

Flies (*Musca domestica*) are an unpleasant nuisance in pig houses, both for humans working there, and for animals. Pesky flies cause restlessness among animals, which in turn results in poorer performance or even abnormal animal behaviour, including savaging behaviours, which can occur due to excessive numbers of flies. Furthermore, flies carry and transmit a variety of infectious diseases, like the bacterial swine dysentery caused by *Brachyspira hyodysenteriae*. Since 80% to 85% of the collective fly population exists as fly larvae which emerge continuously from the (liquid) manure, effective and long-lasting control measures must include the larvae in the manure. Therefore, application of adulticides is not sufficient but only larvicides can warrant satisfactory results.

However, the number of available larvicides is limited and in addition, the typical larvicides bear the serious danger of resistance development. (Kristensen and Jespersen (2003); Arthropod Pesticide Resistance Database; Pest Database)

In PT18 the biocidal product ALZOGUR (active substance cyanamide) is used to control *Musca domestica* fly larvae in liquid pig manure.

In contrast to the other currently available larvicides which have a specific mode of action or a specific target site in the larval organism, cyanamide is a **multi-site** inhibitor interfering with the metabolic system of the fly larvae (for example inhibition of the activity of dehydrogenases). This explains why no resistance of fly populations to cyanamide was observed during the decades of ALZOGUR use as larvicide.

Consequently, no alternate active substance is needed to avoid the development of resistance.

As multi-site inhibitor, ALZOGUR creates hostile conditions to fly larvae in the liquid manure for as long as an effective cyanamide concentration is maintained. Therefore, the fly population collapses shortly after the pig slurry is treated with cyanamide and usually remains low for the entire fattening cycle so that no other larvicide or adulticide treatment is required. Furthermore, as a consequence of the breakdown of the fly population the risk that pigs get infected with severe diseases like swine dysentery via fly vectors is notably reduced (please refer to the statement on PT3 use of cyanamide).

Conclusion

All other active substances used as larvicides in manure need to be applied according to a strict and restrictive insecticide management regime in order to avoid the development of resistances.

Due to the multi-side mode of action the use of cyanamide for the control of *Musca domestica* fly larvae in liquid manure offers unique advantages for which no alternatives are available.

References

- Kristensen, M. and Jespersen, J.B., Larvicide Resistance in *Musca domestica* (Diptera: Muscidae) Populations in Denmark and Establishment of Resistant Laboratory Strains, J. Econ. Entomol. 96 (4): 1300-1306 (2003)
- Arthropod Pesticide Resistance Database (APRD): <http://www.pesticideresistance.org/>
- Pest Database: <http://www.irac-online.org/pests/musca-domestica/>