

What is a

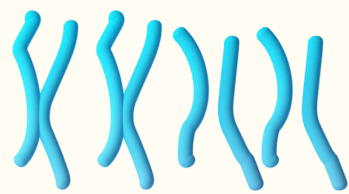
**polyploid
plant?**



Polyploid organisms have cells with **more than two sets of chromosomes**.

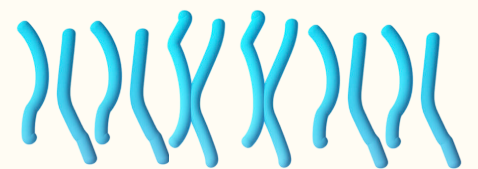
"Poly" (πολύ) means "many" in Greek.

Cotton is a **tetraploid** organism.
It has four sets of chromosomes.

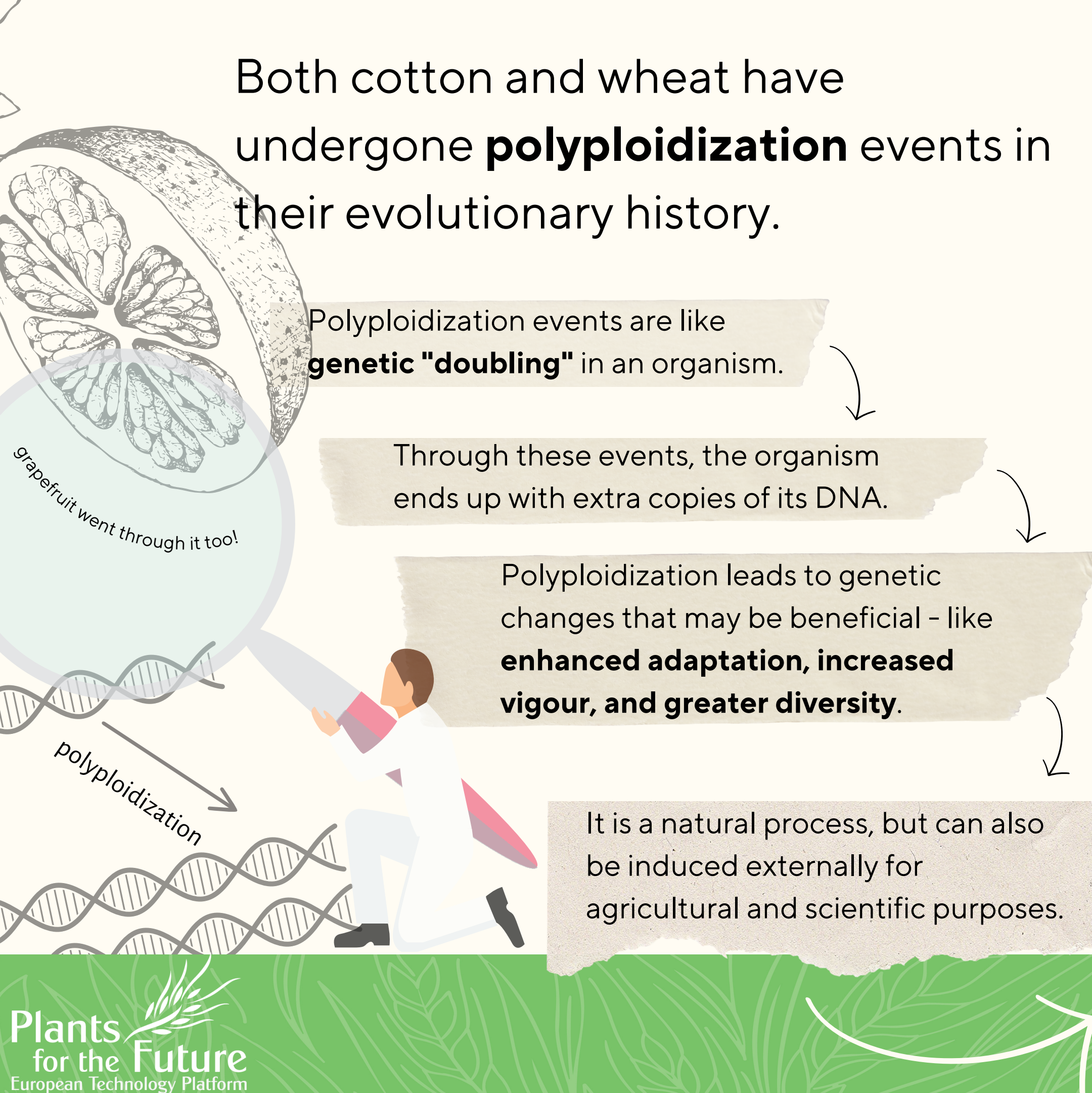


13 sets x 4 =
52 total
chromosomes

Wheat is a **hexaploid** organism.
It has six sets of chromosomes.



7 sets x 6 =
42 total
chromosomes

An illustration featuring a large, detailed cross-section of a grapefruit on the left. Below it, a scientist in a white lab coat is kneeling, holding a laptop. A DNA double helix is shown with an arrow labeled 'polyploidization' pointing from a single strand to a double strand. The background is a green field with stylized leaves. Four text boxes are arranged vertically on the right, connected by curved arrows. The bottom left corner has a logo for 'Plants for the Future European Technology Platform'.

Both cotton and wheat have undergone **polyploidization** events in their evolutionary history.

Polyploidization events are like **genetic "doubling"** in an organism.

Through these events, the organism ends up with extra copies of its DNA.

Polyploidization leads to genetic changes that may be beneficial - like **enhanced adaptation, increased vigour, and greater diversity**.

It is a natural process, but can also be induced externally for agricultural and scientific purposes.

What is a **haploid** state?

... is a state in which an organism or cell has a **single set of chromosomes** - so basically half the number of total chromosomes.

In sexually reproducing organisms, the haploid state is typically associated with reproductive cells, such as sperm and egg cells, which are also called gametes.



CAUTION! Not a plant kingdom example!

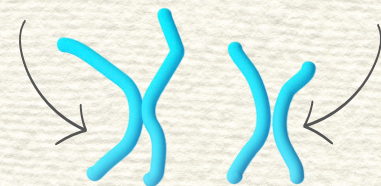
Humans are diploid organisms!
We have two sets of chromosomes.
"Di" (δί) means 2 in Greek.



one set of
chromosomes from the
mother



one set of
chromosomes from the
father



2 sets x 23 = 46
total
chromosomes