

What is a

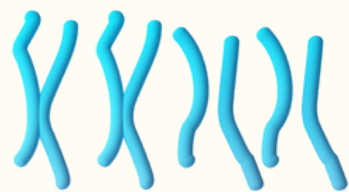
**polyploid  
plant?**



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

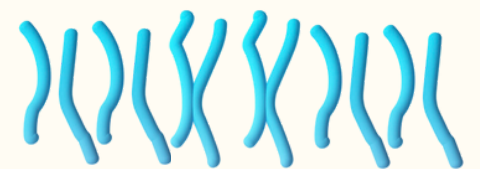
*"Poly" (πολύ) means "many" in Greek.*

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

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!*

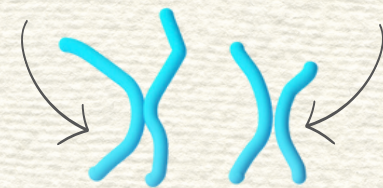
Humans are diploid organisms!  
We have two sets of chromosomes.  
"Di" (δί) means 2 in Greek.



one set of  
chromosomes from the  
mother



one set of  
chromosomes from the  
father



2 sets x 23 = 46  
total  
chromosomes



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