**Weeding Directly Seeded Rice Fields**

<https://agms.dji.com/h5/agro-information-detail/250>

The direct seeding of rice fields saves time and labor by eliminating the need to cultivate the seedlings before transplanting them. Also, it prevents injury to the plants during the transplanting process and reduces the time it takes for rice plants to mature. The simplicity and convenience of the direct seeding method are driving its increasing popularity among farmers.

However, this process makes weeding more difficult. In directly seeded fields, the rice and weeds sprout at about the same time, so weed growth becomes a more serious problem. This means weed control is critical for directly seeded fields.



**1. Job Environment**

|  |  |  |  |
| --- | --- | --- | --- |
| Job Date | 2020/3/22 | Job Location | Luzhou, Sichuan |
| Terrain | Hilly | Wind Speed | Level 1 |
| Weather | Cloudy | Temperature | 16-26℃ |

**2. Job Parameters**

|  |  |  |  |
| --- | --- | --- | --- |
| Drone Model | T16 | Flight Speed | 5 m/s |
| Relative crop height | 2.5 m | Row Spacing | 5 m |
| Chemical Volume per 667 sqm | 1.3 L | Nozzle Model | XR110010VS |
| Job Mode | Manual |

The terrain of the worksite was uneven and the plot was small. The largest plot was 1.89 acres and the smallest was only 0.2 acres. The job was performed manually, with 37 flights and a total time of 4.6 hours. The work was done at a rate of 7.58 acres per hour.

**3. Chemical Information**

100 ml of Pretilachlor 30% EC, 10 ml of aerial application additives. Pretilachlor is a highly selective herbicide for rice fields. It is safe for rice, but kills a wide range of weeds. Weed seeds absorb the chemical during the germination process, but weed roots have poor absorption. Therefore, this treatment can only be performed on the soil before germination.

Rice is also more sensitive to pretilachlor during the germination period. In order to ensure safety during the early stages of rice growth, safeners are often added to pretilachlor. When using pretilachlor, be sure to promptly sow rice and apply the treatment after the ground is prepared. Otherwise, the weeds will be unearthed, which will affect the efficacy of the treatment. The sown rice should have normal roots and shoots, and must not have shoots without roots. Otherwise, the safener in the herbicide cannot be absorbed, resulting in phytotoxicity.

Can Agricultural Drones Fight Citrus Red Mites? Let the Facts Speak

<https://mp.weixin.qq.com/s/Umjonvrj9tDZgTaeYj1Iog>

In recent years, the widespread application of the Agras T16 agricultural drone, which provides a large payload and heavy flow rate, has allowed for more sophisticated fruit tree spaying practices. Increasingly, orchards are adopting more efficient aerial application practices to replace traditional manual spraying.

However, compared with traditional crops planted in large fields, it is more difficult to control fruit tree pests and diseases, and especially red mites that live on the undersides of leaves. The many farmers who have never used the Agras T16 may question whether aerial application can effectively deal with these difficulties.

Red Mites

Can aerial application protect fruit trees from red mites? Let's look at a real-world example. In July 2019, a red mite outbreak occurred in Mr. Li's citrus orchard in Dayu County, Ganzhou City, Jiangxi Province. When assigned this aerial application task, the Ganzhou Chengfeng Smart Technology Aerial Application Team used its T16 drones to treat the fruit trees. They eliminated the red mites in just two days. Let's see how they did this.

**Case Background**

Citrus red mites absorb juices from the leaves and shoots of fruit trees and the skin of fruits. This damages the trees, causing leaves and fruit to fall off. Because the mites generally hide on the backs of the leaves of citrus trees, it is more difficult to treat the problems using aerial application methods.

The orchard treated in this job was located in a mountainous region to the south of Ganzhou, and the terrain was very rugged. The 26.36-acre orchard stretched across three mountains with steep slopes, resulting in altitude differences of 60 m. Previously, the orchard used manual pesticide application methods, resulting in low efficiency and poor results.

|  |  |  |  |
| --- | --- | --- | --- |
| **Job Date** | 2019.07.02 | **Job Location** | Dayu District, Ganzhou City, Jiangxi Province |
| **Terrain** | Mountainous | **Citrus Variety** | Newhall navel orange |
| **Tree Height** | About 2.5 m | **Tree Age** | 4 years |
| **Temperature** | 25-30℃ | **Wind Speed** | Level 1 |

**Job Review**

**1. Surveying and Mapping Mapped Twice to Improve Flight Path Precision**

When treating fruit trees, the first step is to use the Phantom 4 RTK (P4R) to survey the orchard. First, the team set a fixed flight altitude of 130 m and used the P4R to take high-resolution images of the orchard. Then, they created a map using DJI TERRA. Due to the sharp height changes (>40 m) of the mountainous terrain, a second mapping process is required to prevent altitude errors during route planning.

For the second run, the team imported the image created by DJI TERRA into the P4R and had the drone perform a second survey. This survey simulated the flight path of the agricultural drone at an altitude of 70 m. Afterward, they again mapped the terrain with DJI TERRA.

