

NEW FARMERS CONTRIBUTE INTELLIGENCE & POWER TO CHINESE MODERN AGRICULTURE

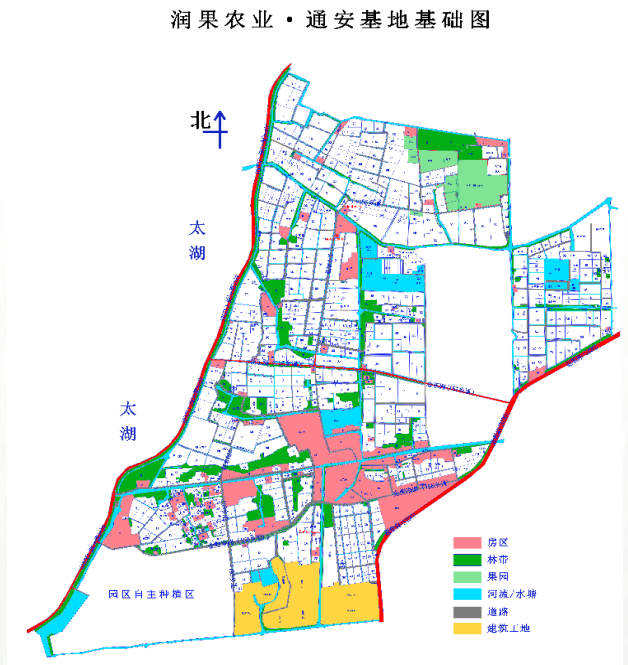
WEI QIAO

**CHAIRMAN, ZHENJIANG NEW DISTRICT YONGXING
FARM MECHANIZATION PROFESSIONAL COOPERATIVE;
CHIEF EXPERT, JIANGSU RUNGUO AGRICULTURAL
DEVELOPMENT CO. LTD., CHINA**

28TH NOV. 2023

New Models of Modern Agriculture Via Technology

- Jiangsu Runguo Agricultural Development Company integrates cultivation, planting, management, harvesting, drying, warehousing, processing and sales.
- It is an agricultural technology-based company. Our company grow rice, wheat and rapeseed.
- Provide our customers with socialized services throughout agricultural planting process.
- 2 plant bases: The Zhenjiang base (1200 hectare) and Suzhou base (416 hectare)



New Models of Modern Agriculture Via Technology

A Whole Industry Chain Operation Model - beginning from soil tillage to serving food at the table



Rice Seeding Raising



Mechanized Rice Transplanting



Plant Protection Drone



Plant Protection



Harvesting



Straw Bundling



Intelligent Dryer



Rice Processing Factory

New Models of Modern Agriculture Via Technology

"Full-process mechanization and comprehensive agricultural service"
& "Excellent Cases of Smart Agriculture Construction"
(from of the Ministry of Agriculture and Rural Affairs of China)



“Who will farm in the future and how to farm well?”



谁来种地???

Now, agricultural development in China is undergoing transition. The business model of modern agriculture is an effective approach to resolve the above-mentioned contradictions.

Around the scale of the rural land circulation, how to farm? How to ask for benefits from scale? We carry out various work from the aspects of cost saving, reducing labor intensity, improving farming efficiency, and how to work better in agriculture through mechanization/information technology.

本期聚焦

2020年7期 | 总第134期

数字农业之“春江水暖鸭先知”

——大学生农机合作社理事长的实践与观察

本刊记者 刘华彬

2019年5月，中共中央办公厅、国务院办公厅印发了《数字乡村发展战略纲要》；12月，农业农村部、中央网络安全和信息化委员会办公室印发了《数字农业农村发展规划（2019—2025年）》。一时间，数字之风乍起，吹皱了农业一池春水。数字农业怎么样？如何发展？“鞋合不合适，只有脚知道”，在中国农机化协会大学生从业合作社理事长工作委员会的大力支持下，本刊记者采访了6位大学生农机合作社带头人。希望通过了解他们的探索与观察，能帮助广大合作社在数字农业的道路上行稳致远。

