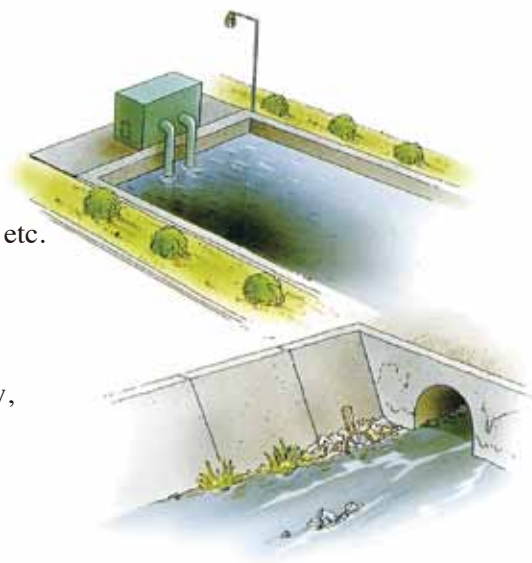


**For
Mosquito
Control**
Where to use Sumilarv® 0.5G?

Apply Sumilarv® 0.5G at mosquito breeding sites:
 standing water : reservoir, swamp, rain pool, pond, cistern, etc.
 running water : drain, ditch, creek, stream, river, etc.


What amount is required to achieve results?
Standing water

Sumilarv® 0.5G should be used as shown in the table below,
 based upon a target concentration of 0.01 – 0.05 ppm A.I.
 (2 – 10 g/m³ of Sumilarv® 0.5G).

Depth (cm)	Sumilarv® 0.5G (kg/ha)
10	2 – 10
20	4 – 20
30	6 – 30
50	10 – 50

* Water volume in the treated area (t) = length (m) × width (m) × average depth (m)

Running water

Sumilarv® 0.5G should be used as shown in the table above, based upon a target concentration of
 0.01 – 0.05 ppm A.I. (2- 10 g/m³ of Sumilarv® 0.5G) against flow volume per hour.

* Running water volume (t)/hour = width (m) × depth (m) × flow rate (m/hour)

First aid measures

Inhalation : Remove to fresh air. Give the victim rest. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Never give anything by mouth to an unconscious person. Get immediate medical attention.

Eye contact : Immediately hold eyelids apart and flush eyes with plenty of water for at least 15 minutes. Get medical attention. Remove contact lenses if worn.

Skin contact : Remove contaminated clothing. Wash skin with soap and water immediately. Get medical attention if irritation develops or persists.

Ingestion : Immediately rinse mouth with plenty of water and call a physician. Do not induce vomiting. Never give anything by mouth to an unconscious person.

Note to physicians : No specific recommendations. Treat symptomatically.

Precaution

Engineering controls : Provide adequate ventilation. Keep container tightly closed.

Exposure limits : No exposure limits have been established for any component.

Personal protective equipments

General : Usual precautions for handling chemicals should be observed.

Respiratory : Wear dust respirator.

Eye / face : Wear safety goggles to prevent contact with eyes.

Skin : Wear protective rubber gloves.

Other : Wear protective clothing as appropriate.

Ecotoxicity

DATA : Substance tested is Sumilarv® 0.5% G.

Fish acute toxicity : (Cyprinus carpio) LC₅₀ (48hr) 832 mg/L

DATA : Substance tested is Sumilarv® TG.

Fish acute toxicity : (Oncorhynchus mikiss) LC₅₀(96 hr) > 0.325 mg/L

Daphnia acute toxicity : (Water flea) EC₅₀ (48hr) 0.40 mg/L

Algae acute toxicity : (Green algae) EC₅₀ (72hr) 0.064 mg/L



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Insect Growth Regulator

Sumilarv® 0.5G

Try Sumilarv® for Perfect Pest Control, Toward a World without Pest Problems.

As a new generation insecticide, Insect Growth Regulator (IGR), Sumilarv®, provides you with a new approach to insect control.

Stop pest propagation with Sumilarv®. For nonrecurring populations, no more problem with pests. Forever!

Now why Sumilarv®? Because it breaks the life cycle of the insect, prevents a pre-adult from maturing into an adult. Thus, it can't reproduce, resulting in a decreased population. If a faster, stronger and longer lasting pest elimination system is desired, Sumilarv® should be used in combination with adulticides. The choice of Sumilarv® is a key to success in the control of fly, mosquito, flea and other insect populations

Thanks to Sumilarv®...