After the mapping process, they planned flight paths on the output image. Due to the large diameter of citrus tree canopies (>4 m), the spray pattern cannot cover the canopies in fixed-point spraying mode, so the team selected the continuous spray mode. Then, they generated a 3D flight path.

**2. Formula Selection: A Variety of Agents Are Combined to Ensure Good Performance**

When selecting the pesticide formula, the team chose systemic agents with strong conductivity, such as spirotetramat. Such pesticides can effectively reach red mites on the backs of leaves.

The formula to be used each day was prepared in the morning. The team used the **secondary dilution method**. The pesticides were added to the 240-liter tank in sequence, starting with the insoluble agents and then the easily soluble agents.

The following formula was used for this job: **7 ml of Abamectin 3% + Spirotetramat 12%, 50 ml of Jianxiu mineral oil, and 5 ml of areal application additives per liter of water**.

Abamectin is a broad-spectrum insecticide and acaricide toxic through contact and ingestion. Spirotetramat is an ambimobile systemic insecticide, which is effective against piercing-sucking insects, such as mites, aphids, and thrips. In combination, these two insecticides attack the mites in different ways for enhanced acaricidal performance.

The Jianxiu mineral oil evenly adheres to the bodies of the red mites preventing them from performing normal behaviors, such as crawling, feeding, mating, and laying eggs. This reduces the damage the mites can cause and their base population. The aerial application additives are added to improve the spreading effect of the other agents on the surface of the plants.

**3. Job Procedure: Low Speed and High Concentration**

After programming the flight path on the computer, the operator saved it to an SD card and inserted the SD card in the remote control. Then, the operator set the following parameters to have the drone perform the job completely autonomously.

|  |  |  |  |
| --- | --- | --- | --- |
| **Job Mode** | Fruit tree mode 2.0 | **Spray Type** | Continuous spray |
| **Altitude** | 2 m | **Flight Speed** | 2 m/s |
| **Flow Rate** | 2.5 L/min | **Working Distance** | 3 m |
| **Chemical Volume per 667 sqm** | >4 L | **Nozzle Model** | XR11001VS |

During aerial application for citrus trees, the flight speed is much slower than for field crops, and the spray volume per area is higher. Given the large size and dense foliage of citrus trees, setting a lower flight speed helps increase then penetration of the pesticides, ensuring they can reach to the base of the tree and the undersides of the leaves. Increasing the amount of pesticide sprayed per unit area can ensure that there is sufficient liquid to reach all the leaves. A low flight speed and high concentration are essential to aerial application for citrus orchards.

Due to the complex terrain of the citrus orchard, the operator needed to pay close attention to the drone's flight status in order to avoid accidents.

**Lessons Learned**

After one day of treatment, the red mites began to die. After one week, over 90% of the mites had died off. After this job was performed, this orchard did not experience any further damage from red mites in 2019. By studying the results of this job, we identified the key factors for the control of red mites in citrus orchards.

1. **Due to the large tree canopies and dense leaves, we must increase the volume of insecticide used and reduce the flight speed to ensure sufficient penetration**.

2. **When treating navel oranges in southern Ganzhou, we should generally use a flow rate of 2.5 L/min for trees under 4 years old, 3 L/min for trees 4-8 years old, and 3.5 L/min for trees over 8 years old**.

3. **We should select strongly systemic pesticides**.

4. **Due to its superior effectiveness, drone-based orchard application does not have to be performed as frequently as manual application. Drones increase the efficiency of pesticide treatment. In 30 minutes, a drone performs the equivalent of a full day's work by a human**.

We are grateful to the Ganzhou Chengfeng Smart Technology Aerial Application Team for providing this case study to us.

Fruit trees have always been the most difficult challenge for aerial application. Now, DJI's fruit tree mode provides a safe and efficient solution for aerial fruit tree application. However, for optimal results, operators still need to tailor their approach to local conditions through trial and error. DJI Agriculture will constantly work with users to improve our equipment, learn from experience, and combine products and services into better crop protection solutions for fruit orchards. Through this, we will continue to make new breakthroughs in the aerial application industry and keep moving forward.

**Downy Mildew Control for Broccoli**

<https://agms.dji.com/h5/agro-information-detail/231>

Broccoli is a common vegetable originally from Italy. This biennial plant is a variety of cabbage. Broccoli is characterized by large leaves and a large flower head, green or purplish-green in color, at the top of the main stalk. The surface head is composed of small buds. Flower heads do not develop on peripheral branches.

On February 17, 2020, the vegetable planting base in Dongsheng Town, Shishou City, Hubei Province invited Shishou City's Jishiyu Aerial Application Team to prevent downy mildew on 165 acres of broccoli.

