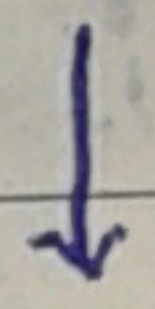
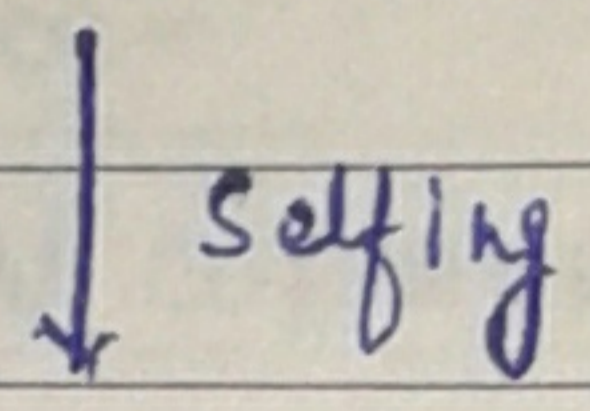


# Dihybrid cross -

Round yellow  $\times$  wrinkled Green  
 $RRYY$   $rryy$



$RrYy$  —  $F_1$  (All Round yellow)



	$RY$	$Ry$	$ry$	$ry$
$RY$	$RRYY$	$RRYy$	$RrYy$	$RrYy$
$Ry$	$RRYy$	$RRyy$	$RrYy$	$Rryy$
$ry$	$RrYy$	$Rryy$	$rrYy$	$rryy$
$ry$	$RrYy$	$Rryy$	$rrYy$	$rryy$

Phenotype  $\Rightarrow$  Round yellow 9  
 wrinkled yellow 3  
 Round Green 3  
 wrinkled Green 1  
 } 9:3:3:1

Genotype  $\Rightarrow$  1:2:2:4:1:2:1:2:1 (1:1:1:1:2:2:2:2:4)

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## Law of Independent Assortment -

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- It was Mendel's 2<sup>nd</sup> law.

- Given After dihybrid cross.

- The inheritance of one factor is independent (not affected) of other factor.

or

- The two factors of each character Assort (separate) independent of the factors of other characters at the time of Gamete formation and get randomly re-arranged in the Gamete.

Note →

(1) wrinkled yellow(3) & Round Green(3) are due to independent Assortment.

(2) - This law was criticized on the basis of Linkage.

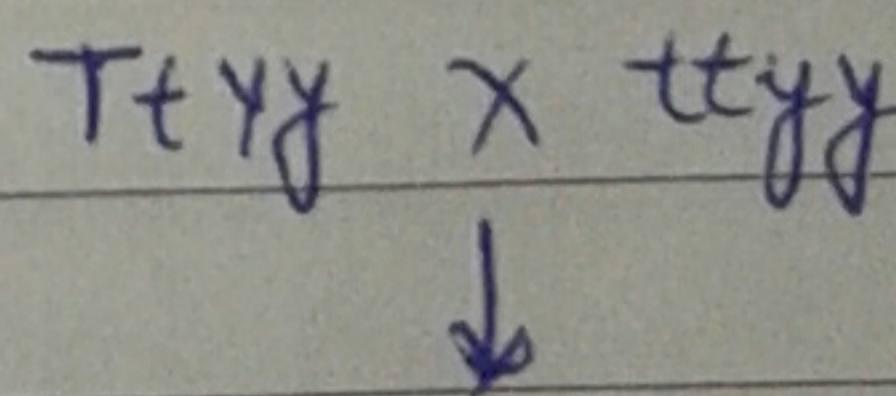
Q. A Heterozygous Tall & yellow seeded plant was crossed with Dwarf Green seeded plant?

SUN 20

a) How many Type of offspring will be produced

(b) what is ratio of Genotype & Phenotype

(c) what is the name of cross



Back-cross

It is cross between offspring ( $F_1$ ) with their parents (Dominant & Recessive)

Type

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Dominant B.C

Recessive B.C

- Also called outcross

-  $F_1 \times$  Dominant parent

- Phenotype = 100% Tall

- Genotype = 1:1

- Also called Test cross

-  $F_1 \times$  Recessive parent

- Phenotype = 1:1 (50% Tall &amp; 50% Short)

- Genotype = 1:1

Note - (1) All Test cross are Back cross but all Back cross are not Test cross.

(2) Test cross is done to know the Genotype of  $F_1$  (Hybrid)

(3) Back cross is used in quick production of Homozygous.

(4) Test cross ratio in —

(a) Monohybrid cross — 1:1

(b) Dihybrid cross — 1:1:1:1

Same for B.C

Geno &amp; pheno

Type of Crosses	Type of Gamete	Types of Phenotypes	Type of Genotypes	Number of Individuals
1) Mono/di/Tri	$2^n$	$2^n$	$3^n$	$4^n$

where  $n$  = no. of Heterozygous allele.

For Trihybrid Cross -

(a) Types of Gametes =  $2^n = 2^3 = 8$

(b) Types of Phenotype =  $2^n = 2^3 = 8$

( $27:9:9:9:3:3:3:1 = 8$ )

(c) Types of Genotype =  $3^n = 3^3 = 27$

(d) Total no. of Individual =  $4^n = 4^3 = 64$

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Q. How many Gametes are produced from -

- (1) AA =  $2^0 = 1$  (A)
- (2) AA BB =  $2^0 = 1$  (AB)
- (3) AA BB CC =  $2^0 = 1$  (ABC)
- (4) Aa Bb =  $2^2 = 4$  (AB, Ab, aB, ab)
- (5) Aa Bb Cc =  $2^3 = 8$  (ABC & ABc)