- Long-term pest population elimination, by subtly altering insects' life cycle.
- At low levels, it promises surprisingly effective control.
- Won't harm man and animals.

Thanks to Sumilarv®...

Long-Term Pest Population Elimination, by Subtly Altering Insects' Life Cycle.

What is Sumilarv®?

Sumilarv® is an insect growth regulator with unique mode of action.

Sumilarv® affects the physiology of morphogenesis, reproduction and embryogenesis of insects.

The morphogenetic effect of Sumilarv® is primarily seen during larval-pupal or nymphal-adult transformation. Under the presence of Sumilarv®, various degrees of incomplete metamorphosis can be seen.

Due to such unique modes of action, Sumilarv® prevents successful growth of insect population.

What Happens with the Application of Sumilarv®?

Against flies and mosquitoes, Sumilarv® inhibits their life cycles at the pupal stages. Where applied, larvae develop normally to pupation, but they cannot become adults. That is, normal maturing into an adult capable of reproduction is inhibited. And thus, the target population gradually decreases.

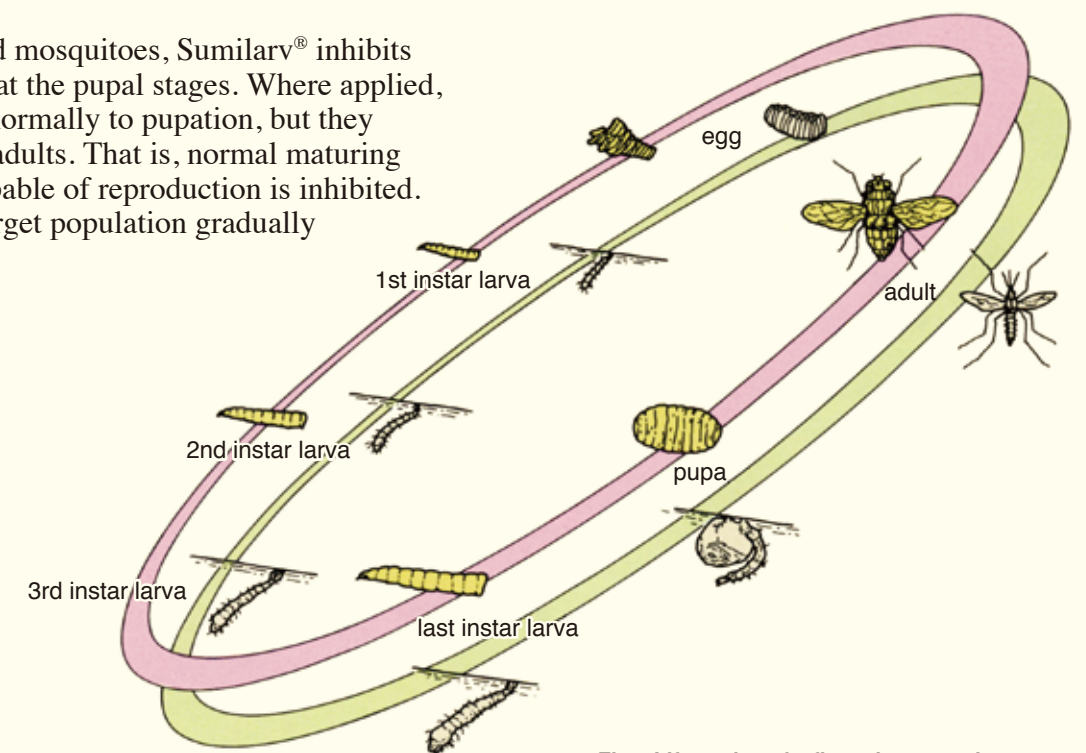


Fig.1 Life cycles of a fly and a mosquito

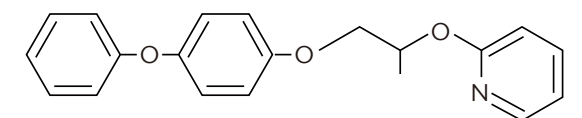
Sumilarv® 0.5G

Formulation : Granule

Composition : Sumilarv® (Pyriproxyfen) 0.5
Other Ingredients 99.5

100.0 (% w/w)

Structural Formula



Thanks to Sumilarv®...

At Low Levels, It Promises Surprisingly Effective Control.

