3-Alfalfa or Lucerne

Medicago sativa ssp. sativa - Fabaceae

Prepared
BY

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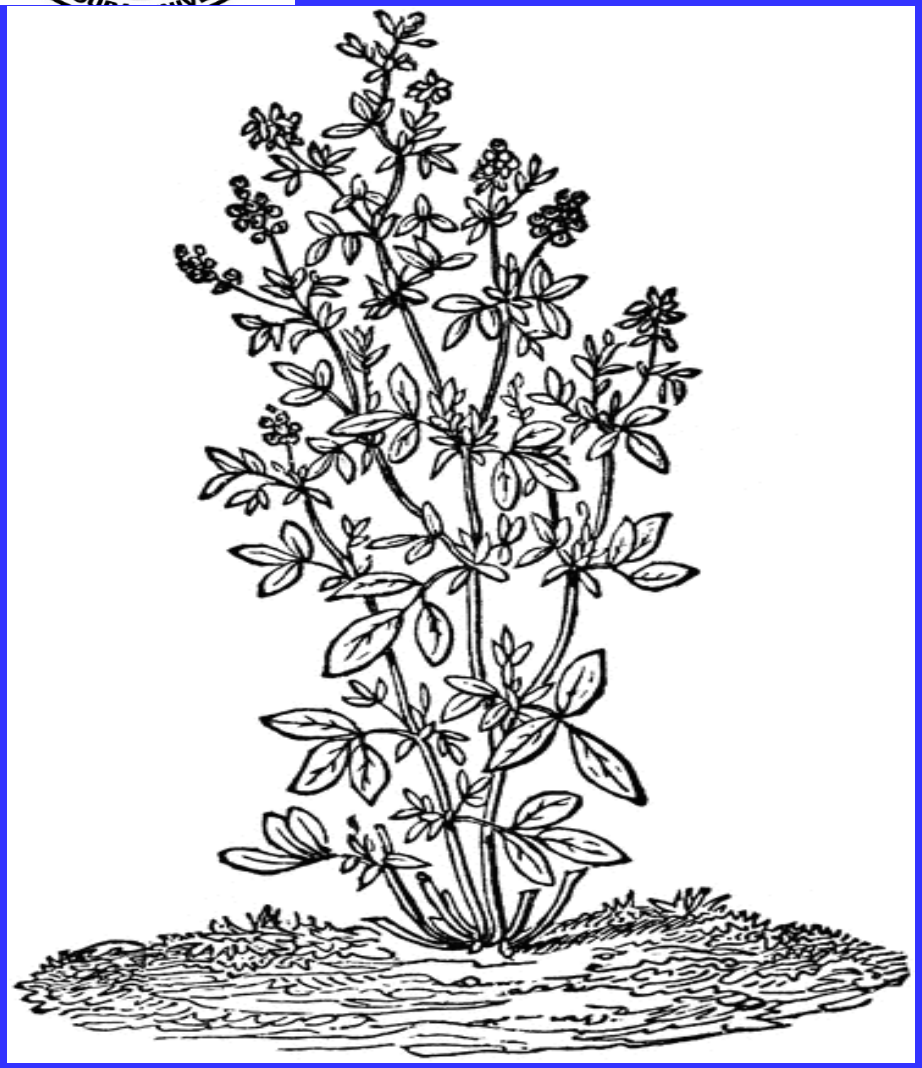
Introduction:

Alfalfa is the most cultivated forage legume in the world. Worldwide production was around 436 million tons in 2006 (FAO, 2006). The US is the largest alfalfa producer in the world, but considerable production is found in Canada, Argentina (primarily grazed), Southern Europe, Australia, South Africa, and the Middle East.



