

TECH SCAN

AGRICULTURAL TECHNOLOGIES



Agri-tech, or agricultural technologies, refers to advancements in farming and food production. To address issues like productivity, sustainability, and climate change in agriculture, they make use of developments in biotechnology, robotics, data analytics, and artificial intelligence.

Agri-tech has multiple purposes. It minimizes the impact on the environment while maximizing crop production through resource optimization. Additionally, it increases productivity through automation and precision farming, raises

food safety and quality with sophisticated monitoring systems, and gives farmers the ability to make data-driven decisions.

Agricultural technology patents encourage innovation by giving innovators exclusive rights, creating a competitive atmosphere that promotes ongoing development. In order to speed up adoption worldwide, it facilitates technology transfer and licensing agreements while safeguarding the investments made by businesses in the creation and commercialization of these technologies.



INNOVATION TIMELINE

2001

The term "Precision agriculture" gains traction as yield monitors and variable rate application technologies become more prominent, building the foundation for data-driven farming.

2003

Advanced yield monitors enhance the accuracy of agricultural production data during harvest, supporting more informed management decisions.

2004

Further developments in Variable Rate Technology (VRT) enable more precise, real-time input application tailored to specific field conditions.

2005

GPS integration in agricultural machinery revolutionizes field navigation, enabling greater efficiency and precision in farming operations.

2006

The adoption of remote sensing technologies (satellite/aerial imagery) for crop monitoring and farm management becomes more widespread, allowing for early detection of crop stress and variability.

2008

Drones begin to be used for aerial imaging and mapping, allowing faster and more granular analysis than traditional remote sensing methods.

2010

Advances in remote sensing further improve comprehensive crop monitoring and early intervention strategies.

2011

The development of precision agriculture software platforms enables data-driven, farm management decision-making.

2012

Major advancements in sensor technology allow for high-resolution environmental and soil monitoring, supporting site-specific management.

2013

Introduction of agricultural robots for repetitive tasks such as harvesting and weeding, marking the start of wider farm automation.

2014

Launch of IoT-based smart irrigation systems improves water efficiency, adapting water delivery in real time based on crop needs.

2015

Robotics and automation take a more prominent role in tasks like harvesting, weeding, and monitoring, further reducing labor and boosting precision.

2016

Precision livestock farming advances with the use of wearable sensors for animal health and productivity monitoring.

2017

Introduction of autonomous vehicles (self-driving tractors, harvesters) in farming operations.

2018

Innovations in indoor farming and the proliferation of hydroponics and vertical farming support urban agriculture and resource-efficient production.

2019

Adoption of blockchain in agriculture begins to ensure supply chain transparency and traceability from farm to table.

2020

Major advances in gene editing, particularly CRISPR, accelerate crop improvement and resilience.

2021

Integration of 5G technology boosts IoT connectivity and real-time data sharing on farms.

2022

Innovative deployment of AI and robotics in vertical farming further enhances automation and yield optimization.

2023

CRISPR-Cas9 and next-generation gene editing technologies start to fundamentally transform crop breeding and genetic improvement efforts

