



## **Airport Bird Control**

### **-- Application Scheme of Pestman Bird Repellents at Nanchang Changbei International Airport**

In recent years, with the improvement of the ecological environment and the enhancement of people's awareness of environmental protection, birds have become more and more, and even become a disaster. In Agriculture, airports, electricity and other fields have suffered greatly, and birds striking aircrafts are the most serious one among the bird hazards.

#### **1. Overview of the other bird repellent products which are commonly used in China:**

Bird repellent, as a kind of bird behaviour change agent, now has become one of the integrated management method to prevent birds striking aircrafts at airports and is widely used in China. However, the country has not yet formulated a unified industry standard for bird repellent products, the effective composition formula of bird repellent from various enterprises are varied. Many manufacturing enterprises are driven by profits, and they have no careful and serious scientific attitude to carry out experimental studies and repeated field trail tests. Some manufacturing enterprises just copy someone else's patent results in inferior products, and their repellent composition formulations do not take adequate account of the interactions between aromatic compounds. Although their products can temporarily drive away part of the birds after application, but the side effect is to attract a large number of flying insects, which will cause the increase of birds quantity in the treated area due to more and more flying insects. In the past several years, many airports have applied these inferior bird repellent



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products which increase the frequency of bird striking aircrafts during the take-off and landing, and the outbreak of swallows and bats is the most realistic evidence.

### **2. The Characteristics of Pestman bird repellent products:**

Pestman bird repellent is microcapsule aqueous preparation which is produced by using active ingredients of various biological raw materials which are rich in biological factors for repelling various birds, and it is the real sense of slow-release biological product. The use of aromatic compounds affects the birds in the sense of smell and taste to produce allergic reaction and anorexia reaction, and meanwhile it also affects the birds in the sense of touch to produce a " rejection reaction" function. That is why Pestman bird repellent product has good effect and long effective time. The microcapsule bird repellent suspension emulsion for airport is our flagship product, and it also can be used in livestock farms. It is regarded as the exclusive product that can effectively repel sparrows by many pest control enterprises in China.

Pestman bird repellent products takes full account of the interaction among the aromatic compounds, the produced odour after application will not attract flying insects, and even have a repellent and physical killing effect to some insects.

### **3. The technical parameters of Pestman bird repellent products for airport:**

Pestman bird repellent products for airport are divided into liquid types and solid types. The liquid types are water-based Microcapsule bird repellent Suspension Emulsion and oil-based bird repellent Smoke Fog agent. The solid types are Microcapsule bird repellent Granules and Microcapsule bird



repellent block.

**1) Bird Repellent Microcapsule Suspension Emulsion:  
(Hereinafter called Pestman bird repellent B)**

(1) Properties: Milky white or slightly yellow viscous water-based liquid, slightly fragrant smell.

(2) Content of active ingredient:

Methyl anthranilate content:  $\geq 20\%$

(3) PH (1% water diluent): 6.5~8.5 .

(4) Dispersion stability: Acceptable.

(5) Low temperature and Heat storage stability: Qualified.

(6) Toxicological test:

Acute oral toxicity test LD50  $\geq 10000\text{mg/kg}$ ;

Acute percutaneous toxicity test LD50  $\geq 10000\text{mg/m}^3$

The acute skin irritation test and eye irritation test should have no acute skin irritation and mild eye irritation to the white rabbits.

(7) Shelf life: Two years.

(8) Formulation type: Microcapsule Suspension Emulsion.

(9) Dilution ratio with water: 200~300 times.

(10) Recommend dosage rate: 1.0-1.2 ltrs/hectare.

(11) It is usually recommended to dilute with water 250 times for spray use, with the dosage rate of 1 ltr Pestman bird repellent B per hectare, so as to achieve the purpose of driving away birds, rodents and bats after spraying.

(12) The effective time: 15~30 days.

(13) Package: 1 ltr/bottle; 4 ltrs/drum; 20 ltrs/drum, 200 ltrs/drum.



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### **2) Bird Repellent Smoke Fog Agent:**

**(Hereinafter called Pestman bird repellent E)**

(1) Properties: Brown yellow transparent oily liquid, with strong fragrance.

(2) Content of active ingredient:

Methyl anthranilate:  $\geq 20\%$ .

(3) Density (g/ml) : 1.05~1.10 .

(4) Melting point (°C) : -8.6.

Flash point (°C) : 106.

(5) Dosage rate: 0.5~1.0 ltr/hectare.

It should be applicated by Thermal foggers, no need to add any solvents, and it can be used at 10°C below zero, so as to achieve the purpose of driving away birds, rodents and bats after spraying.