**1. Job Environment**

|  |  |  |  |
| --- | --- | --- | --- |
| **Weather** | Cloudy | **Temperature** | 1-8℃ |
| **Wind Speed** | Level 1 | **Terrain** | Flat |

**2. Job Parameters**

|  |  |  |  |
| --- | --- | --- | --- |
| **Drone Model** | T16 | **Flight Speed** | 2 m/s |
| **Relative Crop Height** | 2.5 m | **Row Spacing** | 6 m |
| **Chemical Volume per 667 sqm** | 1 L | **Nozzle Model** | XR11001VS |
| **Job Mode** | **Flight Plan** |

**3. Chemical Information**

40 g/667 sqm Pyraclostrobin + Metiram 60% WG, 30 g/667 sqm Trifloxystrobin + Tebuconazole 30% Metiram is an excellent protective fungicide and a low-toxicity pesticide. It is mainly used to prevent downy mildew, anthracnose, brown spot, and other fungal diseases that affect vegetables. Pyraclostrobin is a new broad-spectrum fungicide, which has protective and curative effects and can penetrate and spread through leaves. It can prevent powdery mildew, downy mildew, leaf spot, sclerotinia, and other diseases. Trifloxystrobin and tebuconazole are efficient broad-spectrum fungicides. They are protective and curative systemic fungicides with sustained efficacy and rain-resistance.

**4. Disease Background**

When broccoli leaves are infected with downy mildew, the lower leaves have yellow spots with inconspicuous edges that are restricted by the veins, giving them a polygonal or irregular shape. Some leaves have slightly sunken purple-brown or gray-black irregular spots on the leaf surface, with dark brown stains. Sparse white mold can be seen on the back of the leaves when wet. There are also obvious dark brown spots on the diseased spots on the back of the leaves, slightly protruding, with a white layer of mildew. In serious cases, leaves will wither and fall off. When the stalk is affected, the diseased part often falls off.

This disease occurs at temperatures of 16 to 20℃ and high relative humidity or when water droplets coat the surface of the leaves. In the north, this disease is more common in spring than in fall, while it commonly occurs in winter and spring in the south. Broccoli is often affected during the period of stalk growth and flower head formation or during periods of sustained rain and low temperatures in the case of off-season cultivation.

**Control of Tea Jassids**

[**https://agms.dji.com/h5/agro-information-detail/191**](https://agms.dji.com/h5/agro-information-detail/191)

In August 2019, Longwu Town, West Lake District, Hangzhou experienced an infestation of tea jassids. Zhejiang Nongfeike used the Agras T16 drone to conduct aerial application to excellent effect.

**1.       Job Environment**

|  |  |  |  |
| --- | --- | --- | --- |
| **Job Date** | 2019/08/23 | **Job Location** | Tongwu Village, Longwu Town, West Lake District, Hangzhou |
| **Terrain** | Mountainous | **Temperature** | 26-34℃ |

**2.       Job Parameters**

|  |  |  |  |
| --- | --- | --- | --- |
| **Job Mode** | Manual | **Flight Speed** | 3.5 - 4 m/s |
| **Altitude** | 2 - 2.5 m | **Working Distance** | 5 m |
| **Chemical Volume per 667 sqm** | 3 L | **Nozzle Model** | XR11001VS |

**Parameter Explanation**: Manual operation mode was selected due to the complex terrain. The flight speed was maintained below 4 m/s to ensure safety. Due to the dense foliage of the tea plants, 3 L of pesticide was used per 667 sqm.

**3.  Chemical Information**

Dinotefuran 20% SG was used to treat the plants. Dinotefuran is the latest version of neonicotinoid insecticides. This broad-spectrum insecticide is toxic through contract or ingestion. It is easily absorbed by the roots of tea plants, takes effect quickly, and provides sustained efficacy for 4-8 weeks (theoretically 43 days). It performs exceptionally well on piercing-sucking insects even at a low dose. The tea jassid is a piercing-sucking insect and, therefore, susceptible to this insecticide.

**4.    Pest Background**

The tea jassid is one of the main pests that affect tea plants. Tea jassids reproduce 8 to 12 generations a year, with an alternation of generations. This pest can cause severe damage to summer and autumn tea crops. The diseased tea buds and leaves curl up and harden. The leaf tips and leaf margins turn reddish-brown, and the bud tips grow slowly. This significantly affects the yield and quality of tea. The tea jassids are most prevalent at two times during the year: from late May to mid to late June and from October to early November. Adults and nymphs are inactive on rainy days and dewy mornings. They most frequently affect overgrown tea gardens where it is alternatively sunny and rainy. The adults mostly live on the leaves of tea bushes and lay their eggs in the first to third young shoots growing under a bud. Each female lays 10 to 30 eggs. Nymphs often live on the back of young leaves.

**5. Team Introduction**

    Zhejiang Nongfeike started to promote its services in Xihu Chachang Village, Longwu Town, West Lake in 2016. To date, they have served close to 16,474 acres of tea plantations just in Longjing, West Lake. They have also served more than 6,589 acres in Fuyang, Jiande, Chun'an, Yuhang Jingshan, Anji Baicha, Changxing Baicha, Songyang, and other regions. The team has a wealth of experience in crop protection practices for tea plants. At the same time, the team also has experience with citrus, mulberry, hickory, sorghum, rice, wheat, luffa, flowers, chrysanthemum, and other crops.

From North to South, What Has Been the Effect of Direct Drone Seeding?

<https://mp.weixin.qq.com/s/yhZduo8abngnoTT18dMg1w>

Rice is one of the most important food crops in China and sowing is one of the most important steps in the rice cultivation process. The efficacy and efficiency of rice seeding have a direct impact on the cost, yield, and profit of rice cultivation. In many regions in southern China, such as Hunan, Jiangxi, Guangxi, and Guangdong, rice is planted from the end of March to early April. In Heilongjiang, in contrast, rice planting gradually starts from early May. Due to differences in climate, the planting times and methods vary across different regions.