Sumilarv® is much more effective than organophosphates, pyrethroids or other IGR against larvae of flies and mosquitoes, being active at substantially lower rates. Moreover, it provides the long-lasting control you have been seeking. If combined with adulticides, you can easily attain optimum perfect pest control.

Extremely High Biological Activity in Lab.

Sumilarv® is several 100 × more effective against housefly larvae (*Musca domestica*, 4-day-old larvae) than other compounds. Sumilarv® shows similar superiority against mosquitoes (*Culex pipiens pallens*, last instar larvae).

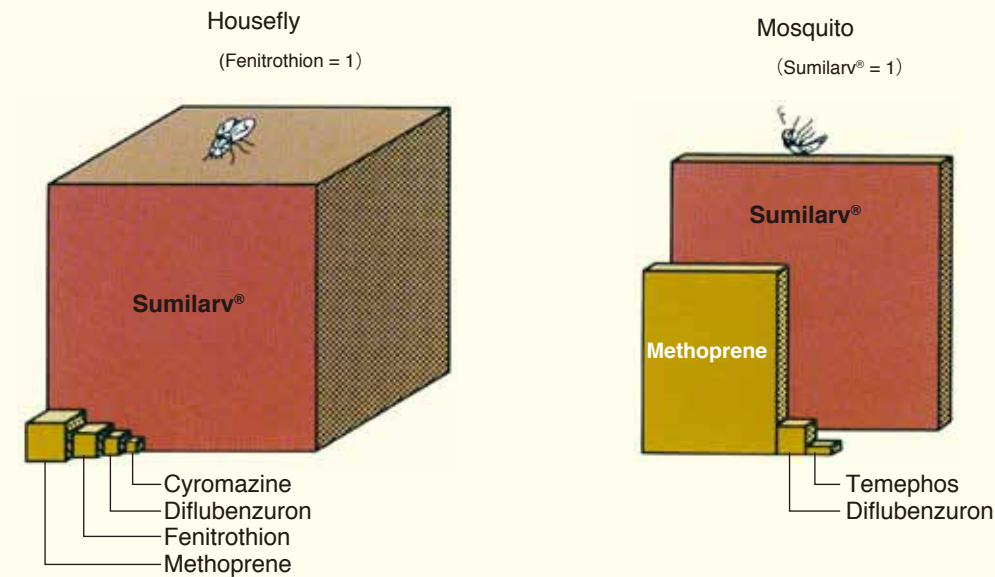


Fig.2 Relative emergence inhibition efficacy of Sumilarv® and various insecticides

Test method: Housefly Artificial medium method
Mosquito Immersion method

The efficacies are shown by IC₅₀ (µg/g medium) for Sumilarv® and Methoprene, and by LC₅₀ (µg/g medium) for other compounds.

Thanks to Sumilarv®...

Won't Harm Man and Animals.

Sumilarv® will not harm man and animals. Unlike conventional insecticides, Sumilarv® acts only against insects. It is insect-specific. It only controls insects and has no effect upon non-target animals, such as livestock, pets, birds and fish.

Sumilarv® is an ideal insecticide which can safely be used for the long-lasting control of houseflies and mosquitoes.

Toxicity of Sumilarv® 0.5G

Acute oral effects : LD₅₀ >5000 mg/kg (rats)
(both male and female rats)
Acute dermal effects : LD₅₀ >2000 mg/kg (rats)
(both male and female rats)
Eye effects : Mildly irritating. (rabbits)
Skin effects : Mildly irritating. (rabbits)
Sensitization : Negative (Guinea pig, Buehler)
Fish acute toxicity : LC₅₀ (48hr) 832 mg/L
(Cyprinus carpio)

High Performance in the Field

Sumilarv® has demonstrated its high potency in field tests. Sumilarv® 0.5G is effective against flies in a waste treatment facility at a rate of 40g per square meter. Furthermore, a pig house trial showed that Sumilarv® 0.5G combined with an adulticide space spray gave more rapid and complete control of flies. Similarly, with mosquito control, Sumilarv® provided 100% inhibition of emergence for 12 weeks in a fire pond. This powerful larvicidal action allows long term control of flies and mosquitoes, thus promoting a more healthy and comfortable environment for all to enjoy.

