Table. Selected examples of agricultural automation and intelligent farming solutions in China. The table covers agricultural drones, autonomous machinery and guidance systems, crop monitoring and phenotyping, precision application, agricultural AI and large language models, weeding, harvesting, pollination, greenhouse robotics and controlled-environment agriculture. Technology maturity is classified into four indicative levels based on publicly available evidence: Research — technology under research and development or at proof-of-concept stage; Pilot (P) — prototype or technology tested through field trials, demonstrations or pilot applications; Early Commercial (EC) — commercially available or deployed in a limited number of real-world applications, with market adoption still emerging; Commercial (C) — established commercial products or systems with broader market deployment. The classification is an indicative assessment by the authors rather than a formal certification of technology readiness. Information was compiled from company and institutional websites, product documentation, academic publications, and publicly available exhibition and industry materials. The table is illustrative rather than exhaustive, and maturity assessments may be affected by the limited availability of public information on actual deployment and market adoption.

Crop-Protection Drones				
PRODUCT OR SYSTEM	**COMPANY**	**PRIMARY USE CASE**	**TRL**	**MARKET OUTLOOK**
DJI Agras T-series 大疆农业 T 系列	DJI 深圳市大疆创新	Spraying, fertilization, broadcasting field scouting	C	Chinese manufacturers lead globally (research pack estimates DJI holds ~59% of the global agricultural drone market); no direct Dutch benchmark cited in the documents. The pay-per-mu service model suits smallholders and is among the few technologies achieving true large-scale penetration.
XAG P-series 极飞 P 系列	XAG 广州市极飞科技	Crop protection, seeding, remote sensing	C	Second-largest global share (research includes a Frost & Sullivan estimate of ~17.1%, commissioned by the company); together with DJI dominates domestic and export markets; no Dutch benchmark.
Q100 Agricultural Drone Q100 农业无人机	United Aircraft 联合飞机集团	Spraying, spreading, transportation, and aerial surveying for field crops and orchards	C	Priced at approximately RMB 50,000; over 6000 units sold, with a 2025 sales target exceeding 10,000 units and projected revenue of RMB 600 million. Part of a 16,00 unit order (including Q100) secured at the Dubai Airshow, indicating growing international competitiveness. United Aircraft is a national-level “little giant” enterprise specializing in industrial-grade UAVs, with a product portfolio spanning multi-rotor, unmanned helicopter, and tilt-rotor platforms.
Beidou Auto-Steering				
PRODUCT OR SYSTEM	**COMPANY**	**PRIMARY USE CASE**	**TRL**	**MARKET OUTLOOK**

FJDynamics Auto-Steering System 丰疆自动驾驶系统	FJDynamics 丰疆智能（深圳）	Tractor auto-guidance, assisted driving	C	Exported to 110+ countries; ~two-thirds of revenue from overseas. Beidou-native technology; no Dutch benchmark.
AllyNav 联适导航	AllyNav 上海联适导航	Agricultural-machinery auto-steering	C	Deployed on large farms in Northeast China and Xinjiang; ASP once dropped sharply after subsidy adjustments; STAR listing application terminated in 2024.
Huida 惠达科技	Huida 哈尔滨市惠达科技	Beidou terminals, assisted driving	C	Among the domestic mainstream alongside FJDynamics and AllyNav; subsidy-dependent with thin margins.
Precision Field Operations				
PRODUCT OR SYSTEM	**COMPANY**	**PRIMARY USE CASE**	**TRL**	**MARKET OUTLOOK**
Sinochem MAP Zhinong Platform 中化 MAP 智农平台	Syngenta Group China 先正达集团中国	Full-chain agronomy services, remote-sensing prescriptions	C	700+ service centers, 28 provinces, ~33 million mu of serviced area, 2M+ app users (company figures); China's largest agricultural service platform. No direct Dutch benchmark (Syngenta HQ in Switzerland).
Zhirang COOMAP / Yuntu / Lizhu Remote-Sensing Cloud 智壤 COOMAP / 云图 / 丽珠遥感云	Beidahuang Information 北大荒信息公司	"Sky–air–ground–human" integrated management of field crops	EC	Covers farmland portraits of ~48.74 million mu (Xinhua, 2025); 99 algorithms / nearly 3,000 datasets (company figures); most metrics are self-reported and should be read as deployment evidence rather than independent ROI validation.
3WYP-160DB Variable-Rate Sprayer 3WYP-160DB 变量喷洒机	Hefei Duojia 合肥多加	Field or weed variable-rate spraying	P	Demonstrated in Weifang / Yellow River Delta; herbicide reduction of 30–80% (company figures); concentrated in state farms, not yet reaching smallholders.
Agricultural AI / Large Models				

