

How does Natural Selection happen?

Natural selection occurs when:

1. There is variation in phenotypes/traits in a population.
2. One phenotype has an advantage over another phenotype.

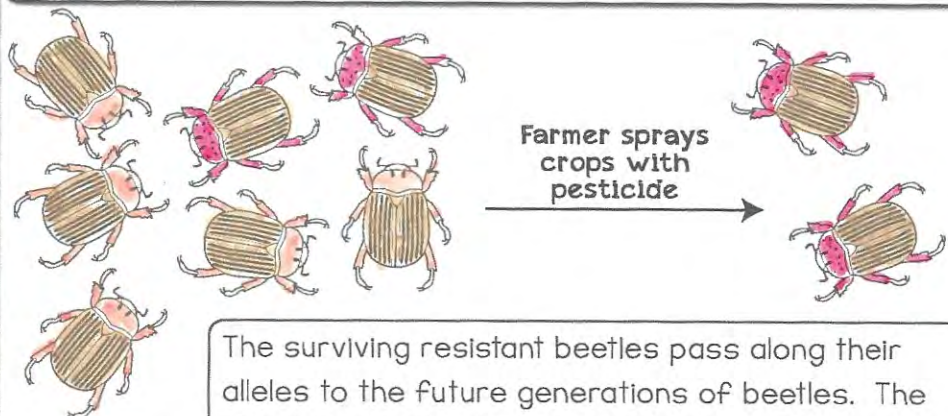
Individuals with the advantageous phenotype have greater fitness.

3. The trait is heritable. The trait can be passed to future generations in alleles.

The Colorado potato beetle is a pest that eats crops all over the United States. There are individuals in some populations who are resistant to pesticides and individuals who are not resistant. Resistant beetles have a special protein (from a unique allele) that enables them to break down the toxic pesticide quickly.



When crops with beetle populations are sprayed with pesticide, the resistant beetles have an advantage. They have a greater fitness in an environment with pesticide and survive.



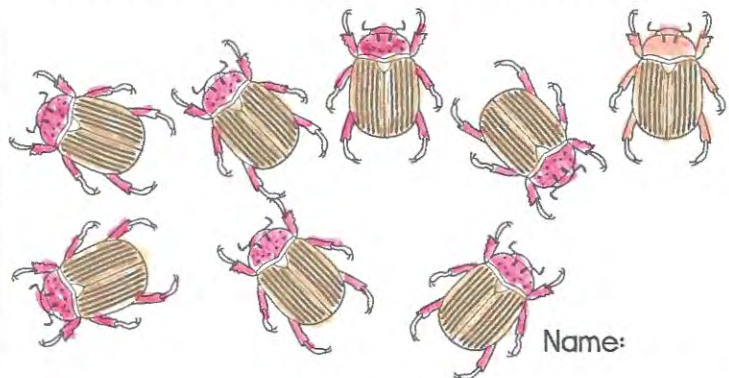
The surviving resistant beetles pass along their alleles to the future generations of beetles. The population of beetles now has a higher proportion of resistant beetles.

Types of natural selection

- In the example, one allele (the pesticide resistant allele) is being selected for and the not-resistant allele is being selected against. This is called Negative Natural Selection. One allele is selected against.

- Sometimes, the environment actually favors heterozygotes, individuals with two different alleles. In this type of scenario, the natural selection is called Balancing Natural Selection.

The next generation of Colorado potato beetles



Natural Selection