DRONE TECHNOLOGY IN AGRICULTURE – SCIENCE & TECHINOLGY

News: Farmers in Bhagthala Khurd, Kapurthala, and Amritsar are using drones for spraying pesticides on their maize and moong crops.

What's in the news?

- The Indian drone market for agriculture is in its initial stages but shows promising growth.
- In Punjab, 93 out of 100 drones made available to farmers by the **Indian Farmers Fertiliser Cooperative (IFFCO)** under the **Centre's 'NAMO Drone Didi' scheme** are already operational.
- These drones cost Rs 16 lakh each, and come equipped with 12-litre water tanks.

DRONES

- Drones, or unmanned aerial vehicles (UAVs), are computerized flying vehicles that can operate autonomously or be controlled remotely.
- Drones use GPS for route planning and navigation.
- They can be managed through remote operators for precise control.

Drones can be equipped with various sensors, including:

1. Spectral Cameras: For capturing detailed images across different wavelengths.
2. Thermal Imaging Units: For monitoring temperature variations in crops.
3. LiDAR Systems: For creating high-resolution maps and 3D models of fields

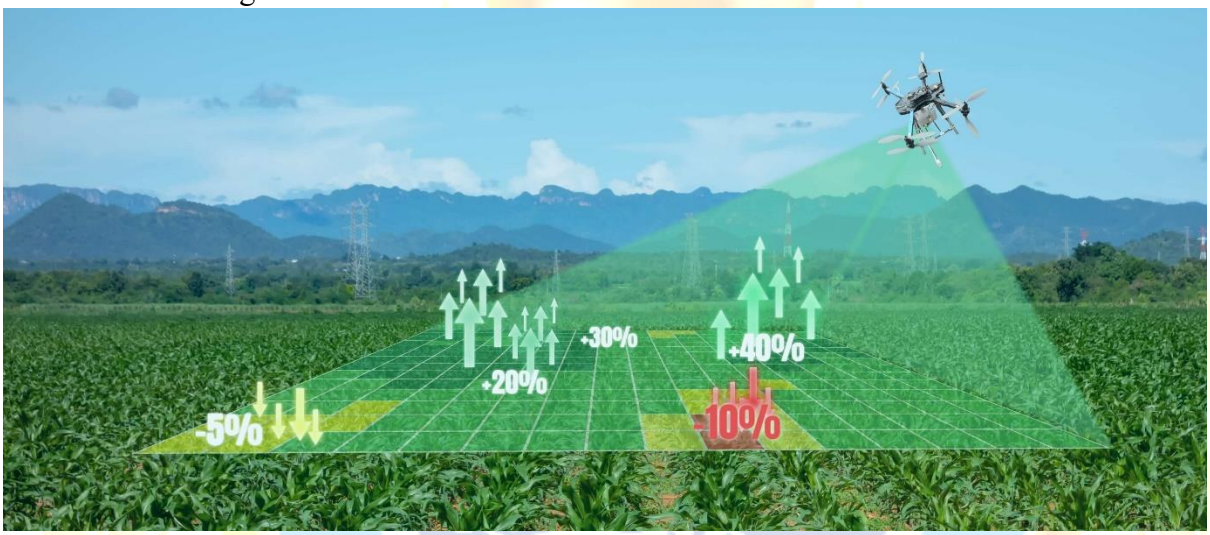
Benefits

- **Health Protection:** Drones reduce farmers' direct exposure to harmful pesticides, which can lead to serious health issues like cancer and kidney ailments.
- **Efficiency**: Drones complete spraying tasks in 5-7 minutes per acre, compared to several hours manually.
    - They also ensure uniform application, improving crop yields.
    - Data from drones helps identify areas needing attention, which can lead to improved crop yields and increased profits.
- **Nano Fertilisers**: Drones handle nano fertilisers efficiently, ensuring uniform application of small quantities that are otherwise challenging to spread manually.
- **Pest Control:** Drones provide timely and effective application during pest infestations like pink bollworm, locusts, and whiteflies.
- **Environmental Benefits:** Drones can increase nutrient absorption from nano fertilisers to up to 90%, reducing runoff and pollution.
    - Leaf-based application is less polluting than soil-based methods.
- **Water Conservation:** Drones cut down water use by up to 90% compared to traditional pesticide application methods.
- **Reduced Costs:** Drones minimize the need for manual labor and reduce pesticide and chemical usage, lowering overall costs.

- **Additional Uses:** Drones are also being used for dropping seed balls (soil and cow dung balls with seeds) for potential reforestation projects.

Challenges of Adopting Drone Technology

- **Job Loss:** The use of drones may lead to reduced demand for manual labor, impacting job opportunities for laborers.
- **Lack of Knowledge and Training:** Farmers may lack the necessary skills and training to operate drones effectively.
- **Cost**: The high cost of drones can be a barrier for many farmers.
- **Regulatory Barriers:** There may be regulatory challenges that complicate the adoption of drones in agriculture.



Initiatives:

- The Digital India campaign aims to improve digital infrastructure and provide training.
- Organizations like the Indian Council of Agricultural Research (ICAR) are promoting precision agriculture technologies, including drones.
- **Production linked incentive (PLI) scheme:** This scheme offers a considerable financial push of Rs. 120 crore (US$ 14.39 million) to incentivise domestic drone manufacturing and reduce import reliance.
- **Sub-mission on agricultural mechanization (SMAM**): This initiative provides financial aid to farmers who purchase drones, making this technology more accessible.
- The Government of India has launched the **Namo Drone Didi Scheme** with an aim to empower the women Self Help Groups (SHGs) and to provide access to modern agricultural technology.
- **Support and Training**: Efforts are being made to provide necessary training and support to farmers to overcome barriers to drone adoption.

Way Forward

- Drone technology has the potential to revolutionize agriculture by enhancing efficiency, yields, and cost-effectiveness.
- Drones may revolutionise pesticide or fertiliser application in Punjab fields, which has traditionally been carried out manually either by hired labourers or the farmers themselves.

- Therefore It is crucial for farmers and policymakers to collaborate to address challenges and ensure that the benefits of drones are realized while mitigating any concerns.

Source: https://indianexpress.com/article/cities/chandigarh/new-farm-revolution-drone-technology-game-changer-agriculture-sector-sustainable-eco-friendly-farming-9545546/