PRODUCT OR SYSTEM	COMPANY	PRIMARY USE CASE	TRL	MARKET OUTLOOK
ShenNong Large Model 4.0 神农大模型	China Agricultural University, Wang Yaojun team 中国农业大学	Farming Q&A, pest or disease identification, yield prediction	P	Claims coverage of 31 provinces, 1.2M+ farming households, 5M mu (developer figures, unverified); fast-growing under policy push, but limited evidence of farmer willingness-to-pay and returns.
Fengdeng / SeedLLM, Fengdeng· Rice 丰登 / SeedLLM	Shanghai AI Laboratory + Yazhouwan National Laboratory + China Agricultural University 上海人工智能实验室 + 崖州湾国家实验室 + 中国农业大学	Seed-industry or rice molecular-breeding knowledge Q&A	P	Released Apr 2024, billed as China's first seed-industry large model; still at research / demonstration stage.
Nonggeng / Nongzhi Large Model 农耕 / 农知大模型	CAAS; Inst. of Agr. Resources & Regional Planning / Agr. Info Inst. + CNKI 中国农业科学院	Cropland remote-sensing monitoring, controlled-hallucination Q&A	P	Demos in Kunshan and elsewhere; the policy-mandated "large-model platforms" are real, but independent benchmarks are lacking.
CottonMind 1.0 棉芯	CAAS Cotton Research Institute 中国农业科学院棉花研究所	Cotton-specific knowledge, diagnosis, and Q&A	P	Released Aug 2026, billed as the world's first cotton-specific large model; research / early deployment.
ShiNong 识农	ShiNong Intelligence 深圳市识农智能	Mobile pest or weed identification	EC	Citrus/weed recognition library (500+ diseases & pests, 1,400+ weeds, industry-association figures); app already actively used in the Guangdong–Guangxi citrus belt; accuracy self-reported.
CAS-San'an Plant Factory 中科三安植物工厂	CAS / San'an Optoelectronics 中国科学院 + 三安光电合资	Leafy-vegetable LED artificial-light production	EC	Claims 20,000 m² (since 2016); ~578 plant factories nationwide (industry report); but industry reports state >90% operate at a loss, with energy >50% of cost (CAAS's Yang Qichang also acknowledges poor economics).

Agricultural Robots – Targeted Spraying / Weeding				
PRODUCT OR SYSTEM	**COMPANY**	**PRIMARY USE CASE**	**TRL**	**MARKET OUTLOOK**
Intelligent Row-Following Weeding Robot / Cotton-Topping Robot 智能对行除草 / 棉花打顶机器人	Veil Technology 深圳市纬尔科技	Field cotton topping, row-following weeding	P/EC	Cotton-topping robot in small-batch trial production; already sold to XPCC Divisions 6/7/8 and Aksu, contracted for 100,000+ mu of topping work (press-release figures).
Fully Electric Paddy-Weeding Robot 全电动水田智能除草机器人	College of Engineering, Nanjing Agricultural University 南京农业大学工学院	Rice-paddy weeding	P	Field tested Jul 2026 at Taihe Farm, Jiangning; Beidou + vision navigation, 90% weeding rate, <5% seedling damage, ~5 mu/hour (university figures).
Harvesting Robots				
PRODUCT OR SYSTEM	**COMPANY**	**PRIMARY USE CASE**	**TRL**	**MARKET OUTLOOK**
“Rou Cai” Elevated Strawberry Harvesting Robot 高架草莓采摘机器人“柔采”	Nongxin Science and Technology (registered as AgChip Science and Technology (Beijing)) 农芯科技	Non-destructive harvesting of elevated-grown strawberries, with 24-hour continuous operation	EC	A soft silicone gripper enables non-destructive harvesting, with a damaged-fruit rate below 3%. The robot completes one harvesting operation in approximately 8 seconds and is capable of complex movements such as leg-splitting and obstacle avoidance. Four-wheel steering enables operation on complex terrain.
Tomato Harvesting Robot 番茄采摘机器人	Nongxin Science and Technology (registered as AgChip Science and Technology (Beijing)) 农芯科技	Full-process greenhouse tomato operations, including inspection, harvesting and transport	EC	A combined harvesting capacity of 400 clusters per hour, equivalent to the work of approximately 2–3 skilled workers. The robot achieves an 85% harvesting success rate and integrates autonomous navigation, active obstacle avoidance and gentle placement. It supports three operating modes: fully autonomous, human–machine interaction and remote control.

