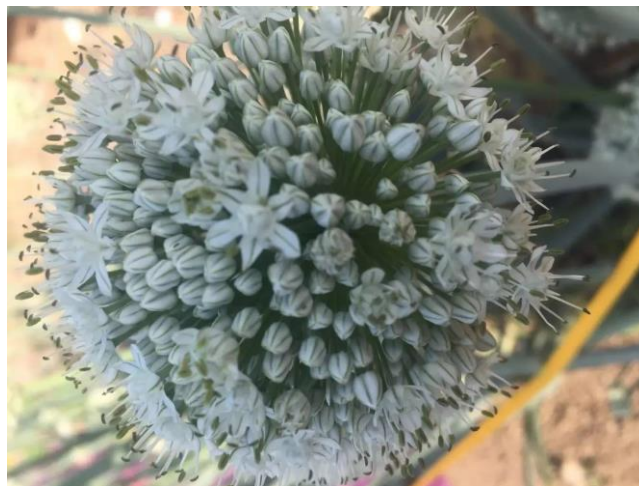


The Onion: A Most Valuable Seed

As one of the most common vegetables used in China, onions are cultivated across the entire country. Known as an essential ingredient in Chinese cuisine, onions are valued for their flavor, as well as a mixture of nutrients that lowers blood pressure, relieves anxiety, and prevents cancer. As onion flowers blossom from May to July, farmers from east to west dig for the valuable bulb in the earth.



Onion Flower

The Wen Tao Plant Protection Service Team is comprised of young professionals who are passionate about applying drone technology into agriculture. To date, the team has sprayed over 2600 acres of wheat, cabbage, rapeseed, and other crops in the northern reaches of Henan province.

Protecting Onion Crops with Drones

For maximum results and resilience, the Chinese Academy of Engineering developed the onion seeds, making them an expensive investment that required extra care. This included pesticide spraying right after planting; however, traditional methods would damage part of the seeds. To avoid this, the Academy invited Wen Tao to treat the seeds with UAVs. Founder Wei Wen Tao led his team to spray 33 acres of onion seeds in half a day using the MG-1S, impressing the Academy members with their effectiveness and efficiency.



Parameters

Flight Mode	P	Operation Mode	F and M+
Flight Altitude	2.1m	Route Spacing	5 m
Liquid per Acre	4.86 L	Flight Speed	4.8 m/s
Spray Rate	1.8 L/min	Nozzle Model	XR11001VS

Environment Information

Date	May 9 th , 2017	Location	Near Zhangsu Express, Jiyuan City, Henan Province
Type of Field	Non-irrigated farmland	Weather	Temperature of 31 °C Wind speed of 2 m/s.

Battling Common Onion Diseases of Onions

Downy mildew damages the leaves from the bottom of leaf tips to upper leaf surfaces, leaving a powdery mildew on the back of leaves that can spread to the plants in high humidity. This mildew affects plants of any age, and if left untreated, affected plants will wither and die in yellow brown.

In addition to downy mildew, farmers needed to address the possibility of soft rot, which infects vulnerable plants from the inside out. From root to head, plants break down into a creamy yellow, mud-like rot. This eventually causes the plant to wither, break apart, and die.

To prevent the onion crops from contracting these diseases, specific pesticide solutions were proposed after communicating with the Guangxi Tianyuan Company, who specialize in spray chemicals. To avoid affecting bee pollination, bifenthrin was not used.

Pesticide Information

Name	Pyraclostrobin & tebuconazole, Brassinolide	Active Ingredient & Content	Pyraclostrobin & tebuconazole: 10% Brassinolide: 0.001%
Dosage Form	Ultra-low Volume Liquid	Dosage per Acre	Pyraclostrobin & tebuconazole: 54 g, Brassinolide: 60 ml

Calculation of Fungicide Efficiency

Morbidity before Spraying (%) = 11 Diseased Plant(s) / 200 Inspected Plants = 5.5%

Morbidity after Spraying (%) = 0 Diseased Plant(s) / 200 Inspected Plants = 0%

Disease Decline Rate (%) = (5.5%-0%) / 5.5% × 100% = 100%

[Picture 1]

Team Expansion Slated for 2017

The Wen Tao Plant Protection Team currently holds four members: three experienced pilots and one project operator. Wei expects to grow the team to ten members, operating five drones for crop-spraying services. To complement this expansion, Wei plans to improve his team's skill sets through professional training in drone flying and pesticide dosage. In fact, the team has already led training programs to share hands-on experiences with recruits.

Because UAV plant protection is a relatively new technique, it has a plenty of room to grow. Wei is confident that his team is leading the way by using DJI drones to improve efficiency, avoid damage, and actually make a difference.