

Selection of true breeding varieties

Mendel started his experiment with 34 varieties of garden peas (*Pisum sativum*). He spent 2 years to select 7 varieties for his experiments. He grew the pea plants for two generations to confirm the purity of the offspring. He then carried out numerous crosses between these pure lines. Seven characters selected by Mendel is described in figure 1.

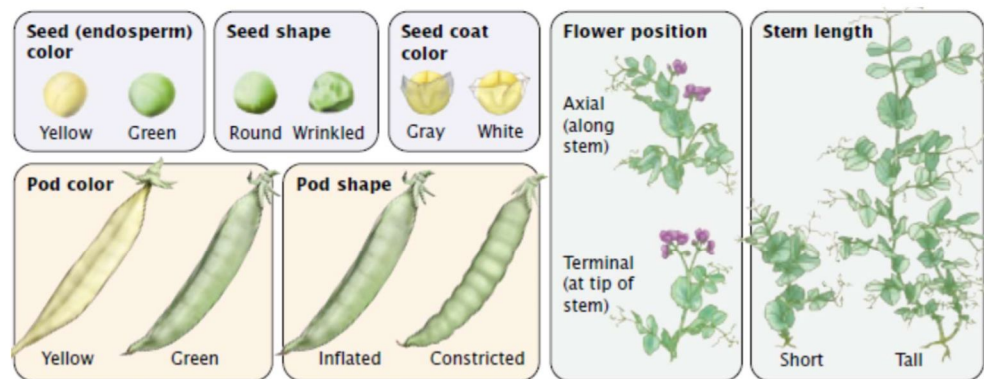


Figure 1.. 7 Characters chosen by Mendel

Characters Studied by Mendel

S.No.	Characters	Contrasting Traits
1.	Stem height	Tall/dwarf
2.	Flower colour	Violet/white
3.	Flower position	Axial/terminal
4.	Pod shape	Inflated/constricted
5.	Pod colour	Green/yellow
6.	Seed shape	Round/wrinkled
7.	Seed colour	Yellow/green

Pisum sativum is typically self-fertilizing; Mendel conducted cross-fertilization between different plants. The process of cross-fertilization is shown in figure 2.

Mendel conducted his artificial cross pollination experiments using 14 true-breeding pea plant varieties.

Monohybrid cross

Mendel crossed tall and dwarf pea plants (Figure 3). He collected the seeds and grew them to generate next generation plants, first hybrid generation (Filial $_1$ progeny or F_1).

Observation: all the F_1 progenies were tall; none were dwarfs (Figure 3).

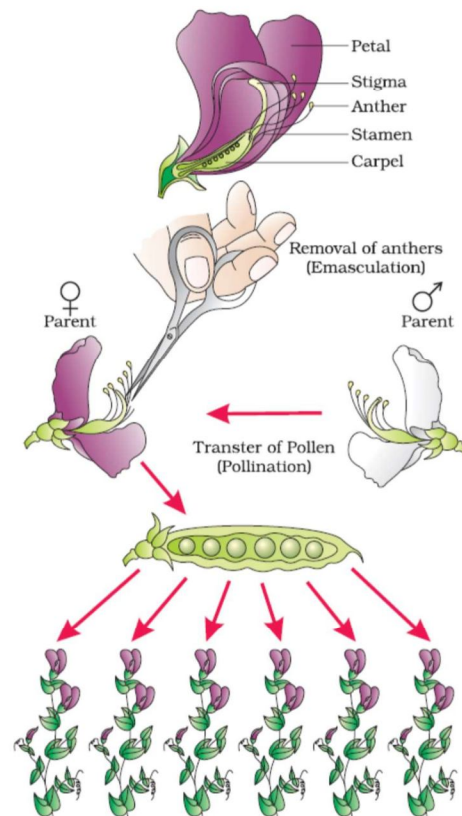


Figure 2. The process of cross-fertilization

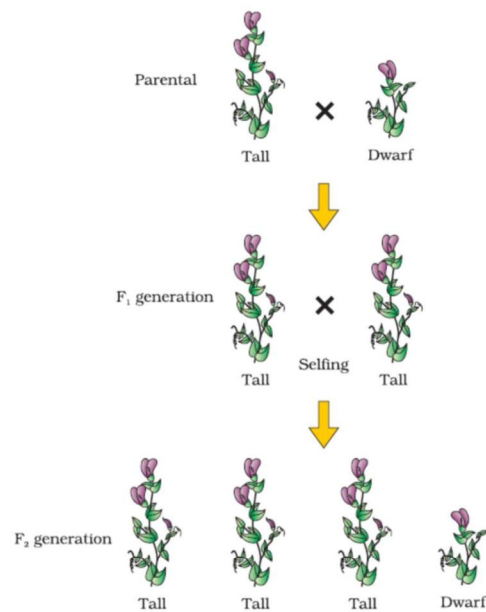


Figure 3. Diagrammatic representation of a cross between a tall and dwarf plant