Qogori / K2 Greenhouse Tomato Track Harvester Qogori / K2 番茄轨道采收机器人	Qogori Technology 杭州市乔戈里科技	Greenhouse tomato track harvesting	EC	Claims ~3 sec/fruit; exported to European greenhouses, covering 17 countries (mainly to high-labor-cost markets); niche (track greenhouses).
Truss Tomato Dexterous Harvesting Robot (“Eye-in-Hand”) 传番茄灵巧采集机器人（眼在手上）	CNBM Triumph Robotics (Shanghai) 中建材凯胜机器人（上海）	Greenhouse truss tomato harvesting;	P/EC	TOF visual serving + 7-DOF robotic arm for precise peduncle identification. Jointly developed with Shanghai Jiao Tong University through an industry-academia collaboration; won a gold award at the China Mechanical Industry Excellent Engineer Education Alliance “Jingdiao Cup” graduation design competition and a first prize at SJTU. Three invention patents filed. Showcased alongside the tomato inspection robot at the 2026 World Robot Conference.
Strawberry-Picking Robot "Caizhai Tong" / "Butterfly" type 草莓采摘机器人	China Agricultural University, Yang Li team 中国农业大学	Strawberry harvesting	P	Four generations of R&D, trials across multiple provinces; no commercial sales, damage rate unsolved (research pack / article).
Apple-Picking Robot "Shuangtai" humanoid 苹果采摘机器人	Northwest A&F University, Yang Fuzeng team → TangGeng Robotics 西北农林科技大学 → 唐耕机器人	Apple harvesting	P	≈7.5 sec/fruit/arm; team assesses it as "still a long way to go," once declined a ¥10M+ technology transfer.
Winter-Jujube-Picking Robot 冬枣采摘机器人	Lanxia Robotics + HIT Shenzhen 深圳市蓝侠机器人+哈尔滨工业大学（深圳）	Winter-jujube harvesting	P	Tested Jul 2025 in Dali; ripe-fruit grasp ~85%, fruit damage <8%; second-gen prototype in development.
Pollination Robots				
PRODUCT OR SYSTEM	**COMPANY**	**PRIMARY USE CASE**	**TRL**	**MARKET OUTLOOK**

Air-Assisted Electrostatic Pollinator (Kiwi) 风送式静电授粉机	Northwest A&F University, Shi Fuxi team + Shaanxi Huaihai Agri-Machinery/ Xi'an Zhiqin Technology 西北农林科技大学 + 陕西淮海农机/ 西安智秦科技	Kiwi pollination	P/EC	Fruit-set success rate stably >90%; Xi'an Zhiqin completed 400-mu trials across six districts/counties in 2026 and is preparing for mass production.
Greenhouse "Little Bee" Multi-Arm Pollination Robot 温室小蜜蜂	Beijing Acad. of Agr. & Forestry Sci., Zhao Chunjiang team + Nongxin Technology + Haidian District Agr. Bureau 北京市农林科学院+ 农芯科技 + 海淀区农业农村局	Greenhouse tomato pollination	P/EC	Tomato-specific; claims ~98% success rate, cost ~30% of bumblebees (both single-source developer figures, zero third-party verification, metrics raised over the years); deployed in Shandong/Beijing/Jiangsu/Hebei, no sales volume/unit price; bumblebees remain dominant. Research pack credits the honor to the parent system "protected-horticulture operation robot" (2023 "Three New" catalog).
Multi-Function Tomato Operation Robot 多功能番茄作业机器人	Fudan University, Shang Huiliang team 复旦大学	Tomato pollination, leaf thinning, flower or fruit thinning, picking	P	Validated at Bright Food's Chongming Farm; claims saving 6 laborers and cost at 1/5–1/10 of foreign equivalents (project figures, unaudited).
Jier / GEAIR 吉儿 / GEAIR	Institute of Genetics & Dev. Biology, CAS, Xu Cao team + Inst. of Automation, CAS, Yang Minghao team 中国科学院遗传与发育生物学研究所+ 自动化研究所	Tomato or soybean hybrid-breeding pollination	Research / P	Backed by a 2025 *Cell* paper (genuine innovation: gene-editing + robot co-design); but the "10 sec / 90% / 82%" are 2026 PR figures, while the paper reports 15 sec / 85.1% / 77.6%±9.4%, with single-pass success below manual (92.4%); no commercial product.