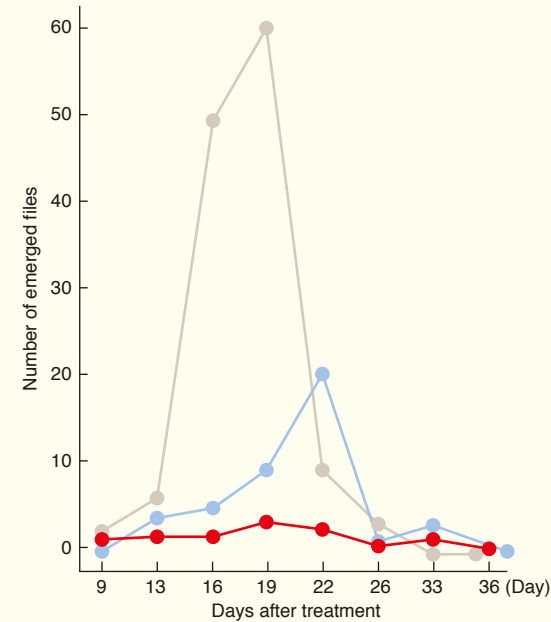


Fig.3 Field evaluation of Sumilarv® for flies in a waste treatment facility

● Sumilarv® 0.5G 40g/m² (0.2g A.I./m²)
● Diflubenzuron 25WP 4g/2l/m² (1g A.I./m²)
● Control

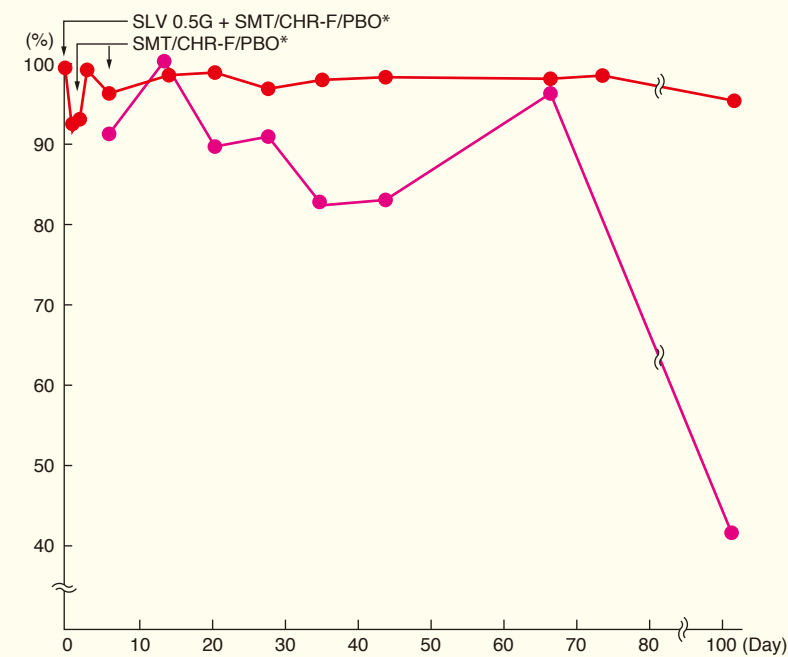


Fig.4 Field evaluation of Sumilarv® for flies in a pig house

Test material: Larvicide - Sumilarv® 0.5G, 20g/m², single treatment
*Adulticide - Sumithion®/Chrysron-Forte/PBO (5/5/15% EC), 15ml/m², three treatments
Method: Number of adults in a certain area was counted and RI was calculated. Larvae and pupae were collected from the test site. Number of emerged adults was counted and EI was calculated

● RI: Recovery Inhibition (%)
= $(1 - \frac{\text{No. of adults counted after treatment}}{\text{No. of adults counted before treatment}}) \times 100$

● EI: Emergency Inhibition (%)
= $(1 - \frac{\text{No. of emerged adults}}{\text{No. of collected larvae and pupae}}) \times 100$

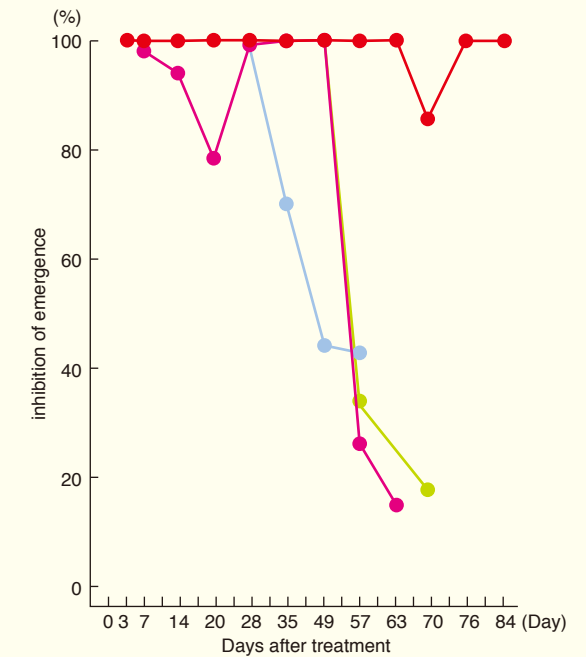


Fig.5 Field evaluation of Sumilarv® for mosquitoes in a fire pond (24m³)

