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Unmanned aircraft spray systems for plant protection

植保无人机

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part

1. Structure and Drafting Rules of Standardization Documents" Drafting. Please note that some contents of this document may involve patents, and the issuing organization of this document does not assume the responsibility for identifying patents. This document is proposed by China Machinery Industry Federation. This document is under the jurisdiction of the National Agricultural Machinery Standardization Technical Committee (SAC/TC201). This document was drafted by: China Agricultural Mechanization Research Institute Group Co., Ltd., Nanjing Agricultural Mechanization Research Institute of the Ministry of Agriculture and Rural Affairs, China Agricultural University, Shenzhen DJI Innovation Technology Co., Ltd., Guangzhou Jifei Technology Co., Ltd., Suzhou Jimu Robot Technology Co., Ltd. Company, Shandong Zhongju Electric Co., Ltd., Shenzhen Dingfeng Wuxian Electronics Co., Ltd., Zhengzhou Yabo Intelligent Technology Co., Ltd., Fangyuan Logo Recognition Certificate Group Shandong Co., Ltd., Jiangsu University, South China Agricultural University, Institute of Plant Protection, Chinese Academy of Agricultural Sciences, Hefei Duoqia Agricultural Science and Technology Co., Ltd. Co., Ltd., National Agricultural Technology Extension Service Center, Shandong Zhongrui Quanxing Testing Technology Co., Ltd., Hainan Flyer Technology Co., Ltd., Gudong Technology Co., Ltd., Shandong Shenzhou Pest and Disease Biological Prevention and Control Co., Ltd., Xi'an Jiuxinchang Internet of Things Technology Co., Ltd., Xi'an Ningkangte Data Service Co., Ltd., Guangdong Liying Intelligent Technology Co., Ltd., Zhejiang Huacong Digital Technology Co., Ltd., Artificial Intelligence and Digital Economy Guangdong Province Laboratory (Guangzhou). The main drafters of this document. Zhou Haiyan, Xue Xinyu, He Xiongkui, Yang Xuejun, Liu Yan, Shi Renli, Peng Bin, Wang Xinyu, Liu Zhongliang, He Xingyang, Chen Haixiong, Jin Chen, Zhang Tie, Wang Changling, Gu Wei, Song Jianli, Zhai Hui, Du Xiuyuan, Dong Xiang, Chen Haifeng, Wang Han, Liu Linlin, Sun Zhu, He Yuequn, Li Xinghua, Zhao Qing, Yan Xiaojing, Yuan Huizhu, Wu Chundu, Lan Yubin, Chen Xiaobing, Yan Herong, Zeng Aijun, Chen Junbao, Sun Mingyue, Qin Guangquan, Feng Jiangang, Li Zhou, Chen Jun, Cui Haitao, Wei Shengya, Wang Zhenghua, Pi Yulin, Ding Chunyan, Lin Hongsong. Plant protection drone

1 Scope

China's national standard for the spray systems of plant protection unmanned aircraft. Agricultural drones have been adopted in China faster and more completely than anywhere else - hundreds of thousands are in service - because they suit the field pattern: small, irregular, terraced and often inaccessible plots that a ground sprayer cannot enter and a manned aircraft cannot treat economically. The spray system is what distinguishes an agricultural drone from an aircraft carrying a tank. It must apply a very low volume per hectare, which means small droplets, and small droplets drift - so the system works with the rotor downwash to drive them into the canopy rather than letting them float. Getting that wrong sprays the neighbouring field, which with a herbicide is a serious matter. The requirements accordingly cover droplet size distribution, deposition uniformity, flow control against ground speed, and the safety of a machine carrying pesticide over people.

This document stipulates the product model preparation rules, safety requirements, technical requirements, test methods, inspection rules, markings, Packaging, transportation and storage. This document applies to plant protection unmanned aerial vehicles (hereinafter referred to as "unmanned aerial vehicles") that spray liquid pesticides and fertilizers. None of other types and uses Use it as a reference for people and airplanes.

2 Normative reference documents

The contents of the following documents constitute essential provisions of this document through normative references in the text. Among them, the dated quotations For undated referenced documents, only the version corresponding to that date applies to this document; for undated referenced documents, the latest version (including all amendments) applies to this document.

GB/T 4208 Shell protection level (IP code)

GB/T 5262 General provisions for determination methods of agricultural machinery test conditions

GB/T 9480 Rules for Writing Instructions for Agricultural and Forestry Tractors and Machinery, Lawn and Garden Power Machinery

GB 10396 General principles for safety signs and hazard graphics on agricultural and forestry tractors and machinery, lawn and garden power machinery GB/T 13306 Signage

GB/T 18675 Determination of total residual liquid volume of agricultural sprayers of plant protection machinery

GB/T 20085 Plant protection machinery vocabulary

GB/T 38058-2019 Civilian multi-rotor unmanned aerial vehicle system test method

GB/T 38152 Unmanned aircraft system terminology

GB/T 38909 Electromagnetic compatibility requirements and test methods for civil light and small unmanned aerial vehicle systems

JB/T 9782-2014 General test methods for plant protection machinery

3 Terms and definitions

The terms and definitions defined in GB/T 20085, GB/T 38152 and the following apply to this document.

3.1 An unmanned aircraft equipped with a liquid pesticide and fertilizer spraying system for agricultural production and plant protection operations.

3.2 ground control system ground control system It consists of a central processor, a communication system ground end, a monitoring display terminal, a remote control, and control software. A system that analyzes and processes various parameters and can modify and control the trajectory of the unmanned aircraft.

3.3 applicationmode applicationmode The flight control method adopted by unmanned aircraft for operations.

Note. The operation mode is divided into two types. manual control operation mode and automatic control operation mode.