.
- **Construction** of large storage facilities, such as silos (total capacity expected to reach 27,000 tones).
- **Installation** of drying towers and port facilities (a wharf in the Tacama area) for easier transport and export.

RICE FARMING IN GUYANA

Rice Farming



- **Rice farming** in Guyana is a crucial agricultural sector that combines traditional labor-intensive methods with modern techniques to produce rice for both domestic consumption and export.
- **Historical and cultural significance:** Introduced by the Dutch in the 18th century to feed slaves, rice cultivation expanded significantly with the arrival of indentured Indian laborers, many of whom were later given land for farming. It remains a vital part of Guyanese identity, with techniques passed down through generations.

RICE FARMING IN GUYANA

» Rice Farming



- **Economic importance:** Rice is Guyana's largest agricultural commodity export, providing employment for thousands and contributing over 3% to the national GDP.
- **Traditional vs. modern practices:** Historically, rice farming was very labor-intensive, relying on communal labor and manual techniques for planting and harvesting. Today, while many smallholders still use traditional methods, larger-scale farming has incorporated more modern machinery and techniques, aided by the development and release of improved rice varieties by the Guyana Rice Development Board (GRDB).

RICE FARMING IN GUYANA

» Rice Farming



- **Farming cycle:** Farmers typically aim for two crops per year. The first crop is sown late in the year and harvested in spring, while the second crop is planted between April and June and harvested in the fall.
- **Challenges:** The sector faces challenges from factors such as poor irrigation infrastructure and susceptibility to weather conditions and saltwater intrusion, especially given that most rice is grown along the coastal plains.
- **Exports:** Key export markets for Guyanese rice include Venezuela and Portugal.

ROLE OF DRONE IN GUYANA AGRICULTURE

The role of Drones in agriculture is to increase efficiency, production, and sustainability in farming techniques. Modern advancements such as drones, assist farmers in maximizing resources, reducing labor, and increasing yields.

Biotechnology and genetically engineered crops also boost resistance to pests, diseases, and climate change, providing consistent food production.