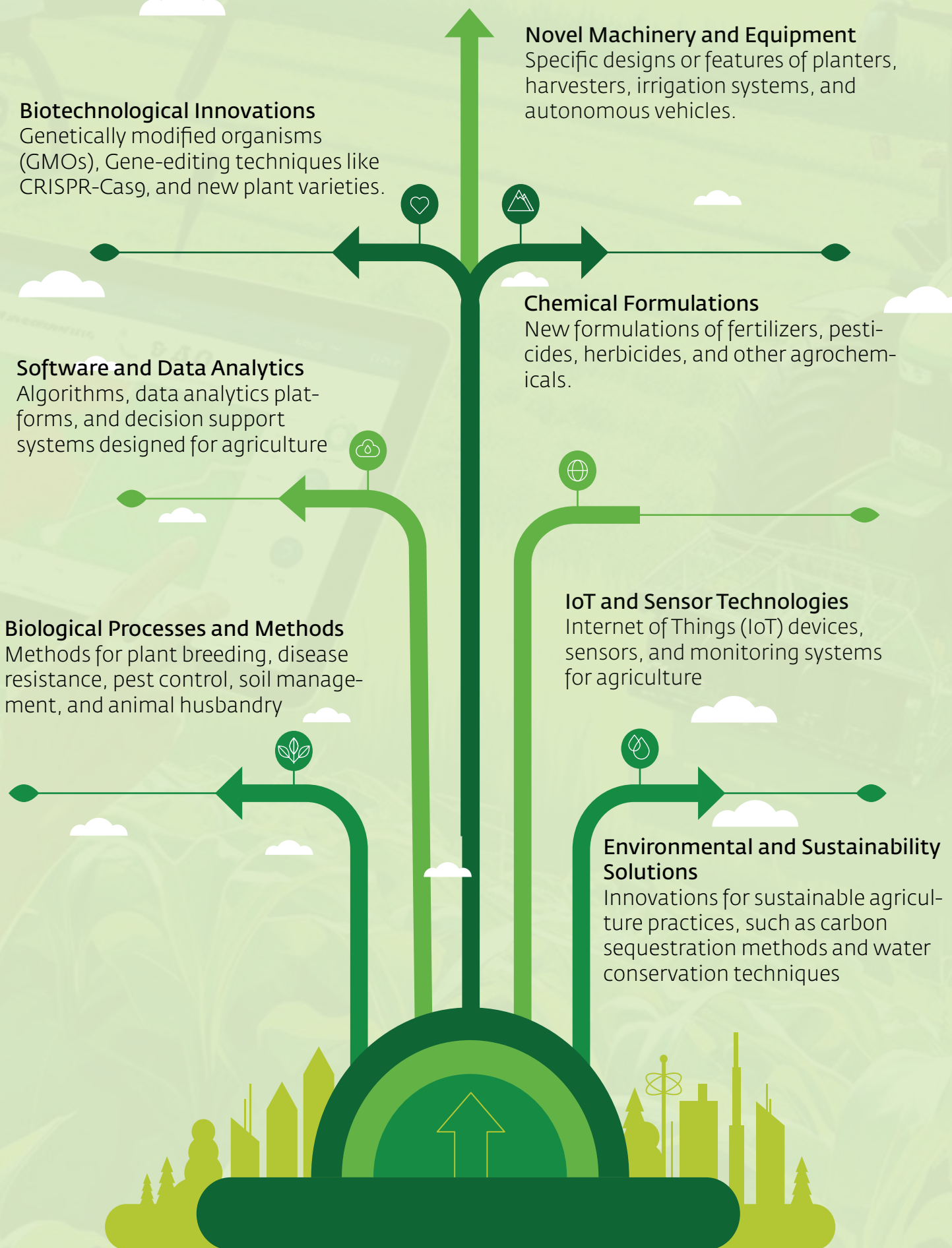
2024

AI-powered farm advisory and high-res satellite monitoring enable precise crop management; robotics, drones, and biodegradable bio-inputs boost sustainable automation.

2025

AI-driven vertical farming and widespread autonomous equipment, drones, and eco-friendly inputs advance efficient, climate-smart agriculture.

