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ORGANIC CONTACT INSECTICIDE AND ITS USE

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This invention relates to insecticides, and particularly to a new class of insecticides of the type known as contact insecticides and employed for combatting aphids and similar piercing-sucking insects, which require contact insecticides for their control.

The insecticides of the present invention have been found to possess toxicity against aphids such as chrysanthemum aphids, green peach aphids, kale aphids, and cabbage aphids.

The insecticides of the present invention are organic compounds containing not less than 11 and not more than 13 carbon atoms and are characterized by the common nucleus



wherein R_1 represents an alkyl group (C_nH_{2n+1}) and R_2 represents an alkyl group, an aryl group, i. e. a phenyl, naphthyl, or tetrahydronaphthyl group, or an aralkyl group; R_1 and R_2 may contain inorganic substituents for example, hydroxyl or halogen.

Examples of compounds within the purview of the present invention are di-n-amyl-ketone, methyl-nonyl-ketone, methyl-undecyl-ketone, phenyl-butyl-ketone, phenyl-n-amyl-ketone, 1-aceto-2-naphthol, beta-aceto-tetrahydronaphthone, beta-acetonaphthone, and 1-bromaceto-2-naphthol.

The contact insecticides of the present invention may be applied in the manner customary for the application of prior contact insecticides as by spraying the material in the form of a liquid or dust as the case may be or by spraying a solution or liquid suspension of the insecticide upon the insects.

The insecticidal compounds of the present invention are compatible with and therefore may be used in combination with fungicides, other insecticides, for example stomach insecticides and supplementary materials such as hydrated lime, diluents, and sticking, spreading, and wetting agents commonly used in combination with insecticides.

There are tabulated hereinbelow results obtained with typical compounds within the purview of the present invention for the purpose of illustrating the efficiency of the new contact insecticides. The tests were conducted by spraying leaves upon which brown chrysanthemum aphids were feeding with the solution or suspension of insecticide and counting the dead and live insects at the end of 24 hours.

The efficiency of control in the expression of results below is calculated as follows:

From the percentage of dead insects resulting from treatment with the insecticide the percentage of dead insects in the check test is subtracted, and this difference is divided by the difference in the percentage of dead insects in the check test and 100%. Thus, where a kill of 90% was obtained with the insecticide and 22% without insecticide, the efficiency as rated below is obtained as follows: $90-22=68$, $100-22=78$, and $68 \div 78=.87$, giving an efficiency of 87%.

In the table, BTW designates a benzene, triethanolamine-oleate, water suspension prepared by dissolving the compound in a minimal quantity of benzene, about $1\frac{1}{2}$ cc. for each $\frac{3}{4}$ to 1 gram of compound, adding the solution to a suspension of about $1\frac{1}{2}$ cc. of triethanolamine-oleate in 20 cc. of water, and diluting with water to the indicated proportions.

Table

Compound	Number of carbon atoms	Concentration in BTW		Efficiency
		Per cent	Per cent	
Phenyl-n-butyl-ketone.....	11	$\frac{1}{4}$	100	
Phenyl-n-butyl-ketone.....	11	$\frac{1}{8}$	70	
Di-(n-amyl)-ketone.....	11	$\frac{1}{8}$	87	
Methyl-nonyl-ketone.....	11	$\frac{1}{4}$	96	
Methyl-nonyl-ketone.....	11	$\frac{1}{8}$	86	
Phenyl-n-amyl-ketone.....	12	$\frac{1}{4}$	100	
Phenyl-n-amyl-ketone.....	12	$\frac{1}{8}$	67	
1-aceto-2-naphthol.....	12	$\frac{1}{4}$	99+	
1-aceto-2-naphthol.....	12	$\frac{1}{8}$	92	
Beta-aceto-tetrahydronaphthone.....	12	$\frac{1}{4}$	97	
Beta-acetonaphthone.....	12	$\frac{1}{4}$	97	
Beta-acetonaphthone.....	12	$\frac{1}{8}$	94	
Methyl-undecyl-ketone.....	13	$\frac{1}{4}$	100	
Methyl-undecyl-ketone.....	13	$\frac{1}{8}$	85	

I claim:

1. A contact insecticide comprising an organic compound containing not less than 11 and not more than 13 carbon atoms and consisting essentially of the nucleus



R_1 representing an alkyl group and R_2 representing an alkyl, an aryl, or an aralkyl group.

2. A contact insecticide comprising an organic compound containing only the elements carbon, hydrogen, and oxygen and containing not less than 11 and not more than 13 carbon atoms and consisting essentially of the nucleus



R₁ representing an alkyl group and R₂ representing an alkyl, an aryl, or an aralkyl group.

3. A contact insecticide comprising 1-aceto-2-naphthol.

4. A contact insecticide comprising beta-aceto-naphthone.

5. A contact insecticide comprising methyl-undecyl-ketone.

6. The method of combatting sucking insects, which comprises applying to the insect an insecticide of the type defined by claim 1.

7. The method of combatting aphids, which comprises applying thereto an insecticide of the type defined by claim 2.

8. The method of combatting sucking insects, which comprises applying to the insect an insecticide of the type defined by claim 3.

9. The method of combatting sucking insects, which comprises applying to the insect an insecticide of the type defined by claim 4.

10. The method of combatting sucking insects, which comprises applying to the insect an insecticide of the type defined by claim 5.

11. The method of combatting brown chrysanthemum aphids, which comprises applying to the aphids an insecticide of the type defined by claim 2.

12. The method of combatting brown chrysanthemum aphids, which comprises applying to the aphids an insecticide of the type defined by claim 3.

13. The method of combatting brown chrysanthemum aphids, which comprises applying to the aphids an insecticide of the type defined by claim 4.

14. The method of combatting brown chrysanthemum aphids, which comprises applying to the aphids an insecticide of the type defined by claim 5.

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