● Sumilarv® 0.5G 20g/m³ (0.1 ppm A.I.)
● Sumilarv® 0.5G 10g/m³ (0.05 ppm A.I.)
● Methoprene 10F 5g/m³ (0.5 ppm A.I.)
● Diflubenzuron 25WP 2g/m³ (0.5 ppm A.I.)

How to Use Sumilarv® 0.5G, for Successful Pest Control

For Fly Control

Learn Fly Habits, Prior to Using Sumilarv®

The most harmful insect in an animal house or a waste treatment facility is the housefly. Knowing its life cycle and habits is vital to attaining more efficient fly control.

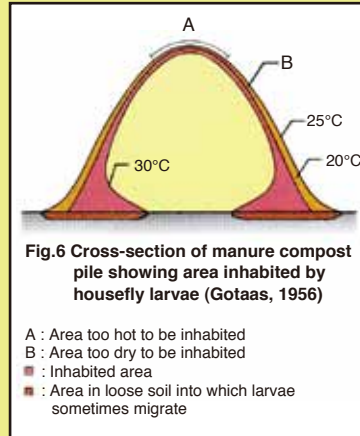
An adult housefly lays 50 – 150 eggs five or six times during its lifetime. The eggs hatch in a day, and the resulting larvae moult twice to become pupae and then adults.

Housefly larvae prefer the dark and will dig down into a dung/garbage pile to breed, particularly, the upper part of the pile near surface, which has the optimum temperature of 20 – 28°C for growth.

On the contrary, larvae can't survive at the lower central region of the pile, due to high temperatures 50 – 60°C.

Last instar larvae are willing to metamorphose to pupae in dry places. So, they crawl out of the interior and move about on the surface or dry soil around garbage piles when pupating.

Sumilarv® 0.5G is a larvicide subtly utilizing the above-mentioned housefly larval habits. Once it contacts last instar larvae, development will be inhibited.



Where to use Sumilarv® 0.5G?

Sprinkle Sumilarv® 0.5G all over housefly breeding sites such as livestock and poultry houses or waste treatment facilities, as uniformly as possible.

Pig house

Sprinkle Sumilarv® 0.5G over the whole surface of floor, where manure lies on the floor, as in the cow house. Where manure lies in the manure cellar as in the poultry house, Sumilarv® 0.5G must be directly sprinkled on the accumulated manure in the cellar.

Poultry house

Broadcast Sumilarv® 0.5G directly on manure under the hen cage or on manure in the cellar.

Cow house (Cattle pen)

Broadcast Sumilarv® 0.5G over the entire surface of the floor, when manure lies on the floor. Particularly, around pillars, posts, corners and other spots where manure and muck easily accumulated and flies would pupate.

Waste treatment facility

The whole surface of war sewage areas must be treated.

When and how often to use Sumilarv® 0.5G?

The time required for fly growth depends upon temperature. For a housefly, it takes about 10 days at 25°C, from egg-laying to the birth of a new fly. The higher the temperature, the faster it develops. Where it is below 10°C or beyond 35°C, they can't breed.

Sumilarv® 0.5G must be applied at the beginning of fly propagation, to attain the most effective control. For example, it should be applied before the adult fly population reaches a nuisance level as follows:

- 4 – 5 flies/board (m²) in a poultry house
- 4 – 5 flies/head in a pig house
- 12 – 25 flies/head in a cow house

If the manure depth is over 20 cm, another Sumilarv® 0.5G treatment is required.

What amount is required to achieve results?

Sumilarv® 0.5G should be applied at the rate of 20g/m² single application or at 10g/m², double applications with 2 weeks interval.

- Poultry house (80 m × 10 m) ≥ 8 kg/house
- Farrowing unit (2 m × 3 m) ≥ 60 g/unit
- Breeding pen (4 m × 5 m) ≥ 200 g/pen
- Others ≥ 10 g/m²

How to use?