(6) The effective time: 7~10 days.

(7) Shelf life: Three years.

(8) Toxicological test:

Acute oral toxicity test LD50  $\geq 5000\text{mg/kg}$ ;

Acute percutaneous toxicity test LD50  $\geq 5000\text{mg/m}^3$

The acute skin irritation test and eye irritation test should have no acute skin irritation and mild eye irritation to the white rabbits.

(9) Formulation type: Oil based Micro-emulsion.

(10) Package: 1 ltr/bottle; 4 ltrs/drum; 20 ltrs/drum, 200 ltrs/drum.

### **3) Bird Repellent Microcapsule Granules:**

**(Hereinafter called Pestman bird repellent G)**

(1) Properties: Brown or Slightly black cylindrical particles, with strong fragrance.

(2) Content of Active ingredient:

Methyl anthranilate content:  $\geq 10\%$

(4) PH value (1% water diluent) : 6.0~8.0

(5) Toxicological test:

Acute oral toxicity test LD50  $\geq 10000\text{mg/kg}$ ;

Acute percutaneous toxicity test LD50  $\geq 10000\text{mg/m}^3$

The acute skin irritation test and eye irritation test should have no acute skin



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irritation and mild eye irritation to the white rabbits.

- (6) Usage: Broadcast sowing, Pile up, Hanging bottle, or put in the Thermometer screen.
- (7) Dosage rate: 7.5~15.0 kgs/hectare.
- (8) The effective time:  $\geq 40$  days.
- (9) Shelf life: Two years.
- (10) Package: 20 kgs/plastic drum.

#### **4) Bird Repellent Microcapsule block: (Hereinafter called Pestman bird repellent M)**

- (1) Properties: Red solid soft square, with strong fragrance.
- (2) Content of active ingredient:  
Methyl anthranilate:  $\geq 20\%$  .
- (3) PH value (1% water diluent) : 7.5~12.5 .
- (4) Toxicological test:  
Acute oral toxicity test  $LD_{50} \geq 10000\text{mg/kg}$ ;  
Acute percutaneous toxicity test  $LD_{50} \geq 10000\text{mg/m}^3$

The acute skin irritation test and eye irritation test should have no acute skin irritation and mild eye irritation to the white rabbits.

- (5) Usage: put it on the lawn of the airport every 3-5 meters in “田” type or “回” type.
- (6) Mu (667 m<sup>2</sup>) dosage:  $\leq 10\text{kg}$
- (7) Efficacy:  $\geq 180$  days.
- (8) Shelf life: 2 years.
- (9) Packing: 10kg/ plastic drum x 2 drum/ctn.

**Noted: Pestman bird repellent G and Pestman bird repellent M are repellents which are effectively on repelling birds by smell, and have strong repellent effect on birds which are sensitive to smell.**

#### **4. Application Scheme of Pestman Bird Repellent at Nanchang Changbei International Airport:**

##### **1) Overview of the flight control area:**

The runway of the flight control area of Changbei Airport is 3,400 meters length and 60 meters width, the lawn area is nearly 167 hectares. The terrain is basically flat, with few low-lying areas.

Outside the perimeter are grass belts, rivers, ponds, large areas of crop planting and small distributed arbor forests, which is the best place for birds to inhabit and insects to breed easily.

In the lawn of the flight control area, insects are abundant in Spring, Summer and Autumn, but few in winter. In the season of insect abundance, moths of Lepidoptera and grasshoppers are the most, while beetles of Coleoptera are rare. These insects are the main foraging objects of birds in these three seasons. Although the grass in the flight control area is mowed four times per year on average, the grass seeds grow unevenly and are the food source for the finches that like to eat grass seeds.

## **2) Insecticide application in the lawn area of the flight control area:**

In winter, there are lots of insect eggs in the soil of airport lawns, especially the eggs of locusts which is 5 ~ 8 cm deep from the ground. Airport should spray the insecticides such as Malathion timely after the first mowing in spring to kill the young Orthoptera and Lepidoptera insects. After mowing, you should also applicate Molluscacide (such as: Metaldehyde) on the low-lying areas where snails and other mollusks breed to prevent big waterfowl from harming the airport control area. After each mowing, different insecticides should be sprayed according to the species of insect pests in different seasons to cut off the food source for birds to forage in the earthen lawn area of the airport.

The application of insecticides and bird repellent in the flight control area of the airport can get twice the result with half the effort.