PATENTABLE ASPECTS



PATENT STATISTICS

80

CHINA AGRICULTURAL
UNIVERSITY

75

SAVEETHA INSTITUTE OF
MEDICAL & TECHNICAL
SCIENCES

70

LPU - LOVELY
PROFESSIONAL
UNIVERSITY

57

NORTH WEST AGRICULTURE
& FORESTRY UNIVERSITY

49

HOHHOT BRANCH OF
CHINESE ACADEMY OF
AGRICULTURAL MECH SCIENCES

47

REVA UNIVERSITY

46

JIANGNAN UNIVERSITY

41

FEDERAL SCIENTIFIC
AGROENGINEERING
CENTER VIM

45

GUANGXI ZHUANG
AUTONOMOUS REGION
ACADEMY OF AGRICULTURAL
SCIENCES

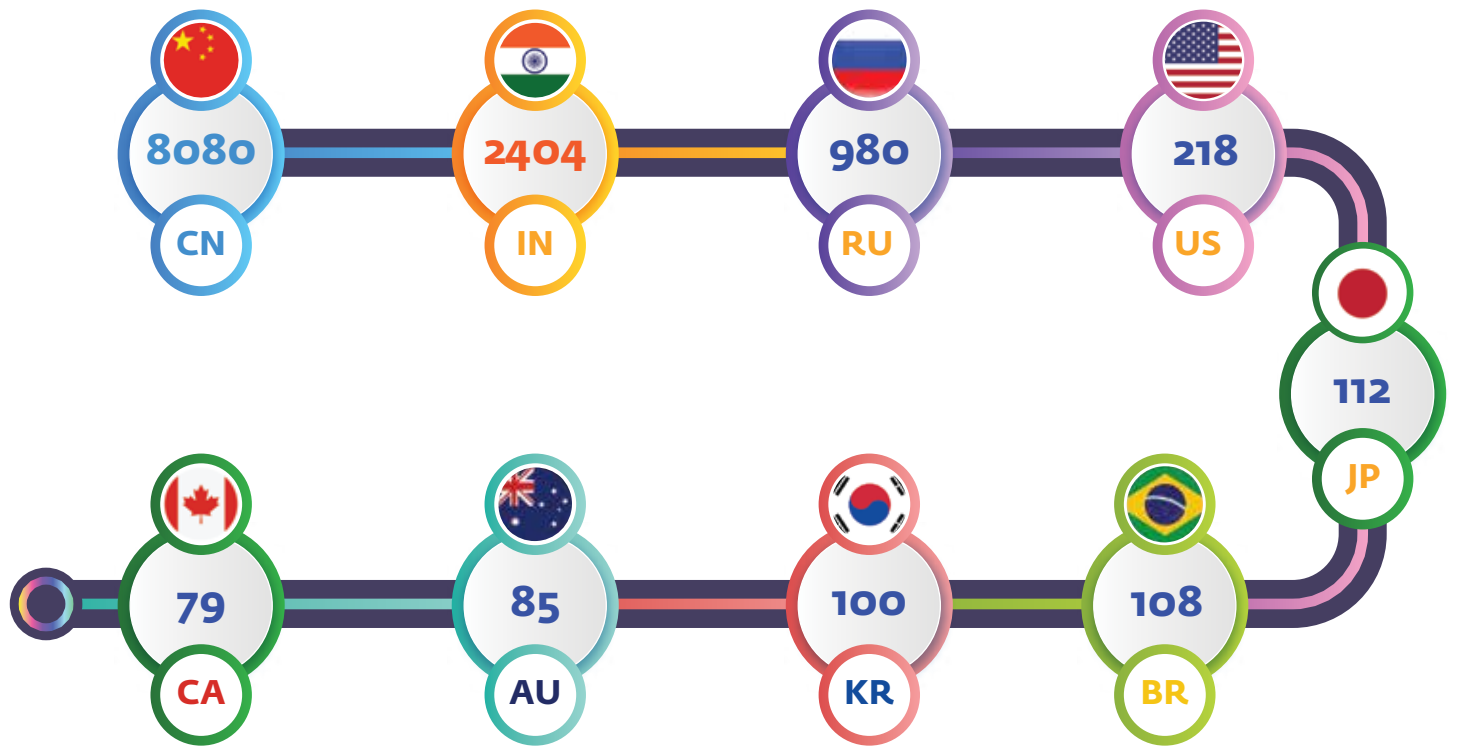
41

KUBAN STATE
AGRARIAN UNIVERSITY

Database: Questel Orbit

Data Range: 01/01/2020 - 31/07/2025

PATENT LANDSCAPE



Database: Questel Orbit
Data Range: 01/01/2020 - 31/07/2025

YEAR WISE PATENT FILING TREND

2025

1095

3191

2024

3051

2023

2508

2022

2626

2021

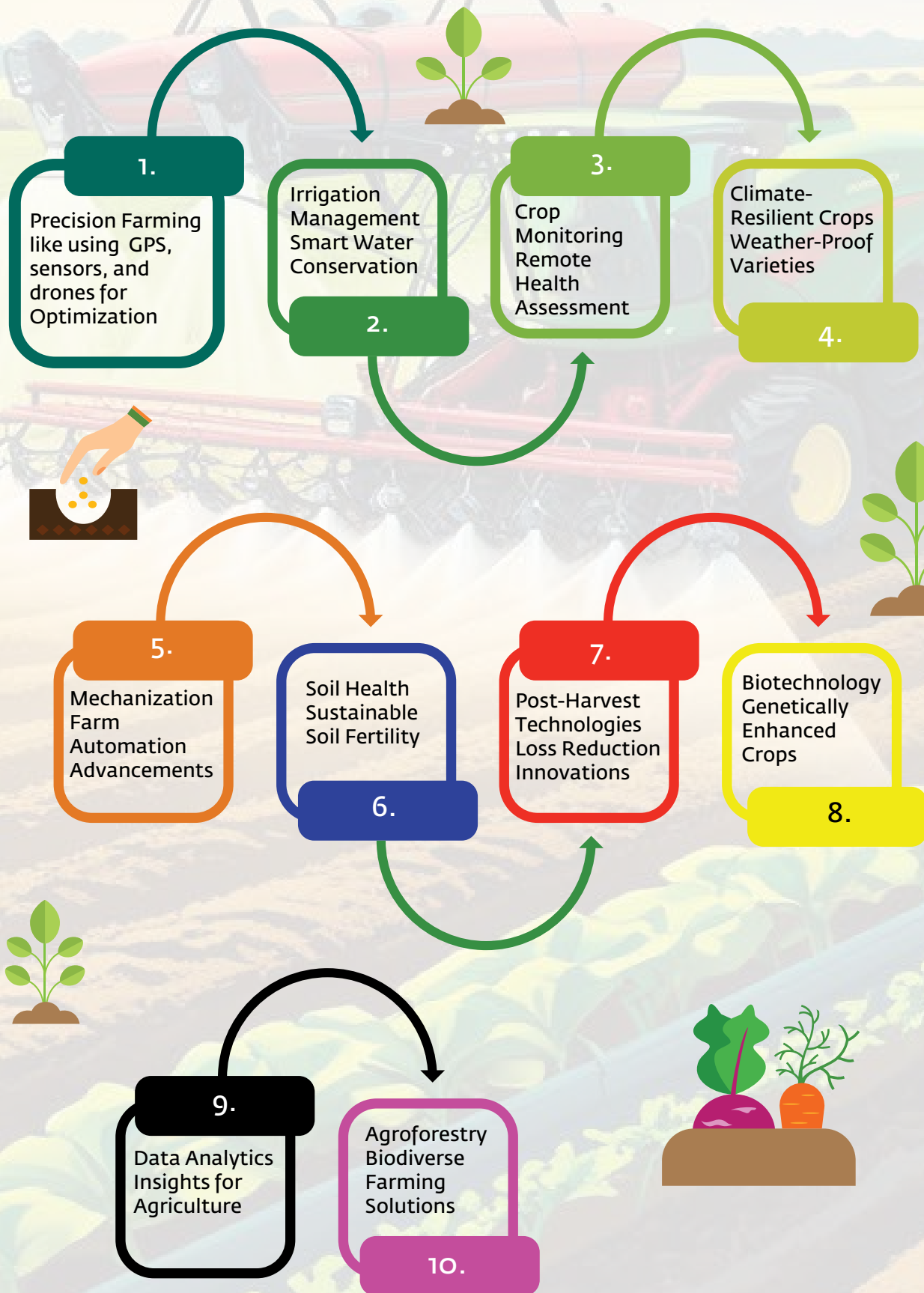
2020

3001

NOTABLE INNOVATIONS

Patent Application	Priority date	Title	Assignee
IN202541065179	July 09, 2025	Ai-enabled platform for improving English proficiency and business management in cross-cultural trade	Banerjee Usnis Dsouza Zeena Flavia Gayathri T Jetlin C P Joshi Niravkumar Rameshchandra
IN202341005584	Jan 01, 2023	IoT And Cloud Based Drone Technology for Sustainable Agriculture to Monitor Soil Analysis for Field Planning, Crop Monitoring, Irrigation Management, Crop Health Assessment, Livestock Monitoring, And Disaster Management, Transporting Goods Using Machine Learning Algorithms	Dr. Mukta Jagdish
IN202331003879	Jan 19, 2023	Precision drone agriculture farming using artificial intelligence (AI) techniques	Nayak Bijaya Bijeta