孙振中，镇江新区富农农机机械化专业合作社负责人
数字农业破解“谁来种地”



孙振中（右）

孙振中，中国科学院生态学博士，北京大学博士后。2017年，孙振中全职加入富农农机机械化专业合作社，现担任合作社副理事长、中国农机化协会大学生从业合作社理事长工作委员会秘书长、江苏苏合农业社会化服务有限公司副总经理。2017年，富农农机合作社建成单次装机能力1500吨的粮食烘干系统，托管周边5万亩耕地，被认定为“全

国农机合作社示范社”；2018年，合作社加入江苏润果农业发展有限公司在建的大田数字农业建设试点项目，向智慧农机领域发展；2019年10月，合作社入选全国首批“全程机械化+综合农事”服务中心典型案例。

目前，我国农业处在发展的转型期，人口老龄化和城镇化造成农业从业人口年龄偏大，且兼业化严重。如何解决这一问题，成为关系到民生的大事。我本科到博士后期间一直学的是农业相关专业，涵盖了园艺、农学、农学、土壤学、生态学、自然地理学、环境科学等，后来又自学农业机械。读博士期间，我参与过“18亿亩耕地红线”“中国空心村”等课题的研究，当时我们预测农业的瓶颈期是10年，那现在可能也就剩两三年时间了。今年初，有一位60多岁的村支书特意找到我，说村里一帮70岁左右的老人实在种不了地了，让我帮忙想想办法，因此解决“谁来种地”问题非常迫切。我觉得农业全程机械化、农田建设宜机化可以缓解“谁来种地”问题，而农机智能化、智慧农业、农业产业化和社

会化服务能解决“谁来种地”问题。

我们合作社从2012年起就服务江苏润果农业发展有

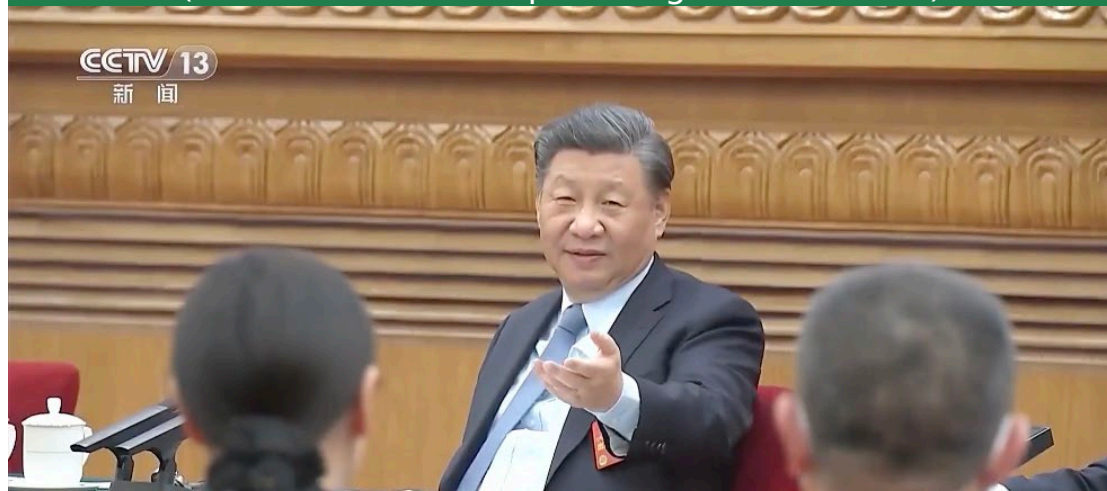
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《中国农民合作社》周刊

本期聚焦

New Models of Modern Agriculture Via Technology

How To Deal With The Issue Of The Agriculture, The Countryside And Farmers As A New Farmer In The New Era
(the 14th National People's Congress on March 5)



Suggestions On How To Promote The Solution Of The Problem Of Who Will Farm And How To Farm Well In The New Era
(the 5th meeting of the 14th National People's Congress Standing Committee)



New Models of Modern Agriculture Via Technology

Cooperating with scientific research institutions such as the Institute of Intelligent Machinery of the Chinese Academy of Sciences, we applied for piloting the field digital agriculture project initiated by the Ministry of Agriculture and Rural Affairs of China. And we successfully became one of the pilots with with our space-air-ground integrated technology aiming at empowering agricultural production.