Laser Weeding				
PRODUCT OR SYSTEM	**COMPANY**	**PRIMARY USE CASE**	**TRL**	**MARKET OUTLOOK**
Guangyun Laser-Weeding AI Robot 光耘激光除草 AI 机器人	Cyan Force (Shanghai) Technology 蔚蓝引擎（上海）科技	High-value-crop weeding	P/EC	Piloted at Waigang cooperative, Jiading; target to bring per-mu-per-pass cost down to the ~¥30 range (company figures).
Shennong / Nongfu Series Laser Weeder H8 神农 / 农夫系列 H8	Huagong Zhiyun, HGTECH subsidiary 哈尔滨市华工智耘	Field or greenhouse laser weeding	EC	Weed recognition >99%, mis-hit <0.1%; first trailed unit exported to Australia Jul 2026; relatively mature for soybean/maize; only single-digit units, economics viable only for high-end organic.
Intelligent Laser-Weeding Robot 智能激光除草机器人	Shanghai University, Miao Zhonghua team 上海大学	Vegetable greenhouses or fields weeding	P	100+ mu demo in Baoshan / Jiading; recognition >95%, ~1 sec/plant (university figures).
T100 Laser-Weeding Robot T100 激光除草机器人	Taoteng Technology, East China Normal University spin-off 上海市韬滕科技	Organic leafy-vegetable weeding	P/EC	Completed prototype closed-loop validation May 2026; multiple units sent to 500-mu farms in Jiading / Pudong for trial, claimed to enter mass production within the year.

Table. Selected examples of agricultural automation and intelligent farming solutions in China with their contact or websites

Product or System	Company	Website
DJI Agras T-series 大疆农业 T 系列	DJI 深圳市大疆创新	https://www.djiag.com
XAG P-series 极飞 P 系列	XAG 广州市极飞科技	https://xa.com
Q100 Agricultural Drone Q10 农业无人机	United Aircraft 联合飞机集团	https://www.uatair.com
FJDynamics Auto-Steering System 丰疆自动驾驶系统	FJDynamics 丰疆智能（深圳）	https://www.fjdynamics.com/

AllyNav 联适导航	AllyNav 上海联适导航	https://www.allynav.com/
Huida 惠达科技	Huida 哈尔滨市惠达科技	https://www.huidatech.cn/home
Sinochem MAP Zhinong Platform 中化 MAP 智农平台	Syngenta Group China 先正达集团中国	https://www.syngentagroup.cn
Zhirang COOMAP / Yuntu / Lizhu Remote-Sensing Cloud 智壤 COOMAP / 云图 / 丽珠遥感云	Beidahuang Information 北大荒信息公司	https://www.bdhic.com
3WYP-160DB Variable-Rate Sprayer 3WYP-160DB 变量喷洒机	Hefei Duojia 合肥多加	https://doujiaaa.com
ShenNong Large Model 4.0 神农大模型	China Agricultural University, Wang Yaojun team 中国农业大学	https://shennong.cau.edu.cn
Fengdeng / SeedLLM, Fengdeng· Ric 丰登 / SeedLLM	Shanghai AI Laboratory + Yazhouwan National Laboratory + China Agricultural University 上海人工智能实验室 + 崖州湾国家实验室+ 中国农业大学	https://www.shlab.org.cn/news/5443900
Nonggeng / Nongzhi Large Model 农耕 / 农知大模型	CAAS; Inst. of Agr. Resources & Regional Planning / Agr. Info Inst. + CNKI 中国农业科学院	https://ai.agriknow.cn/
CottonMind 1.0 棉芯	CAAS Cotton Research Institute 中国农业科学院棉花研究所	https://8.140.245.90/home/index.html
ShiNong 识农	ShiNong Intelligence 深圳市识农智能	https://www.senseagro.com
CAS-San'an Plant Factory 中科三安植物工厂	CAS / San'an Optoelectronics 中国科学院 + 三安光电合资	https://www.sananbio.com.cn
Intelligent Row-Following Weeding Robot / Cotton-Topping Robot	Veil Technology 深圳市纬尔科技	https://viewer.tech