## **3) Application of Pestman bird repellent in flight control areas:**



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Pestman bird repellent, as one of the measures of comprehensive bird prevention and control in the airport, is the most effective when flock birds disaster occurs in the flight control area. And it can also be a preventive measure if you know the season of airport birds hazard well.

According to the characteristics of Pestman bird repellents, the first choice is to spray Bird Repellent Microcapsule Suspension Emulsion (Pestman bird repellent B), and scattering Bird Repellent Microcapsule Granules (Pestman bird repellent G) and putting Bird Repellent Microcapsule Block (Pestman bird repellent M) as auxiliary. Bird Repellent Smoke Fog Agent (Pestman bird repellent E) should be used when there are Swallow hazard and Bat hazard or when the environmental temperature below 0°C in winter to prevent and control bird hazard.

It is suggested to mix Pestman bird repellent B with insecticide, and dilute them with water and spray them on the runway (Swallows like to warm themselves and pick up rubber particles on the runway after dawn) and the lawns on both sides of the runway in the flight control area. If you will use Bird Repellent Smoke Fog Agent (Pestman bird repellent E) to repel the Swallows and Bats, we suggest you to apply it over the runway and lawns.

**Attached table: Application Scheme of Pestman Bird Repellent**





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Season	Month	Application area	Dosage form	Dosage (kg)				Note
				SE	GR	KZ	ME	
Spring	January	On both sides of the 3400-meter runway, around 2000 mu lawn	Suspoemulsion (SE) or smoke agent (ME)				100	
	February	On both sides of the 3400-meter runway, around 2000 mu lawn	Suspoemulsion (SE) or smoke agent (ME)				100	
	March	On both sides of the 3400-meter runway, around 2000 mu lawn	Suspoemulsion (SE) or smoke agent (ME)	200				
Summer	April	On both sides of the 3400-meter runway, around 2000 mu lawn and pavement	Suspoemulsion (SE) & block (KZ)	200		500		Put blocks along the two sides of the runway, around 50 mu
	May	On both sides of the 3400-meter runway, around 2000 mu lawn and pavement	Suspoemulsion (SE)	250				
	June	On both sides of the 3400-meter runway, around 2000 mu lawn and pavement	Suspoemulsion (SE)	250				





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Aut umn	July	On both sides of the 3400-meter runway, around 2000 mu lawn and pavement	Suspoemulsion (SE) & granules (GR)	250	100			Spread granules along both sides of the runway, around 100 mu
	August	On both sides of the 3400-meter runway, around 2000 mu lawn and pavement	Suspoemulsion (SE) & granules (GR)	250	100			Spread granules along both sides of the runway, around 100 mu
	September	On both sides of the 3400-meter runway, around 2000 mu lawn and pavement	Suspoemulsion (SE) & granules (GR)	200	100			Spread granules along both sides of the runway, around 100 mu
Winter	October	On both sides of the 3400-meter runway, around 2000 mu lawn and pavement	Suspoemulsion (SE) & granules (GR)	200	100			Spread granules along both sides of the runway, around 100 mu



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	<b>November</b>	<b>On both sides of the 3400-meter runway, around 2000 mu lawn</b>	<b>Suspoemulsion (SE) &amp; granules (GR)</b>	<b>200</b>	<b>100</b>			<b>Spread granules along both sides of the runway, around 100 mu</b>
	<b>December</b>	<b>On both sides of the 3400-meter runway, around 2000 mu lawn</b>	<b>Suspoemulsion (SE) or smoke agent (ME)</b>				<b>100</b>	
<b>Total</b>				<b>2000</b>	<b>500</b>	<b>500</b>	<b>300</b>	

Instruction: The suspension emulsion (SE) can be sprayed in alternate rows by pulling rod type spray truck, and spray around 1000 mu lawn each time. Spray at the road surface of plane take off and landing area to avoid swallow hazard.



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### **5. Conclusion**

This "Application Scheme of Pestman Bird Repellents at Nanchang Changbei International Airport" (referred to as " Application Scheme") was developed by the technical personnel of Pestman Group after visiting the flight control area of Changbei International Airport in person, communicating and analyzing with the leaders of the flight area management department. It is a combination of theory and practice, has practicability and feasibility.

According to the Application Scheme, the application of bird repellents in Changbei Airport will not increase the number of insects due to the application of a series of bird repellent products, because of its unique performance, so that the accident frequency of bird striking aircraft will be reduced, and the cost of other comprehensive bird pest control measures will be reduced.

The dosages of Pestman bird repellents applied in this Application Scheme is calculated based on the theory of the current situation of the flight control area, and the specific dosage should be appropriately increased or decreased according to the effect reflected in the process of application in the flight control area.