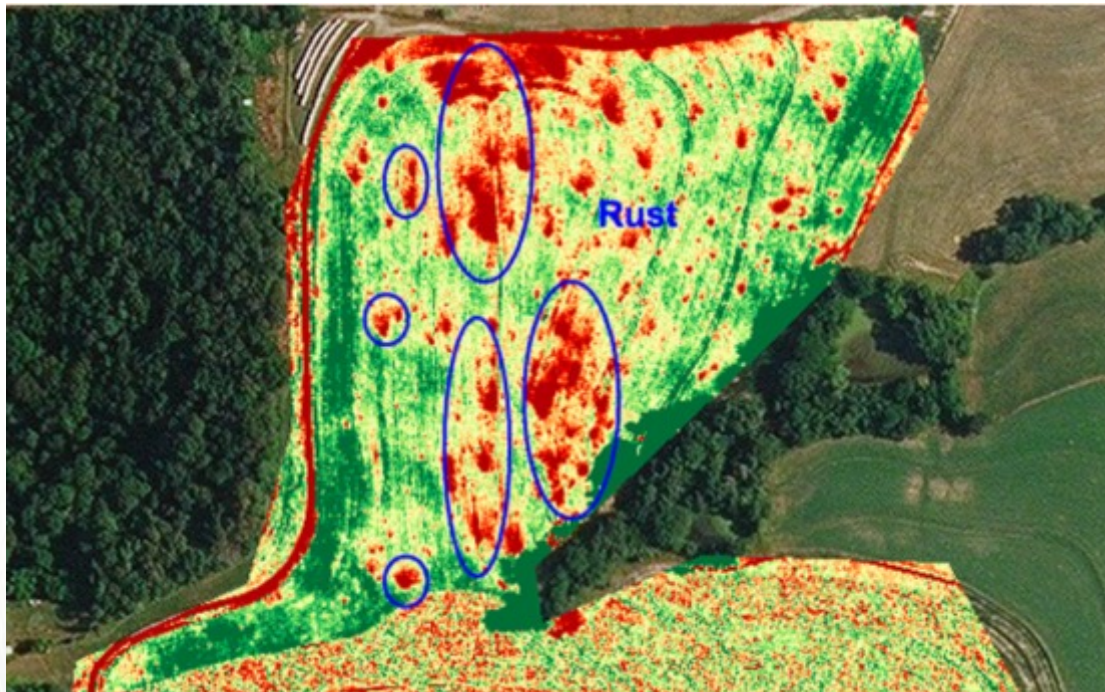


- Supported by big data, Internet of Things (IoT), mobile Internet, cloud computing;
- Use agricultural intelligent equipment (robots) ;
- Aiming at unmanned, less manned, precise and intelligent in the whole process of agricultural production.