Currently, the most common rice planting methods include manual sowing, manual direct seeding, and transplanters. Today, we will demonstrate the performance of the T20 spreading system and its usage methods and recommendations.

**Case 1**

**Seeding Date**: February 26, 2020

**Operator**: Chen Xiaoyun (Kaiping Yonghui Agricultural Machinery Association)

**Job Location**: Dajiang Agricultural Demonstration Field in Kaiping City, Jiangmen, Guangdong

**Drone Model**: T20

**Area**: 49.42 acres

**User Comments**: The speed and performance of the T20 spreading system is a great surprise for the members of our association. They are relieved that they can use the T20 system to plant more of their fields.

In February of this year, DJI Agriculture planted 3 acres of rice in Jiangmen's demonstration field project, and we joined forces with Southern+ to live broadcast the entire process. The demonstration field is now full of rice and looks to promise a great harvest. Click the video to watch the planting and sprouting of the demonstration field.

**Video: Click to watch the seeds planted by the T20 system grow**

Seeds are sown evenly across the field

Rice tillering stage

**Case 2**

**Seeding Date**: May 7, 2020

**Operator**: Han Qingyu (Harbin Sanwo Agricultural Technology Co., Ltd.)

**Job Location**: Bayangang Town, Bayan County, Harbin City, Heilongjiang Province

**Drone Model**: T16

**Area**: 25.19 acres

**User Comments**: The seeding performance was great. We plan to continue to use DJI drones to seed the next 28 acres.

Rice seed germination

Seeding with the T16 drone

Rice seeds are evenly sown

**Case 3**

**Seeding Date**: May 10, 2020

**Operator**: Wang Conghe and Li Dashuai (Youyi County Dajiang Crop Protection Service Co., Ltd.)

**Job Location**: Heilongjiang Youyi Farm

**Drone Model**: T20

**Area**: 24.13 acres

**User Comments**: We used two T20 units and the farmers were very impressed with the seeding performance. The productivity of this system is superior to traditional machinery and it saves a great deal of manpower (due to the epidemic there is a labor shortage and the cost of labor has doubled). It greatly reduces the labor required and sows seeds much more evenly than humans can.

Seeding by the T20 system

Germinated rice seeds are sown in the field

The aerial seeding performance of DJI's agricultural drones is being demonstrated all over the country. We will summarize the relevant parameters and usage methods below.

**Rice seeding information**

1. For seeding jobs, upgrade the agricultural drone firmware to version **0154 or later**.

2. After completing seeding, ensure there is at least 1 kg of material remaining in the tank.

3. We suggest keeping the flight speed below 4 m/s.

4. The seeding disk is a consumable part. Promptly replace it when it wears out to avoid uneven seeding.

**Note: Do not wash the spreading system with water. Instead, wipe it down with a clean, soft, and dry cloth.**

|  |
| --- |
| **High-uniformity operation checklist, suitable for seeding** |
| Row Spacing | 5 m | Opening Size (based on material measurement, adjust the opening percentage to achieve the desired flow rate) |
| Seeding Disk Speed | 800 rpm |
| Relative Crop Height | 2.5 m |
| Volume per 667 sqm | Flight Speed |
| 1 kg | 4 m/s | 1.8 kg/min |
| 2 kg | 3.6 kg/min |
| 3 kg | 5.4kg/min |
| 4 kg | 7.2kg/min |
| 5 kg | 3 m/s | 6.8kg/min |
| 6 kg | 8.1kg/min |
| 7 kg | 9.5kg/min |
| 8 kg | 2 m/s | 7.2kg/min |
| 9 kg | 8.1kg/min |
| 10 kg | 9.0kg/min |
| 11 kg | 9.9kg/min |
| 12 kg | 10.8kg/min |

|  |
| --- |
| **High-efficiency operation checklist, suitable for seeding** |
| Row Spacing | 7 m | Opening Size (based on material measurement, adjust the opening percentage to achieve the desired flow rate) |
| Seeding Disk Speed | 1000 rpm |
| Relative Crop Height | 2.5 m |
| Volume per 667 sqm | Flight Speed |
| 1 kg | 4 m/s | 2.5kg/min |
| 2 kg | 5.0kg/min |
| 3 kg | 7.6kg/min |
| 4 kg | 10.1kg/min |
| 5 kg | 3 m/s | 9.5kg/min |
| 6 kg | 11.4kg/min |
| 7 kg | 13.2kg/min |
| 8 kg | 2 m/s | 10.1kg/min |
| 9 kg | 11.4kg/min |
| 10 kg | 12.6kg/min |
| 11 kg | 13.9kg/min |
| 12 kg | 15.1kg/min |

**Rice Seeding Notes**

 **Site Preparation**

The field must be level and free of standing water. If the site is not level or not properly drained, water will accumulate in the field, which will affect seedling growth.

**Sun Exposure**

Sun exposure allows the rice seeds to sprout faster. Generally, seeds should be exposed to sunlight for 6 to 8 hours.