ROLE OF DRONE IN GUYANA AGRICULTURE

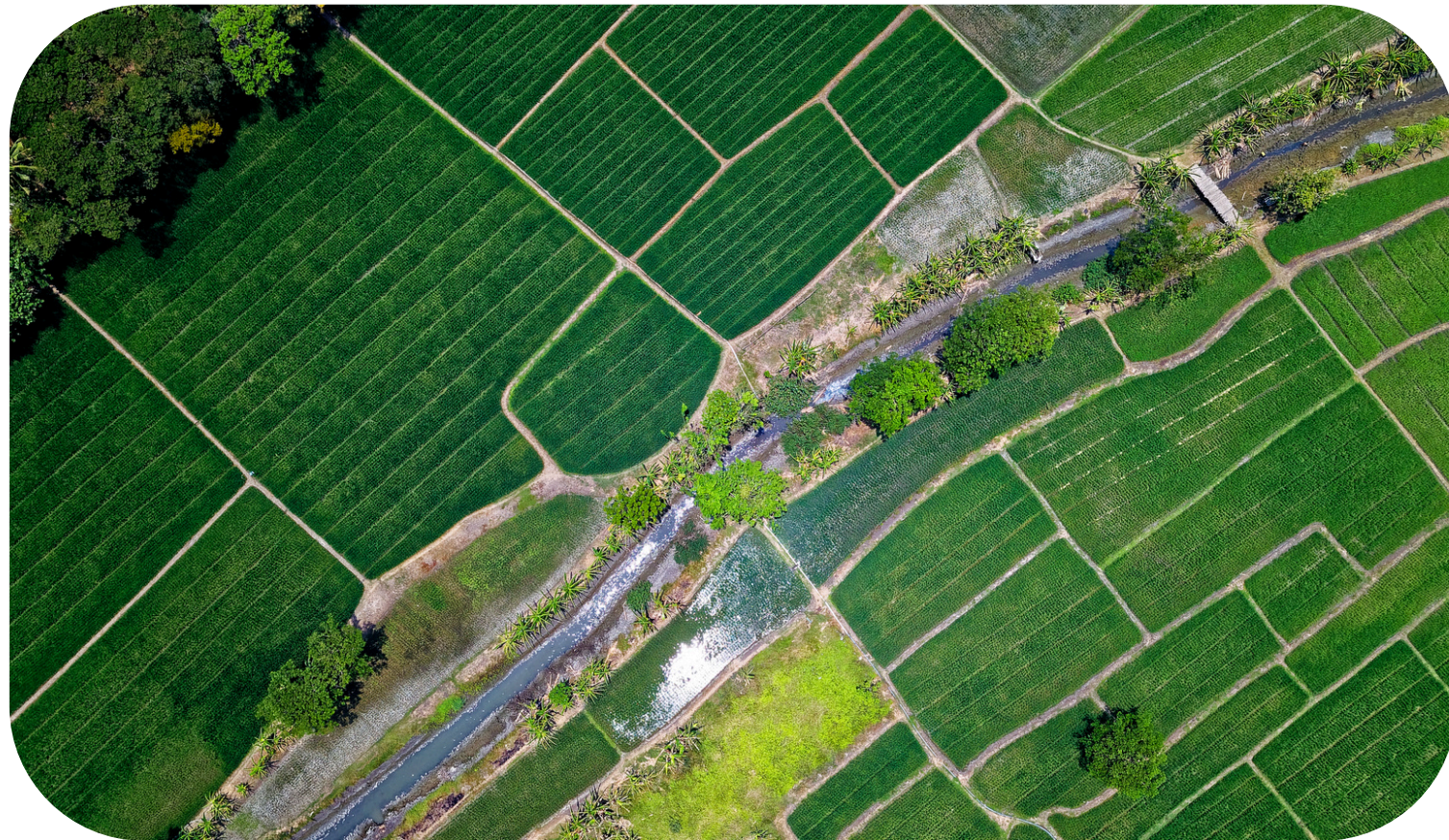
Drones provides efficiency



- **Drones provide efficiency and cost savings:**
- **Precise application:** Drones can apply pesticides and fertilizers precisely where needed, reducing waste, costs, and environmental impact.
- **Labor reduction:** Drones can cover large areas much faster than ground vehicles or manual labor, significantly reducing labor costs and time.
- **Cost reduction:** Drone services can be more affordable per acre than ground sprayers

