## Innovating for Pesticide Safety

### Innovation in pesticides

has come a long way in the past

60 years

leading to significant improvements in product safety.

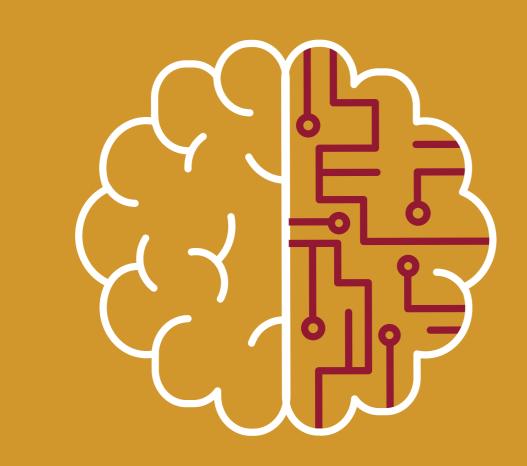


# PESTICIDE

For example, farmers can apply 10 times less pesticide per hectare today compared to 1960 as a lower dose can achieve the same efficacy.

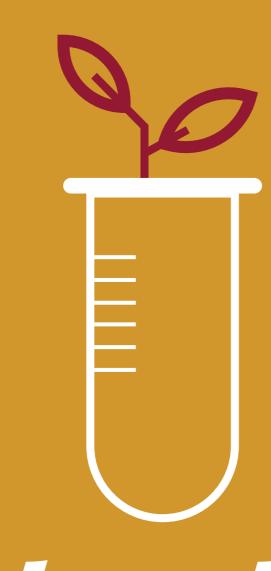


## Technology is at the heart of these improvements:



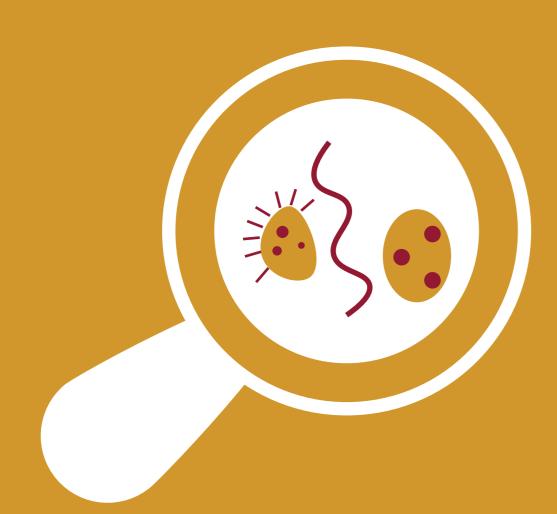
#### Artificial intelligence

assesses the potential health and environmental impacts of hundreds of thousands of chemical structures with pinpoint accuracy.



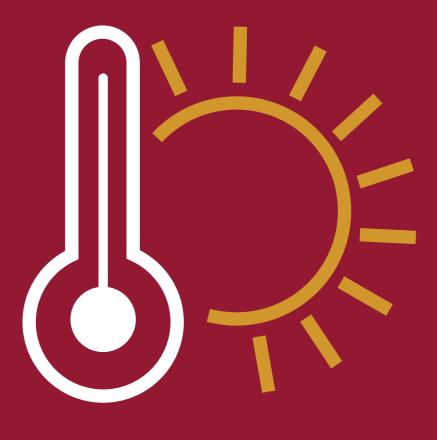
#### Seed treatments

are pesticides applied directly to seed allow for much less product used and safer handling.



#### Biological pesticides

use natural sources, such as microbes and pheromones, that can be used by all farmers, including organic.



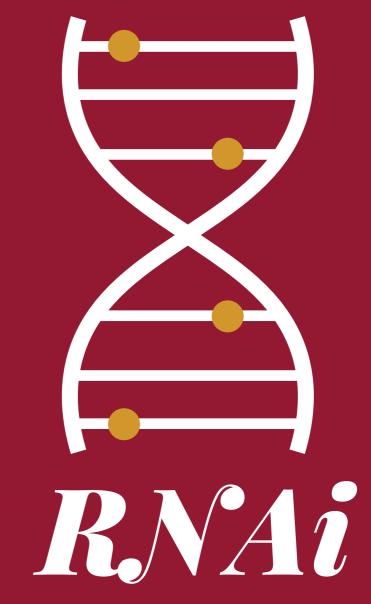
#### Active ingredients

are delivered safely to targets via smart formulations such as microencapsulation, which uses sunlight or temperature to trigger release.



#### Plant inoculants

derived from naturally-occurring bacteria help legume crops by producing nitrogen in soil, reducing fertilizer use.



is a natural biological process that "turns down" the expression of certain genes in a pest to develop highly targeted pesticides.

## Innovation in pesticide packaging

helps prevent misuse and counterfeiting of products. Examples are anti-splash bottle necks, built-in measuring devices, gel formulas, engraved manufacturer logos, holograms and bar codes that can only be read by official retailers.