New Models of Modern Agriculture Via Technology

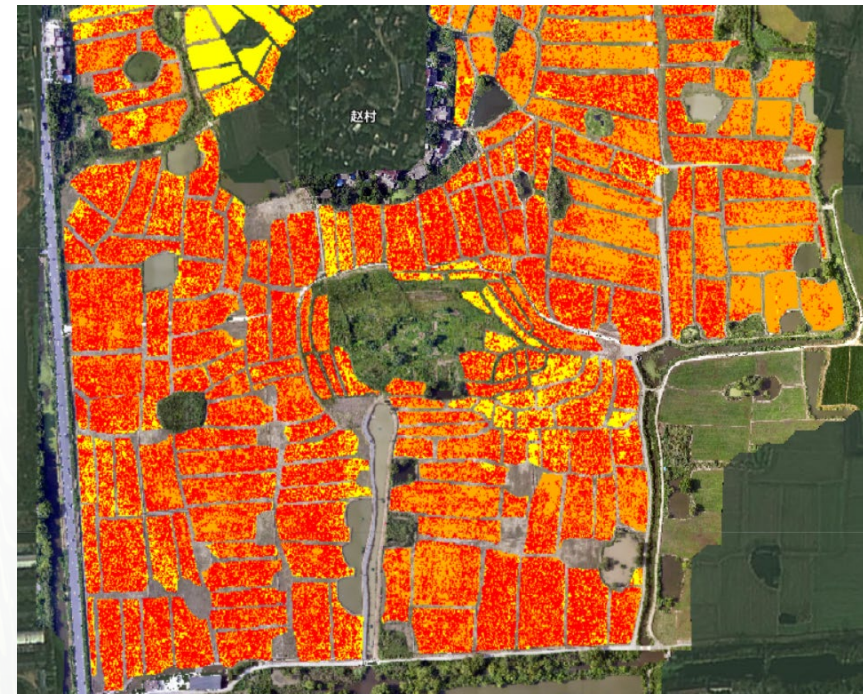
Through satellite and UAV' s remote sensing, crop nutrient distribution maps, pest and disease trend early warning maps, soil moisture maps, crop yield prediction maps, crop stress degree maps, crop maturity, etc. are dynamically generated during the important growth period of crops.

- UAV remote sensing - obtain agricultural information accurately and rapidly



Rust situation in wheat fields
(red areas indicate areas with severe infection)

- Satellite remote sensing--quickly obtain crop information over a large area



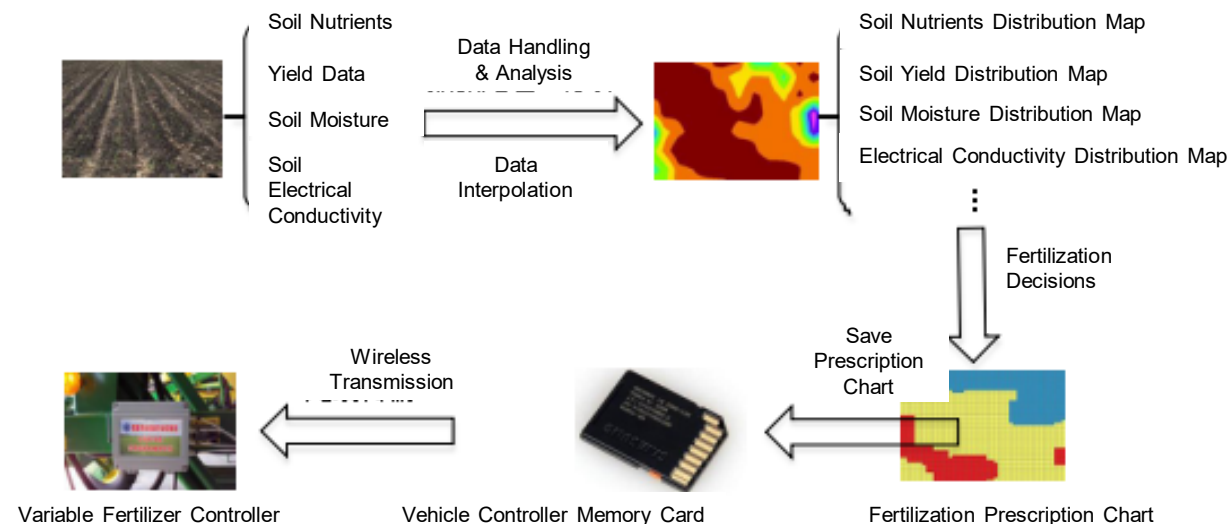
Maturity Monitoring

New Models of Modern Agriculture Via Technology

Basics: Soil Fertilizing Prescription Maps & Satellite Positioning

Equipment: Agricultural machinery variable controller

Execution: Real-time and precisely control the amount of fertilizer and pesticide applied in each field, which is based on variable rate fertilization and pesticide application technology.