ROLE OF DRONE IN GUYANA AGRICULTURE

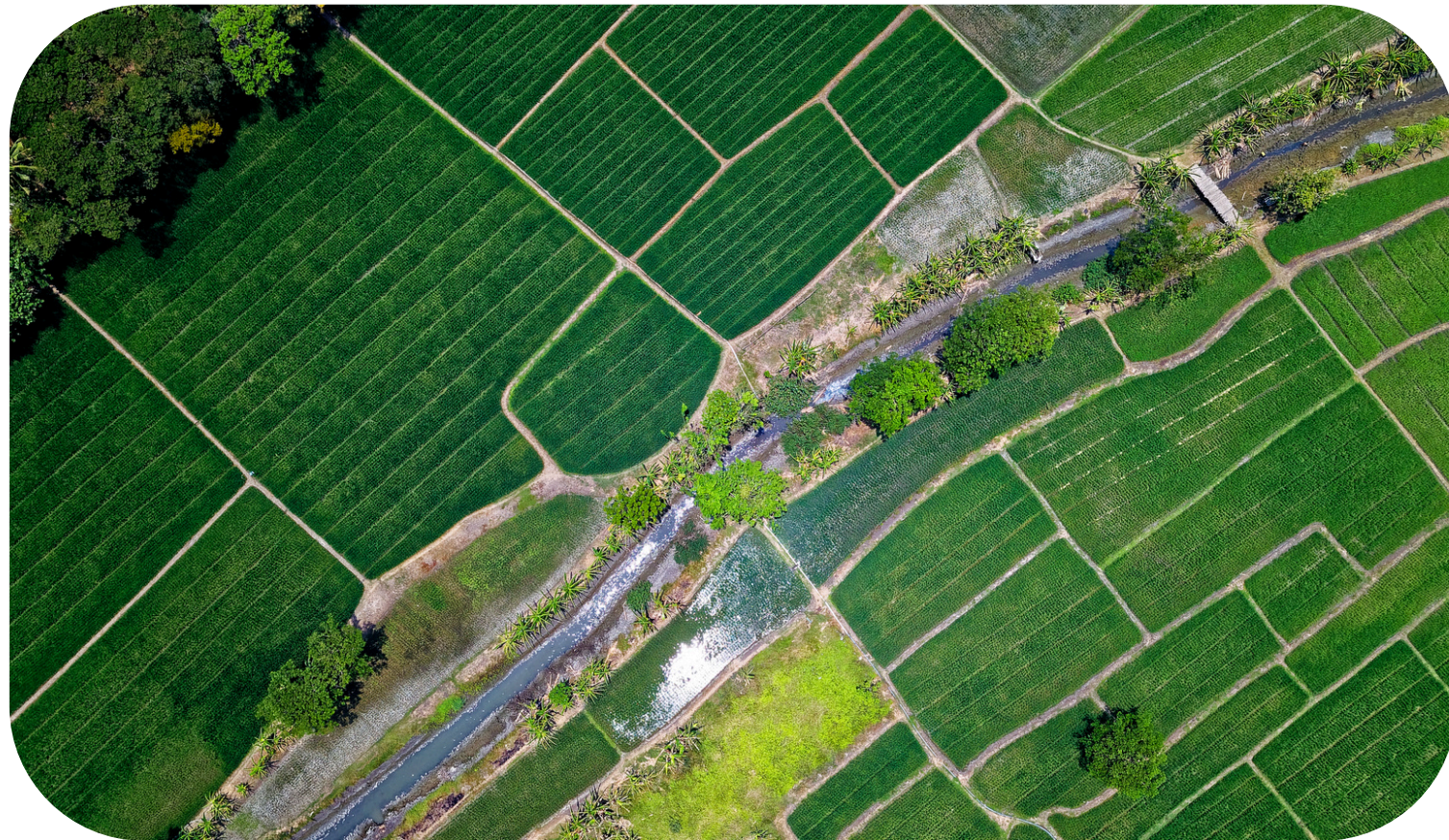
Drones for Farm Management



- **Drones help with crop and farm management:**
- **Data collection:** Drones equipped with sensors can gather detailed data on soil conditions, crop health, and field variability.
- **Crop monitoring:** They create multi-spectral images to monitor crop health, detect diseases or stress early, and track development over time.
- **Farm mapping:** Drones generate detailed maps of farmland, which helps in optimizing land use and planning for planting, irrigation, and other management practices

ROLE OF DRONE IN GUYANA AGRICULTURE

Drones for Farm Management



- **Drones help with sustainability and disaster management:**
- **Environmental** monitoring: Drones can assist in land degradation surveys and other environmental monitoring tasks.
- **Disaster response:** They can be used for disaster response efforts and for tasks like surveying damage after floods.
- **Improved sustainability:** By enabling more precise input application and better management, drones support more sustainable agricultural practices

THE TYPE OF DRONES USED FOR FARMING:

Multirotor Drones:



- **Multirotor drones** (such as quadcopters, hexacopters, etc.) are the most popular type for general agricultural tasks, including in rice paddies, due to their versatility and maneuverability.
- **Key Characteristics:** They can hover in place for detailed inspection or spot application, take off and land vertically (requiring less space), and fly at low altitudes for high-resolution imagery and precise spraying.
- **Applications:** They are ideal for precise application of pesticides, herbicides, and fertilizers, as well as for seeding in specific areas. The downdraft from the rotors helps push the spray droplets into the plant canopy for more effective coverage.
- **Examples:** Specific models include the DJI Agras T40, T30, T10, and the XAG P40

THE TYPE OF DRONES USED FOR FARMING:

Fixed-Wing Drones:



- **Fixed-wing drones** operate more like traditional airplanes and are designed for endurance and speed, rather than hovering.
- **Key Characteristics:** They can cover much larger areas in a single flight and have longer battery life, making them efficient for surveying expansive fields.
- **Applications:** Their primary use is for extensive field mapping and data collection, often equipped with multispectral, RGB, or thermal sensors to generate prescription maps for variable rate applications.
- **Examples:** Models like the senseFly eBee X or WingtraOne Gen II are used for large-scale data collection.

THE TYPE OF DRONES USED FOR FARMING:

Hybrid (VTOL) Drones:



- **Hybrid drones** combine the vertical takeoff and landing (VTOL) capability of multirotor with the long-range efficiency of fixed-wing aircraft.
- **Key Characteristics:** They offer a balance of agility and endurance, making them adaptable to various tasks and terrains.
- **Applications:** They are suitable for operations that require both precise data collection over large areas and the ability to operate in confined spaces.
- **In summary**, the choice of drone depends on the specific task. Multirotor drones are most used for operational tasks like spraying and seeding in rice farming, while fixed-wing drones and hybrids are generally used for large-scale monitoring and mapping.

CHALLENGES IN GUYANA AGRICULTURE



Agriculture has a number of challenges that have an impact on global production, sustainability, and food security. Farmers face challenges such as climate change, unpredictable weather, soil deterioration, and water scarcity, all of which impact agricultural production and animal health. Pests, illnesses, and abuse of chemicals all endanger agricultural systems.

CONCLUSION

In conclusion, agriculture and farming are the foundations of human civilization, supplying vital food, raw materials, and livelihoods for worldwide societies. Despite facing issues like as climate change, resource constraints, and market pressures, the industry continues to evolve via the implementation of Drone technologies and sustainable practices.

FOOTNOTE

Footnote:

1. AI, Drone, Intelligent Analysis Guyana GDF

www.hgptv.com

2. Skyfront

<https://skyfront.com>

THANK YOU



www.cybermcbean.com

YouTube: www.youtube.com/watch?v=ikq3Qr32Few