**Washing**

Pour the seeds into a container with clean water, so that the seeds are submerged by about 10 cm of water to ensure even water absorption.

**Soaking**

After washing the seeds, let them soak in water for 12-24 hours, so that they become saturated.

**Seed Dressing**

The use of a seed dressing agent makes the seeds flow better during drone seeding, ensuring more uniform and smooth sowing.

**Germination**

Soak them in warm water at 35-38℃ for 5-10 minutes. Then, put the pre-heated seeds into baskets or woven bags, and store them in a constant temperature soaking room for germination.

We recommend letting the seeds germinate to no more than 2 mm. If the shoots are too long, they can get entangled, which will affect the evenness of spreading.

**Air Dry**

After accelerating germination, the rice seeds should be spread out to dry on a cool and ventilated surface.

Air Drying Notes

Grab a large handful of dried seeds in your hands. If you can't feel any obvious moisture and the seeds can fall through your fingers without sticking to each other, the seeds are properly dried. If you do not dry the seeds before putting them in the spreader, they may clump together and fail to be spread evenly.

The degree of seed moisture will also affect the feed speed, but you can select different opening sizes to compensate.

To improve job performance, refer to the following points:

1. The flight speed should not be too fast.

2. Before returning to reload, ensure a small amount of material remains in the tank. Reload nearby to reduce the maximum flight distance and improve work efficiency.

3. If you soak seeds before seeding, air dry them first to ensure they do not stick together.

4. When performing fertilization, promptly clean out the remaining fertilizer and dust when you are done so it does not cause clumps that may damage the system during future seeding operations.

5. Different materials have different densities. Adjust the opening size to achieve the recommended flow rate in the table above within 1 minute. For high flow rates, you can calculate based on 30 seconds.

6. Before officially starting, we recommend you conduct a trial run. If the actual volume of materials per unit area is larger than expected, you can increase the flight speed and vice versa. However, the flight speed should not exceed 4.5 m/s.

Cases of Aerial Citrus Orchard Application in Spring

<https://mp.weixin.qq.com/s/VNJOs3W8Olr1_EF1Gxp_kQ>

Spring is the start of the agricultural year. For citrus orchards, crop protection in spring is vital for the rest of the year. If you fail to succeed in this critical period, you will have to deal with stunted growth and more pests throughout the year and a consequent drop in production.

There are three main steps in Spring crop protection for citrus orchards: First, in the spring, citrus orchards are faced with pests like red mites, aphids, psyllids and diseases such as scab and citrus melanose that require **treatment and control measures**. Second, citrus trees begin to flower and bear fruit in spring, requiring the application of **foliar fertilizer to promote flower and fruit growth**. Third, for species with vigorous spring shoots, a chemical agent should be used to inhibit shoot growth and **prevent the excessive growth of citrus plants**.

With the growing adoption aerial application for fruit tree orchards, DJI agricultural drones can be seen all over Chinese citrus orchards in the spring. Let's take a look at how DJI agricultural drones help protect citrus orchards in the spring!

**Fuding, Fujian: Protecting Pomelo Trees Against Citrus Greening Disease**

The pomelo is a major crop in Qianqi Town, Fuding City, Fujian. The town plants an area of 1655.6 acres and earns over RMB 90 million annually from the crop. However, the local Siji pomelo was threatened by citrus greening disease. This is a devastating disease caused by bacteria. There is no cure for citrus plants after being affected by this disease, so it is called "cancer of citrus". Citrus greening disease is mainly transmitted by citrus psyllids. Therefore, the effective control of the psyllid population can prevent outbreaks of citrus greening disease.

Siji Pomelo

In the middle of March 2020, at the invitation of the local government, a crop protection team from Fujian Dingfei Technology Co., Ltd. used two 1P drones and two T16 drones to control the psyllid population in 230 acres of pomelo in Qianqi Town. They finished their task in four days.

Citrus greening disease

|  |  |  |  |
| --- | --- | --- | --- |
| **Drone Model** | **T16** | **Flight Speed** | **4 m/s** |
| **Relative Crop Height** | **2.5 m** | **Row Spacing** | **4 m** |
| **Chemical Volume per 667 sqm** | **4 L** | **Nozzle Model** | **XR11015VS** |
| **Job Mode** | **Manual** |

**Job Parameters**

Parameter Explanation: The total area was large and the plots were dispersed, so a fast and mobile operating method was required. Therefore, the team adopted the manual mode to reduce the planning time required for the different plots. In Qianqi Town, the Siji Pomelo is planted using the dwarfing method, resulting in a thin canopy, fewer leaves, and lower requirements for the penetration of liquid treatments. Therefore, the flight speed can be increased to 4 meters to improve work efficiency. A volume per 667 sqm of 4 L can ensure sufficient coverage.

**Video**

**Chemical Information**

|  |  |  |
| --- | --- | --- |
| **Effective Ingredients and Content** | **Volume per 667 sqm** | **Action** |
| **Bifenthrin + Spirotetramat 26% SC** | **20 mL** | **Insecticide** |

Citrus Psyllids

This insecticide is used to keep the citrus psyllids population under control. Bifenthrin is a highly effective broad-spectrum insecticide that is toxic through contact and ingestion. It is used to control various lepidopteran and homopteran pests. Spirotetramat is a powerful systemic insecticide used for piercing-sucking insects. The combination of the two chemicals has high insecticidal activity against psyllids and sustained effectiveness.