Sumilarv® 0.5G can be easily applied manually or by machinery.

Recommended control system against houseflies, by the combination of Sumilarv® 0.5G and adulticides

To reduce the overall fly population more quickly and surely, one needs an effective control system. A combination of Sumilarv® 0.5G with adulticides offers such a system.

A recommended control system is shown below

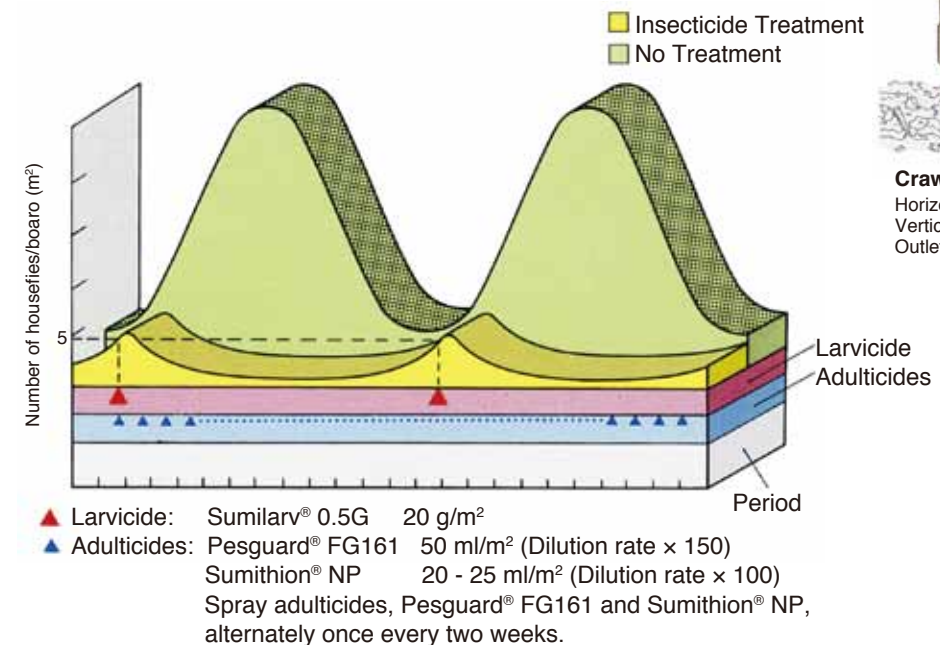
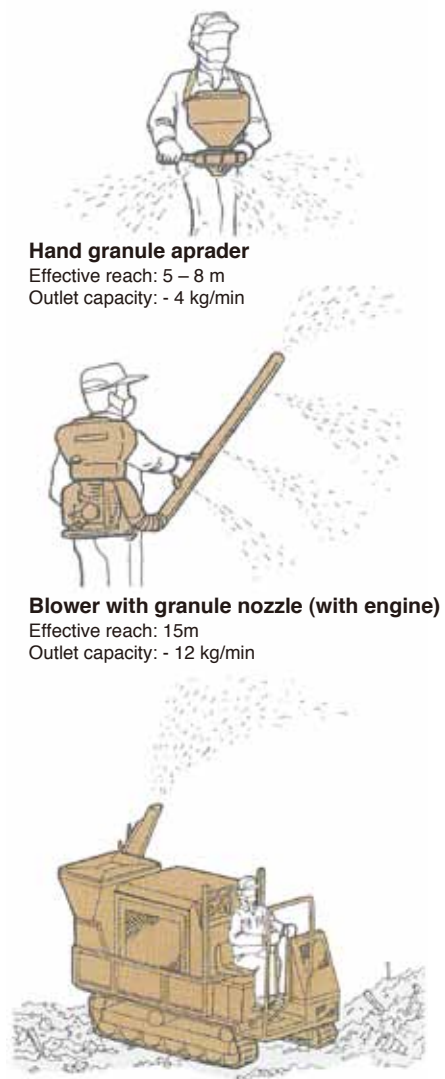


Fig.7 Recommended fly control system in a poultry house (80 m × 10 m)



Hand granule aprader
 Effective reach: 5 – 8 m
 Outlet capacity: - 4 kg/min

Blower with granule nozzle (with engine)
 Effective reach: 15m
 Outlet capacity: - 12 kg/min

Crawler mount type power granuler
 Horizontal throw (in still air): 30 m
 Vertical throw (in still air): 20 m
 Outlet capacity: - 25 kg/min