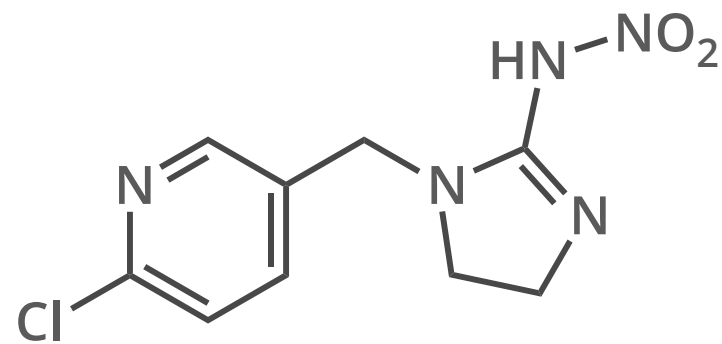
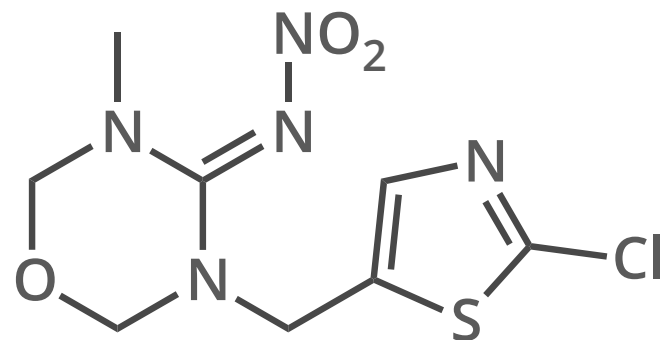


NEONICOTINOID PESTICIDES - THE FACTS

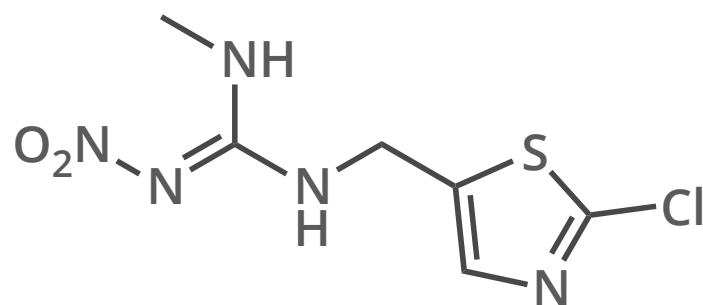
The use of neonicotinoid pesticides has been a contentious issue in recent years. They account for around 25% of the global agrochemical market, but have also been linked with negative environmental effects. This graphic looks at how they work, and the nature of the concerns surrounding them.



IMIDACLOPRID



THIAMETHOXAM



CLOTHIANIDIN



1980s

Decade in which neonicotinoid pesticides first developed

120

Number of countries in which neonicotinoids are registered



Now used more than any other class of insecticide.

HOW DO NEONICOTINOIDS WORK?



Can be added to irrigation water, then taken up & spread through plant tissues. Also used in seed treatments.



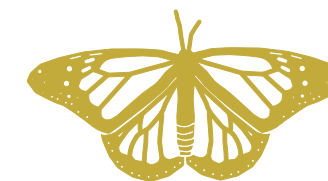
Bind to nicotinic receptors for the neurotransmitter acetylcholine in the insect central nervous system.



This leads to overstimulation and blocking of the receptors, leading to paralysis and eventual death.

Neonicotinoid pesticides are effective against a wide range of crop pests. They are the most widely used insecticides in the world, accounting for roughly 25% of all insecticide use. Median lethal doses vary depending on the size of the insect, ranging from less than 1 nanogram to almost 90 nanograms per insect. Mammals also have the receptors neonicotinoids bind to, but they bind to them less strongly than in insects, so neonicotinoid mammalian toxicity is much lower.

ENVIRONMENTAL CONCERNS



- Can accumulate in soil; low concentrations found in nectar of treated crops.
- Linked as contributors to honey bee colony decline. However, this is still inconclusive, and subject to continued research and conflicting interpretations.
- Increasing evidence of effects on non-target organisms. Negative impacts on monarch butterfly populations in the USA have recently been suggested.
- Use has been partially restricted in the EU since 2013. However, some have suggested this has merely led to increased use of older, harsher pesticides.