IN202311038900	June 06, 2023	Modern Agricultural Practices and Analysis of Socio-Economic and Ecological Impacts of Modern Agriculture On Environment And Sustainable Agriculture	Dr. Anurag Shrivastava
IN202341053424	Aug 09, 2023	Smart Agriculture Using IoT and Its Enabled Technologies	Dr. A. Senthilrajan
IN202341081710	Dec 01, 2023	Autonomous Hydroponic Farming System with Remote Monitoring	KPR Institute of Engineering and Technology
IN202241051450	Sep 08, 2022	Artificial intelligence and IoT based smart agriculture management system to prevent and detect crop status, irrigation, soil preparation, and pest detection to get higher yield for formers using machine learning and cloud computing	Aradhana D
IN202241068395	Nov 28, 2022	Methods For Precision Agricultural Crop Selection Using IoT-Based Surveillance	G. Keerthi, Associate Professor / Department of CSE, Aurora's Technological & Research Institute
IN202121021172	May 10, 2021	A sensor fusion precision technology in agricultural and its method and controlling parameters	Ahmed Mohammed Yaseen
AU2021106131	Aug 20, 2021	A Block Chain Based System for Agriculture	Vishwakarma Institute of Technology
WO2023/082043	Nov 09, 2021	Humidification and ventilation device for use in eco-technological agriculture	Hunan Dajiang Agricultural Technology

WHITESPACES



If you would like to learn more about any of these areas or have specific questions, we're here to provide further information and insights. Our team is dedicated to driving progress and staying at the forefront of Agriculture Technologies.

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