智能对行除草 / 棉花打顶机器人		
Fully Electric Paddy-Weeding Robot 全电动水田智能除草机器人	College of Engineering, Nanjing Agricultural University 南京农业大学工学院	https://faculty.njau.edu.cn/xiaomaohua/zh_CN/index.htm
Strawberry-Picking Robot "Caizhai Tong" / "Butterfly" type 草莓采摘机器人	China Agricultural University, Yang Li team 中国农业大学	https://faculty.cau.edu.cn/zkl/
Qogori / K2 Greenhouse Tomato Track Harvester Qogori / K2 番茄轨道采收机器人	Qogori Technology 杭州市乔戈里科技	https://qogori.com/product/
Truss Tomato Dexterous Harvesting Robot (“Eye-in-Hand”) 传番茄灵巧采集机器人（眼在手上）	CNBM Triumph Robotics (Shanghai) 中建材凯胜机器人（上海）	httpS://www.shemt.com
Apple-Picking Robot "Shuangtai" humanoid 苹果采摘机器人	Northwest A&F University, Yang Fuzeng team → TangGeng Robotics 西北农林科技大学 → 唐耕机器人	https://cmee.nwsuaf.edu.cn/szdw/gjzcry/318424.htm
Winter-Jujube-Picking Robot 冬枣采摘机器人	Lanxia Robotics + HIT Shenzhen 深圳市蓝侠机器人+哈尔滨工业大学（深圳）	https://vallybot.cn
“Rou Cai” Elevated Strawberry Harvesting Robot 高架草莓采摘机器人“柔采”	Nongxin Science and Technology (registered as AgChip Science and Technology (Beijing)) 农芯科技	http://nongxinkeji.cn/products
Tomato Harvesting Robot 番茄采摘机器人	Nongxin Science and Technology (registered as AgChip Science and Technology (Beijing)) 农芯科技	http://nongxinkeji.cn/products

Greenhouse "Little Bee" Multi-Arm Pollination Robot 温室小蜜蜂	Beijing Acad. of Agr. & Forestry Sci., Zhao Chunjiang team + Nongxin Technology + Haidian District Agr. Bureau 北京市农林科学院+ 农芯科技 + 海淀区农业农村局	http://nongxinkeji.cn/products
Jier / GEAIR 吉儿 / GEAIR	Institute of Genetics & Dev. Biology, CAS, Xu Cao team + Inst. of Automation, CAS, Yang Minghao team 中国科学院遗传与发育生物学研究所+ 自动化研究所	http://xulab.genetics.ac.cn/
Multi-Function Tomato Operation Robot 多功能番茄作业机器人	Fudan University, Shang Huiliang team 复旦大学	https://ee.fudan.edu.cn/Data/View/944#1
Air-Assisted Electrostatic Pollinator (Kiwi) 风送式静电授粉机	Northwest A&F University, Shi Fuxi team + Shaanxi Huaihai Agri-Machinery/ Xi'an Zhiqin Technology 西北农林科技大学 + 陕西淮海农机/ 西安智秦科技	https://oriet.nwafu.edu.cn/
Shennong / Nongfu Series Laser Weeder H8 神农 / 农夫系列 H8	Huagong Zhiyun, HGTECH subsidiary 哈尔滨市华工智耘	https://www.hglaser.com
Intelligent Laser-Weeding Robot 智能激光除草机器人	Shanghai University, Miao Zhonghua team 上海大学	https://www.shu.edu.cn/info/1055/388925.htm
Guangyun Laser-Weeding AI Robot 光耘激光除草 AI 机器人	Cyan Force (Shanghai) Technology 蔚蓝引擎（上海）科技	https://en.cyanforce.com/
T100 Laser-Weeding Robot T100 激光除草机器人	Taoteng Technology, East China Normal University spin-off 上海市韬滕科技	https://cn.agropages.com/news/printnew-38411.htm