**Rong'an, Guangxi: Aphid Control for Mandarin Oranges**

By late March 2020, the spring season was in full swing. In Daliang Town, Rong'an County, Guangxi Province the citrus orchards were budding and flowering. However, the young spring shoots were suffering from aphids. Due to the continuous rain and high temperature, the risk of citrus diseases was high. On March 21, the rain finally stopped after days on end, and a local orchard used this time to carry out pest control on more than 16.5 acres of fruit trees.

Mandarin Oranges

**Job Parameters**

|  |  |  |  |
| --- | --- | --- | --- |
| **Drone Model** | **T16** | **Flight Speed** | **2 m/s** |
| **Relative Crop Height** | **2.5 m** | **Row Spacing** | **4 m** |
| **Chemical Volume per 667 sqm** | **4.5 L** | **Nozzle Model** | **XR11015VS** |
| **Job Mode** | **Fruit tree mode 2.0** |

Parameter Explanation: The orchard is located in a hilly area and the terrain is uneven. Therefore, the teams used a P4R drone to map the land. They then used and DJI TERRA to create a map and generate routes. By reducing the flight speed to 2 m/s, the team increased the penetration of the insecticide. A chemical volume per 667 sqm of 4.5 L could ensure sufficient coverage.

**Video**

**Chemical Information**

|  |  |  |
| --- | --- | --- |
| **Effective Ingredients and Content** | **Volume per 667 sqm** | **Action** |
| **Beta Cypermethrin + Imidacloprid 7.5% SC** | **30 mL** | **Insecticide** |
| **Difenoconazole + Pyraclostrobin 40% SC** | **25 mL** | **Fungicide** |
| **Organic water-soluble fertilizer** | **100 mL** | **Increased nutrition** |

This treatment is used to control aphids and prevent diseases. Beta cypermethrin is a highly effective broad-spectrum pyrethroid insecticide that is toxic through contact and ingestion. It is used to control various lepidopteran and hemipteran pests.

Imidacloprid is a systemic pesticide used for piercing-sucking insects. It is an effective agent against aphids. Difenoconazole and pyraclostrobin are both systemic fungicides with protective and curative action. The two fungicides have different actions, so their combination improves the disease prevention and treatment effects.

Citrus Aphids

**Ganzhou, Jiangxi: Protecting the Flowers and Fruits of Navel Orange Trees**

On March 11, 2020, Siji Chengyuan Family Farm in Chongyi County, Ganzhou City, Jiangxi was eager to try out its newly purchased T20. The farm has an 82-acre orange orchard, planted with a variety of orange species. The different species mature at different times, so orange harvesting takes place throughout the year. Under the guidance of the agricultural drone instructor, they used the T20 to apply insecticides and fertilizers on 5 acres of summer oranges and Newhall navel oranges.

The user's new T20 system

**Job Parameters**

|  |  |  |  |
| --- | --- | --- | --- |
| **Drone Model** | **T20** | **Flight Speed** | **2.5 m/s** |
| **Relative Crop Height** | **2 m** | **Row Spacing** | **3 m** |
| **Chemical Volume per 667 sqm** | **5 L** | **Nozzle Model** | **XR11001VS** |
| **Job Mode** | **Flight Plan** |

Parameter Explanation: The orchard was planted on farmland and the terrain is flat. Therefore, they chose to use the RTK module on the remote control to plan flight paths for the plots. This allowed them to set flight paths precise to within centimeters. To ensure effectiveness, they reduced the flight speed to 2 m/s, increasing the chemical Volume per 667 sqm to 5 L. This increased the penetration and coverage of the chemicals.

**Chemical Information**

|  |  |  |
| --- | --- | --- |
| **Effective Ingredients and Content** | **Volume per 667 sqm** | **Action** |
| **Beta Cypermethrin 4.5% EC** | **100 mL** | **Insecticide** |
| **Acetamiprid 70% WG** | **2 g** | **Insecticide** |
| **Spirotetramat 22.4%** | **20 mL** | **Insecticide** |
| **Boron Fertilizer** | **80 mL** | **Fertilizer** |
| **Additives** | **10 mL** | **Improves spray performance** |

This treatment is used to prevent sporadic pest infestations in the orchard and promote flowering and fruit growth. Beta cypermethrin is a broad-spectrum pyrethroid insecticide. It is used to control various lepidopteran and hemipteran pests. Acetamiprid is a systemic pesticide used for piercing-sucking insects. It is mainly used against aphids and thrips in citrus orchards.

Spirotetramat is a powerful systemic insecticide used to protect citrus orchard against aphids, thrips, scale insects, and red mites. It is a very suitable agent for aerial application. Boron fertilizer promotes flowering and fruit growth. The aerial application additives help the treatment liquid spread over the leaves of citrus trees and promote absorption by fruit.