Fertilizer Prescription Diagram



Variable Rate Fertilizer Spreader



Fertilizer Control Terminal



New Models of Modern Agriculture Via Technology

Automatic-Driving Agricultural Machinery and Equipment

Quality Monitoring of Agricultural Machinery Operations

- Satellite positioning
- Machine operating parameters



Driverless Agricultural Machinery

- Self-driving
- Route planning



Work Accurately
&
Highly Efficient
Management

Wireless Communication

- Wireless Data Sending and receiving

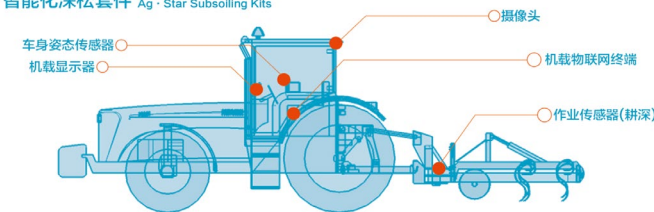


Remote Scheduling

- Remote Mission Planning
- Navigating route delivery



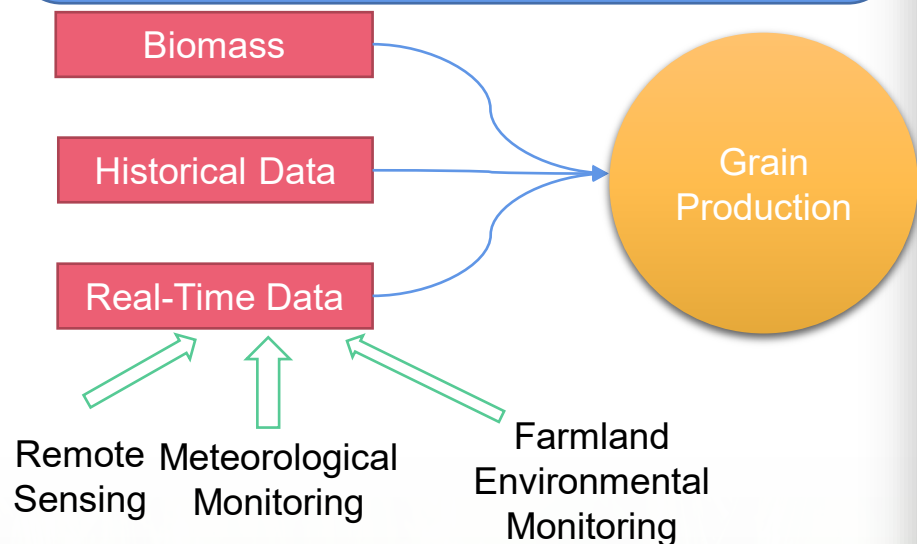
智能化深松套件 Ag · Star Subsoiling Kits



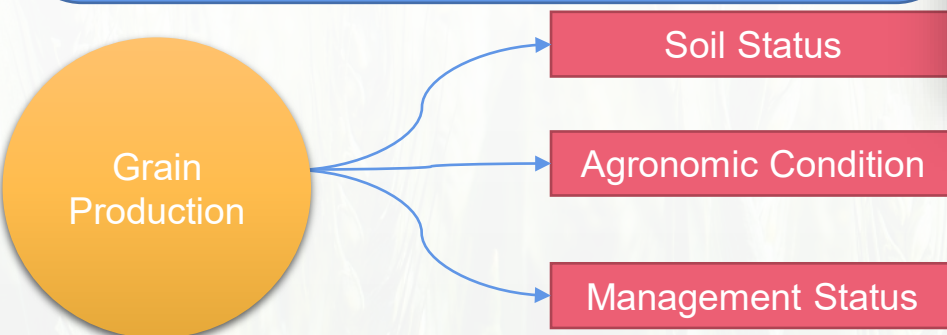
New Models of Modern Agriculture Via Technology

From "Observing The Sky And Working" To "Knowing The Sky And Working" 从“靠天吃饭”到“知天而作”

