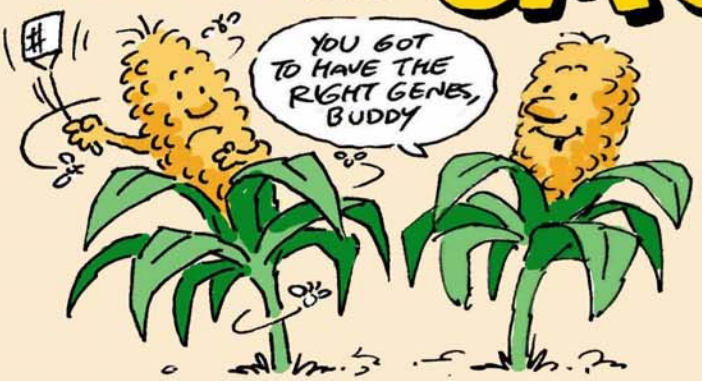
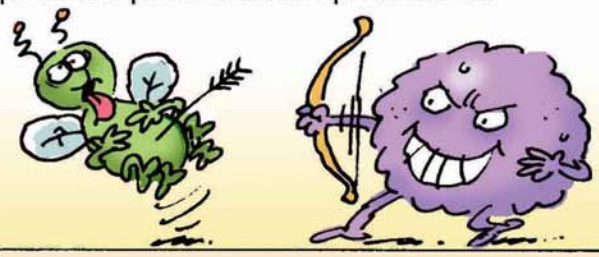
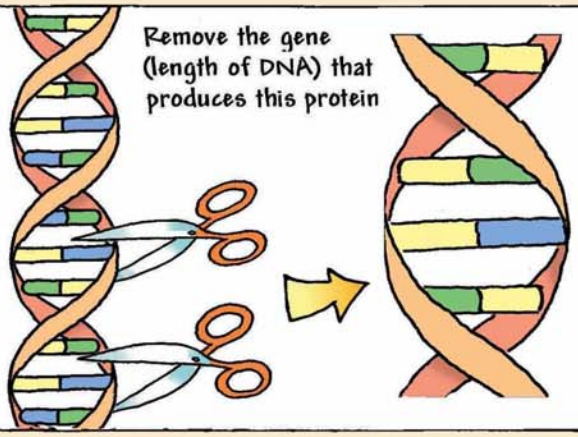
HOW ARE GM CROPS MADE?



1 Identify an organism with the desired characteristics e.g. *Bacillus thuringiensis* (Bt) – a bacterium which produces a protein that kills specific insects.



2 Remove the gene (length of DNA) that produces this protein

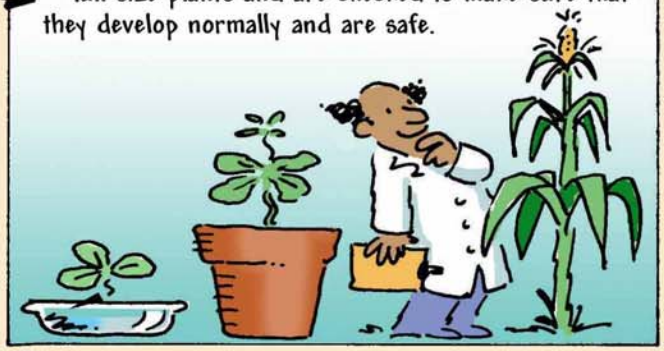


3 Transfer this gene into the plant you want to protect, e.g. maize, by either...

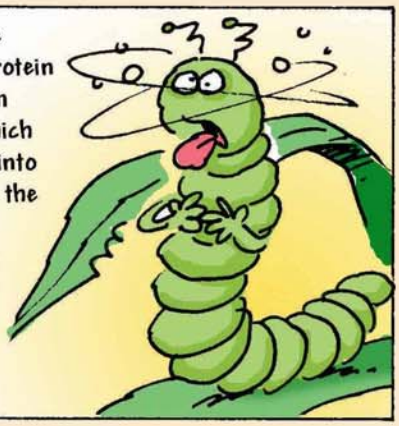
Firing them into the plant using a special gene gun...

Or give the gene to a soil bacterium which puts it into the plant for you.

4 Plant cells that take up the new gene are grown into full size plants and are checked to make sure that they develop normally and are safe.



5 E.g. in maize, the transferred *Bt* protein protects against stem borer caterpillars which eat the leaves, bore into the stalks and infect the mealie cobs. The caterpillars die when they eat the maize – but other insects and animals are unharmed.



6 Alternatively, instead of adding new genes, a gene already in the plant can be switched off, on, or altered to improve a specific characteristic, such as in fruit where a gene can be switched on to slow down ripening and reduce harvest damage.

7 In South Africa, GM organisms have to be approved by national government before they can be used. To date, crops approved for production in South Africa include: insect tolerant and herbicide tolerant maize (yellow and white); insect tolerant and herbicide tolerant cotton and herbicide tolerant soya.

Department of Science and Technology

PUBLIC UNDERSTANDING OF BIOTECHNOLOGY