The advent of DJI agricultural drones has opened a new chapter in crop protection for citrus orchards. The flexible operation modes, powerful wind field performance, and large flow of the drones ensure optimal performance. This makes DJI agricultural drones the undisputed leader in aerial citrus orchard application. The upcoming **Fruit tree mode 3.0**will further enhance the performance of DJI agricultural drones in fruit tree orchard scenarios.

Look! Drone-fed Crayfish Are Delicious

<https://mp.weixin.qq.com/s/-Y8l1No3aC0VshaWEk-ruw>

Crayfish are the perfect summer food. However, they can be difficult to peel and might not contain that much meat. This is the result of poor farming methods.

According to data from the Fisheries Administration of the Ministry of Agriculture and Rural Affairs, in 2018, China had almost 2 million acres of crayfish farms and produced 11.3 million tons annually. The value of this industry exceeds RMB 260 billion, and it employs 5.2 million people.

Feeding is the most time-consuming and labor-intensive process involved in crayfish farming. Crayfish need a relatively large amount of feed each day, about **5%-10%** of the crayfish's body weight on a daily basis. When the crayfish grow to their largest size, a farm requires about 4 kg of feed per 667 sqm.

Crayfish are generally fed twice a day in the morning and evening. However, When the water temperature is low in early spring and late autumn, they only need to be fed once a day in the afternoon.

Crayfish feeding

The traditional feeding method is to have workers manually feed the crayfish on foot or in a rowboat. Using this approach, a worker can cover about 5 acres per hour. This method is labor-intensive and results in an uneven distribution of food.

Since the release of the v2.0 for the DJI T system of agricultural drones, farmers everywhere have started using the drones to feed their crayfish. This method saves time, effort, and money.

**Mr. Fang from Zhejiang**

**165 Acres in 4 Hours**

Mr. Fang lives in Shaoxing City, Zhejiang. Even though he has only been a crayfish farmer for four years, he has already made a name for himself. He has always thought the crayfish feeding process was a major annoyance. In the past, he hired workers to manually spread feed over his 165-acre farm. Every day, it took ten men all morning to complete the job. During rice planting season, feeding takes even longer and it is easy to trample on the rice seedlings. In addition to the high cost of labor at this time, sometimes there is no one available to work.

The release of DJI's spreading system completely revolutionized his work method.

In March 2020, Mr. Fang started to use the spreader drones on his crayfish and rice fields. The first time he used the drones, he was able to spread feed over 50 acres in just one hour using two drones. Afterward, by having the two drones work simultaneously, he was able to cover the entire 165 acres in under 4 hours. This freed him from reliance on manual labor.

**Video: T20 spreading crayfish feed**

Job Parameters

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Volume per 667 sqm** | **Opening size** | **Disk Speed** | **Altitude** | **Flight Speed** | **Route Spacing** |
| **1.5 kg** | **40%** | **1000 rpm** | **2.3 m** | **7 m/s** | **10 m** |

Talking about using the spreader drones, Mr. Fang couldn't help giving a thumbs up, "It used to cost RMB 1,000 a day to hire 10 people to spread feed. Now, I just need three people, so I save RMB 700 a day. Also, the drones do a much better job than humans and spread the feed more evenly. I can also use the drones to spray pesticides after planting rice. This is a great help!”

**Mr. Teng from Sichuan**

**16 Acres in One Hour**

Mr. Teng from Nanchong, Sichuan is in charge of 16 acres of crayfish and rice fields. In addition, to stocking the rice fields with crayfish and then catching them, he must also feed them. This left him exhausted every day. At the beginning of 2020, through an introduction by a local agent, Mr. Teng learned about the DJI T20 spreading system and immediately thought that it could be used in his crayfish field.

He recently purchased a spreading system. After training, he quickly mastered the use of the spreader drone. On March 8, 2020, he flew the T20 over his fields in Nanchong for the first time, evenly spreading the feed. He was able to spread feed over his 16 acres in less than an hour.

Traditional crayfish feeder

The use of the spreading system greatly reduced Mr. Teng's work time and the intensity of the work. It also allowed him to see greater possibilities for the future. "The spreader saves me a lot of time and gives me the energy to expand my farm.”

The T20 spreading system v2.0 has an extra-large 20 L capacity. It can spread solid granular fertilizer, feed, seeds, and other materials. It is suitable for multiple application scenarios such as direct rice seeding, grass replanting, rapeseed sowing, feeding, and fertilization. Compared with traditional feeding methods, the DJI agricultural spreading system is faster, more uniform, and lighter. We expect it to drive a revolution in feeding equipment for the aquaculture industry.

**Protecting Rice Fields Against the Channeled Applesnail**

<https://agms.dji.com/h5/agro-information-detail/234>

The snails originated in the tropical and subtropical regions of Central America, and later invaded countries across North America, Asia, and Africa. It is now an invasive species worldwide.

Each year, April-June and August-October are the peak periods during which these snails reproduce. These are also the times when they pose the greatest threat. These snails mainly affect crops such as rice, milkvetch, arrowhead, prickly water lily, sweet potato, vegetables. They cause particularly serious damage to rice throughout all stages of their growth. From the seedling to the tillering stage, the snails feed on the rice leaves and tillers, which will reduce the yield.