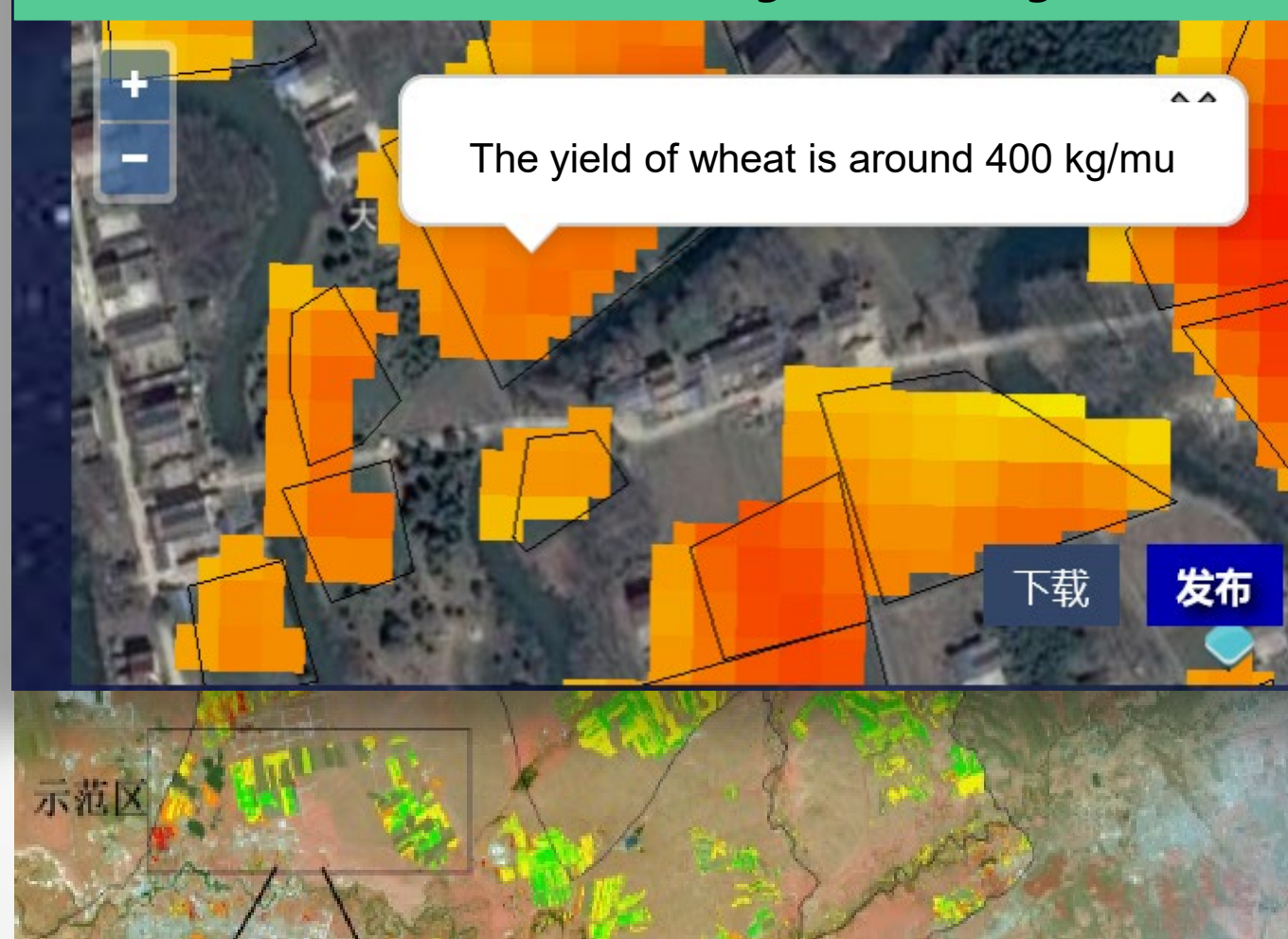
Grain Production Forecasting



Crop Growth Inversion at Grain Production



Grain Production Forecasting and Management

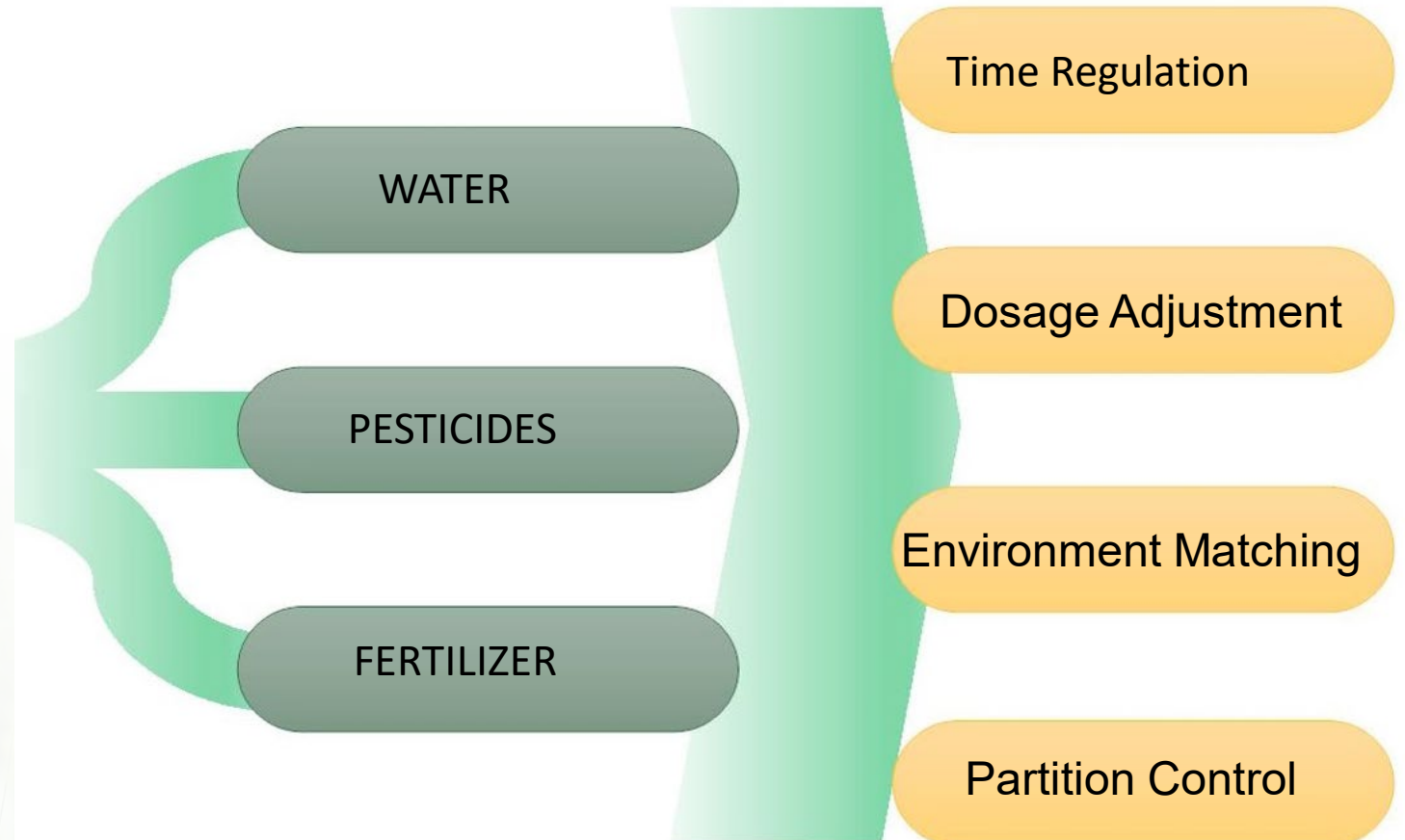


New Models of Modern Agriculture Via Technology



Smart technologies in irrigation, water and fertilizer integration:

- Save the use of water, fertilizer and pesticides
- Control dosages
- Reduce labor costs



New Models of Modern Agriculture Via Technology

Digital Agriculture Platform For Farm



· 大田种植数字农业平台

退出登录



智慧决策



田间气象



田间视频



墒情与供水



土壤肥力



病虫害管理



育种监测



农机物联网



农机运维



水肥一体化



农田数字化



农业生产管理



变量施肥



变量施药



智慧遥感



长势分析



产量分析



智能仓储



智能烘干



产品追溯

New Models of Modern Agriculture Via Technology

Digital Agriculture Platform For Farm

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New Models of Modern Agriculture Via Technology

