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IDENTIFICATION AND DATA CAPTURING  
TOOLS FOR SMART FARMING**

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# RFID-A UNIQUE AUTOMATIC IDENTIFICATION AND DATA CAPTURING TOOLS FOR SMART FARMING

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## INTRODUCTION

**R** RFID or Radio-Frequency Identification technology uses digital data, which is encoded in RFID tags and read by a reader via radio waves. RFID is comparable to barcoding in that data from a tag is acquired by a device that stores the data in a database. RFID has the advantage over barcodes in that the RFID tag data can be read without being seen, whereas barcodes must be seen so that an optical scanner can read it. By placing RFID tags into agricultural products' packages, farmers can determine the health condition of the product, making it convenient for processing companies to concurrently add information on the tag, such as enterprise codes, the processing date, batch processing, and package weight. Radio frequency

identification (RFID) transmits product information using radio waves. The agri-food industry is beginning to use this technology to enhance food quality, safety and traceability.

RFID is part of a technology that is referred to as Automatic Identification and Data Capture (AIDC). AIDC automatically identifies an object, collects data about the object, and enters that data directly into computer systems without human intervention. Basically, RFID systems consist of three parts: an RFID tag, an RFID reader, and an antenna. A RFID tag contains an integrated circuit and an antenna, which is used to transmit data to the RFID reader, which then converts the radio waves into a practical form of data. This information is transferred through a communications interface to a main computer system, where the data is stored in a database and analysed later. Items that are barcoded can easily be upgraded to a RFID system. RFID offers many improvements over the barcode. An RFID tag can hold much more data about an item than a barcode. Also, RFID tags are not susceptible to damages that often happen to barcode labels, like tearing and smudging. RFID labels are used in inventory management, asset tracking, controlling access to restricted areas, ID Badging, and supply chain management. Radio Frequency Identification (RFID) technology identifies an object by radio frequency without any contact. It has been successfully applied in many industries like supply chain management, retail management, logistics management, security supervising, traffic supervising, and more.



## RFID IN AGRICULTURE

There are many uses for RFID technology in agriculture. Bales of hay can be tagged, capturing the date harvested, the field where it was harvested, the temperature, weight, moisture level and the nutritional information to be captured and stored. RFID has many potentials that busy farmers are seeking. RFID is non-contact. It has a high identification rate, mass memory, secure access, and can be integrated into an existing system without difficulty. Data collection in greenhouses is also doable with specialized RFID tags and readers, which are designed for warm and humid conditions. The employment of RFID makes it possible to monitor the chain of perishable food and the expansion of new applications in fields like environmental monitoring, irrigation, specialty crops and farm machinery. RFID technology constitute a farm monitoring system whereby farmers can now protect their crops from pests. Also, livestock such as cattle can be monitored using wireless sensor networks. One common application is the scanning of codes printed on food packaging, linking the barcode to a food category or a certain batch. This method of tracing is cheap and easy to carry out. RFID is a great method for agri-food supply chain traceability. RFID solutions, including tags for agricultural can help farmers overcome the common challenges that they face every day.

## FUTURE OF RFID IN AGRICULTURE

The global RFID tags market for the agricultural sector is expected to give a CAGR of more than 11% from 2017 to 2021. Strong governmental support to farmers to adopt smart agricultural practices and technologies can help achieve that number. RFID devices can be integrated with Wi-Fi and RTLS that can assist farmers with traceability issues. At present, advanced RFID semiconductor devices are being developed for a few customers. These devices help in automating the farming process, making the farm more efficient, by managing the time, controlling access to the property, managing crop inventory, and offering better equipment maintenance. RFID cannot work alone, but needs the use of big-data capable IoT software platform to collect, filter, store and analyse the farm data. Growers are using new technology methods to deliver as many as five crops per year by tracking growing conditions such as sunlight levels, humidity, temperature, and soil chemistry. The IoT platform can provide the growers with the ability to track these variables in real-time so that they can control and improve growing techniques.

## REFERENCES

- [1] <https://www.farmpally.com/rfid-technology-in-agriculture>