**1.     Background**

|  |  |  |  |
| --- | --- | --- | --- |
| **Job Date** | 2020/3/27 | **Job Location** | Kaiping, Guangdong |
| **Terrain** | Flat | **Wind Speed** | Level 1-2 |
| **Weather** | Cloudy | **Temperature** | 22-29℃ |

**2.     Job Parameters**

|  |  |  |  |
| --- | --- | --- | --- |
| **Drone Model** | T20 | **Flight Speed** | 5 m/s |
| **Relative Crop Height** | 2 m | **Row Spacing** | 6 m |
| **Chemical Volume per 667 sqm** | 1.5 L | **Nozzle Model** | XR11001VS |
| **Job Mode** | **Flight Plan** |

**3.     Chemical Information**

100 g/667 sqm Abamectin 5% EC

Time of channeled applesnail treatment: In direct-seeded rice fields, when the weather is warm, the snails need to be treated with chemical agents after hatching. In transplanted rice fields, treatments must be performed before and after transplanting. When applying pesticides in the field, ensure a shallow water layer of about 5 cm for about 7 days. During this period, try to keep the water as clear as possible to achieve the optimal effectiveness against the snails.

**Fruit Tree Mode 2.0 for Peach Tree Protection**

<https://agms.dji.com/h5/agro-information-detail/196>

The T16's Fruit Tree Mode 2.0 solves the problem solves the difficulties of aerial application for fruit trees. More and more users are using Fruit Tree Mode 2.0 for their orchards. Below we will discuss a case where the T16 fruit tree mode was used to prevent brown rot and gum disease in a peach tree orchard.

**1.   Background**

|  |  |  |  |
| --- | --- | --- | --- |
| **Job Date** | 2019.04.30 | **Job Location** | Reshi Town, Taoyuan County, Hunan Province |
| **Terrain** | Mountainous | **Area** | 11.5 acres |
| **Peach Tree Height** | About 3-3.5 m | **Tree Age** | 6 years |

**2.    Job Parameters**

|  |  |  |  |
| --- | --- | --- | --- |
| **Drone Model** | T16 | **Flight Speed** | 3 m/s |
| **Relative Crop Height** | 2.2 m | **Row Spacing** | 4.5 m |
| **Chemical Volume per 667 sqm** | 3 L | **Nozzle Model** | XR11001VS |
| **Job Mode** | **Fruit tree mode 2.0** |

**3.    Chemical Information**

   Difenoconazole 40%, Mancozeb 75%, Thiazole 20% Difenoconazole is a triazole systemic fungicide with protective and curative action. It is widely used to effectively prevent black spot, black pox, white rot, leaf spot, powdery mildew, brown spot, rust, stripe rust, head blight, and other diseases of fruit trees, vegetables, and other crops. Mancozeb is a protective fungicide with a broad insecticidal spectrum. It can also supplement zinc in crop nutrition. Thiazole is a new type of bactericide, which has protective and therapeutic effects. It can prevent most bacterial diseases and some fungal diseases.

**4.   Disease Background**

Peach brown rot, also known as sclerotinia, is a fungal disease. The disease can affect peach flowers, leaves, branches, and fruits. When young leaves are affected by the disease, the infected part will become brown and wilt starting from the edges. The diseased leaves will remain on the branches. Infected fruit initially presents round brown lesions on the surface. If the environment is suitable, the lesions can spread to cover the whole fruit within a few days, and the pulp will also become brown and soft. This disease is most serious in environments where a peach tree is exposed to low temperatures and rain when the tree flowers and young fruit grow and then a warm and humid climate when the fruit matures.

Peach gum disease is a fungal disease. This disease mainly infects tree branches, but it can also harm the fruit. One-year-old branches are infected. At first, small verrucous protrusions are produced centered on the lenticels, and then enlarged into tumor-like protrusions, with small black needle-like dots. Then, in May of the following year, the diseased spots expand and crack, overflowing with a soft translucent and viscous glue, which then hardens and turns dark and swells by absorbing water. In severe cases, the branches can die. Physical damage from freezing, insects, disease, hail, and shearing often causes peach gum disease.

**5.    Team Introduction**

Taoyuan County New Sannong Modern Agricultural Service Co., Ltd. was established in July 2016 by the Taoyuan County Supply and Marketing Cooperative and Xinglong Rice Industry Association. This company is working to systemically build a modern agricultural service enterprise with agricultural materials support services, precision planting services, end-to-end services for the new agricultural industry chain, and unified protection and treatment services. The company has a business area of 3,800 sqm and a warehouse area of 2,100 sqm. They have a distribution center for agricultural materials and seven distribution vehicles. It also has a base construction center, an inspection and testing center, and an agricultural technology training center. At the end of 2018, the company had established supply and marketing service joint venture branches to benefit farmers and village-level service stations in 26 towns and villages across the county.

The company has direct links with agricultural goods manufacturers, reducing the cost of agricultural goods by cutting out the middlemen. During the planting process, the company organizes agricultural technology training and provides pre-production, mid-production, and post-production full-industry chain services to help farmers increase their incomes. By helping develop strong production and sales environments for agricultural products, the company has brought profits to the cultivators and benefits to consumers.