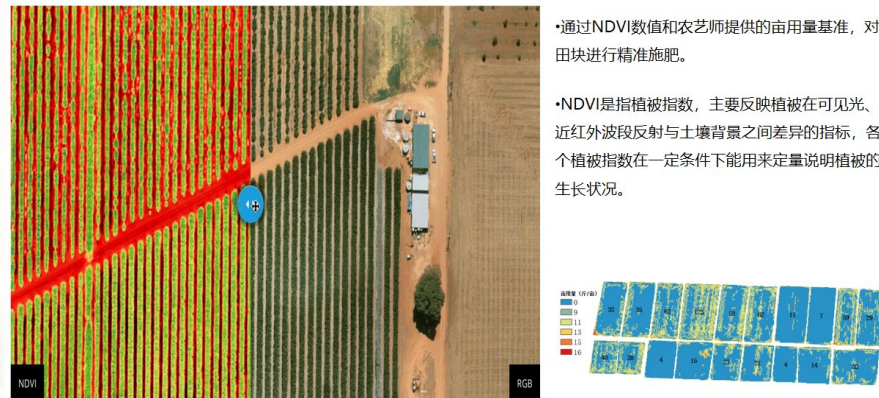
- 1) The core competency of the Runguo Datian segment is to apply data to agricultural production to improve the per mu efficiency.
- 2) So far we have achieved 50% saving in labor, 15% saving in chemicals, 30% decrease in water, 10% increase in production, 17% decrease in fertilization, and 20% in efficiency improvement.

Sow Seeds with Precision



Precise Fertilizer Application

润果农场多光谱技术应用



Automatic Harvesting



In November 2019, the program team of CCTV-17 Agricultural Channel filmed the entire field operation of unmanned agricultural machinery at Jiangsu Runguo Zhenjiang Base, and broadcast it on the "I Love Inventions" program on January 8, 2020.

Intelligent Drying



New Models of Modern Agriculture Via Technology

Comprehensive Measures of Diffused Pollution---the Ministry of Agriculture and Rural Affairs of China ranked as one of the top 10 main technology applications and promotions in 2018

Using the integrated technology of transplanting depth, measurement and fertilization, and slow-controlled release fertilizer technology, fertilizer use has been reduced by 20%, and the demonstration application is 667 hectares.



New Models of Modern Agriculture Via Technology

Green Development To Ensure The Quality And Safety Of Agricultural Products

Utilizing biopesticides and other ecological measures to prevent the pests from damaging farmland



Technology for
controlling rice borers
by using insect
Trichogramma



Trichogramma



Ladybug



Encarsia
Formosa



Chrysopidae



Phytoseiulus
Persimilis



Orius

Most is Lepidoptera, such
as *Homoeogryllus japonicus*,
Heliothis assulta Guenée,
Corn borer, rice borer, forest
pest, etc.

Aphid, scale insect, etc.

Trialeurodes Vaporariorum,
Bemisia tabaci, etc.

Trialeurodes Vaporariorum,
Bemisia tabaci, etc.

Mite, *Tetranychus*
cinnabarinus, etc.

Thrips, etc.



Establish an ecological island to form a
predator database

Natural areas near biologically diverse farmland,
formed naturally or artificially, have the function of
collecting predator and are called "predator
banks". When there are many pests in farmland,
insects migrate to ecological islands. When there
are fewer pests in farmland, they migrate to
ecological islands.

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Rice of Runguo Jiudu Brand - Process Control & Full Traceability



New Models of Modern Agriculture Via Technology

- Provide agricultural socialization services to farmers in nearby farmlands covering an area of 6,667 hectare of land.
- Provide technical training, employment assistance, and material assistance to farmers in the area. About 10,960 households have been mobilized, and 63.4% are women.



Real Scene Of Wheat Harvesting In 2023



Real Scene Of Rice Harvesting In 2023



THANKS FOR LISTENING

