

[Wheat]

T. monococcum
 $2n = 14 = 2x$
[AA]

X Hexelops speltoides
 $2n = 2x = 14$
[BB]

↓
[AB] — F₁, 2x Sterile
7+7=14

↓ — Doubling of Chromosome
[AA BB] → 4x = 28
14x2=28
F₂ T. dicoccoides

T. squarrosa X
 $2n = 2x = 14$
[DP]

↓
[ABD] → F₁ — 3x = 21. Sterile

↓ chromosome doubling
[AABBDD] = 6x = 42.

T. spelta • T. ~~vulgare~~

Mutation and Selection

T. vulgare (42).

It is successfully utilized in many cultivated crops e.g. Cotton, Tobacco, It is helpful in formation of first man engineered plant, Triticale, by unifying Triticum and Secale cereale.

© Segmental Allopolyploids:- In such allopolyploids the different genomes are not completely unlike, the chromosomes of different genomes sets are partly homologous. These chromosomes are known as Homocologous and polyploids are known as Segmental Allopolyploids.

(ii) Aneuploidy:- Here not the complete set, but its ϕ one or some of the chromosomes are changed. It is of two types.

a) Hyperploidy:- Chromosome number is more than the original. It is of two types.

① Trisomics \rightarrow Here one of the ϕ chromosome of a homologous chromosome is extra. If one such it is known. It is of following types \rightarrow

x) ~~Mono~~^{Tri}isomic $\rightarrow 2n + 1$

x) Double ~~Mono~~isomic $\rightarrow 2n + 1 + 1$

x) Triple ~~Mono~~^{Tri}isomic $\rightarrow 2n + 1 + 1 + 1$

$\rightarrow 2n + 1 + + + 1. \dots + 1.$

② Tetrasomic \rightarrow Here a pair of homologous chromosome is more as.

Tetrasomic $\rightarrow 2n + 2$

Double Tetrasomic $\rightarrow 2n + 2 + 2$

Tripple " $\rightarrow 2n + 2 + 2$

" " $\rightarrow 2n + 2 + 2 \dots + 2.$

⊔ Hypoploidy → Here chromosome set is less in number than the original one, It is of two types.

(I) Monosomic → Here one chromosome from a pair of homologous chromosome is absent as

- Single Monosomic → $2n - 1$
- Double " → $2n - 1 - 1$ ✓
- Tripple " → $2n - 1 - 1$
- ! " → $2n - 1 - 1 - \dots - 1$

(II) Nullisomic → Here both chromosomes of a pair is absent in other words the one or more homologous pairs of chromosomes are absent

- Single Nullisomic → $2n - 2$
- Double " → $2n - 2 - 2$
- Tripple " → $2n - 2 - 2 - 2$
- ! " → $2n - 2 - 2 - 2 - \dots - 2$

Causes

Causes of Aneuploidy :- Aneuploidy are caused as:

1. Due to unequal distribution of chromosome during meiosis. to the poles (Non-disjunction).
2. By missing of one or one pair of chromosome during meiosis.

Causes of Polyploidy :- They develop due to .

1. Lack of spindle formation
2. Absence of cell wall formation after Karyokinesis
3. Failure of normal meiosis.
4. Participation of more than two nuclei in fertilization

Role of Polyploids :-

1. Autopol. Autopolyploids give large size of fruits.
2. They have high nutritive values.
3. Allopolyploids helps in combination of different characters from two or more different varieties, species or genera.