Lucerne or Alfalfa Plants

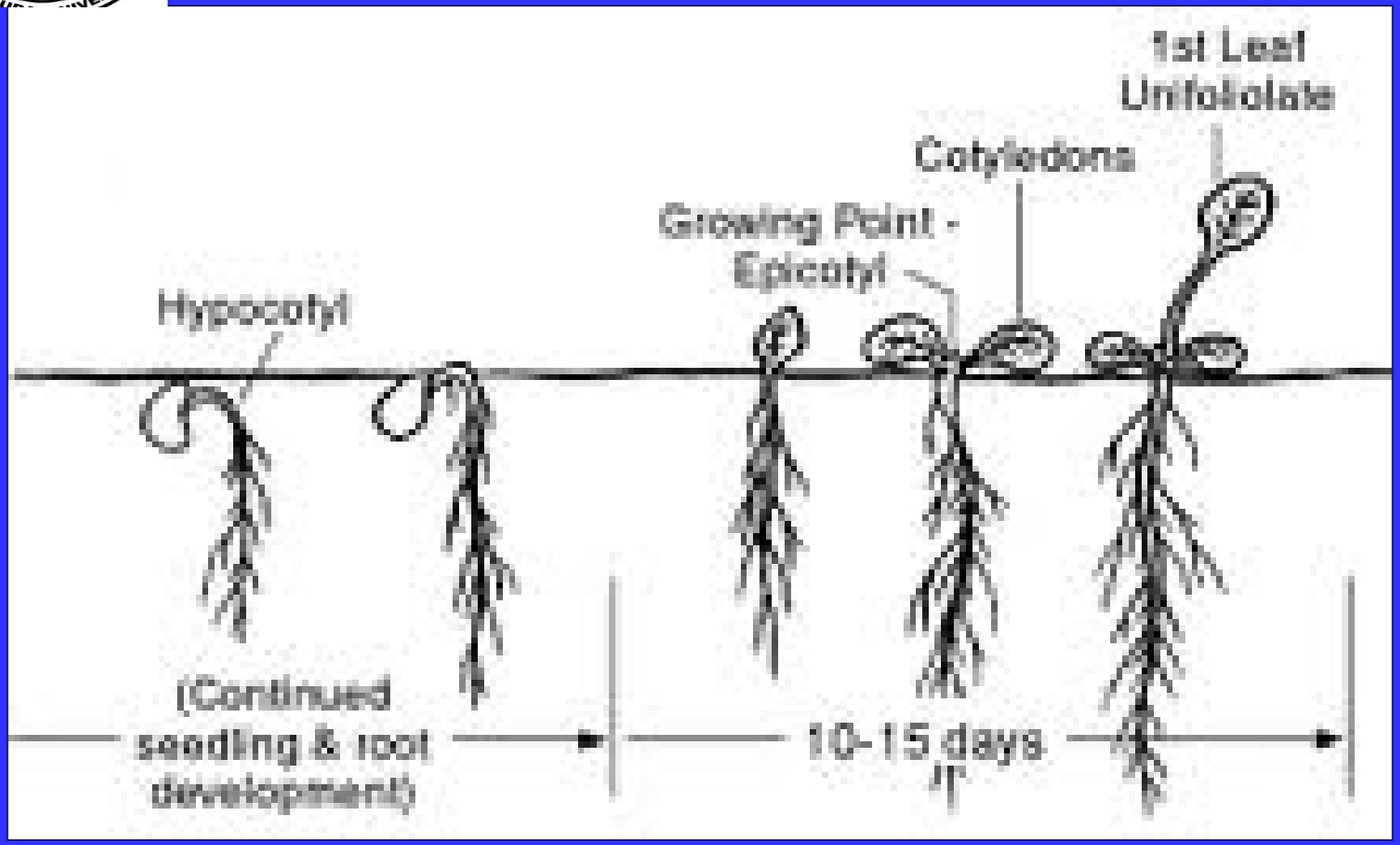
Common names:

Lucerne, Alfalfa, Perennial Lucerne, Violet-flowered Lucerne.

Confused with:

Seedlings of lucerne are easily confused with number of similar plants in this family. Adult plants are readily distinguished by their erect growth habit, flower colour and seed pods.

Seedlings the cotyledon leaves are oar-shaped, with a rounded end, 5 - 7 mm long and 3 - 5 mm wide.



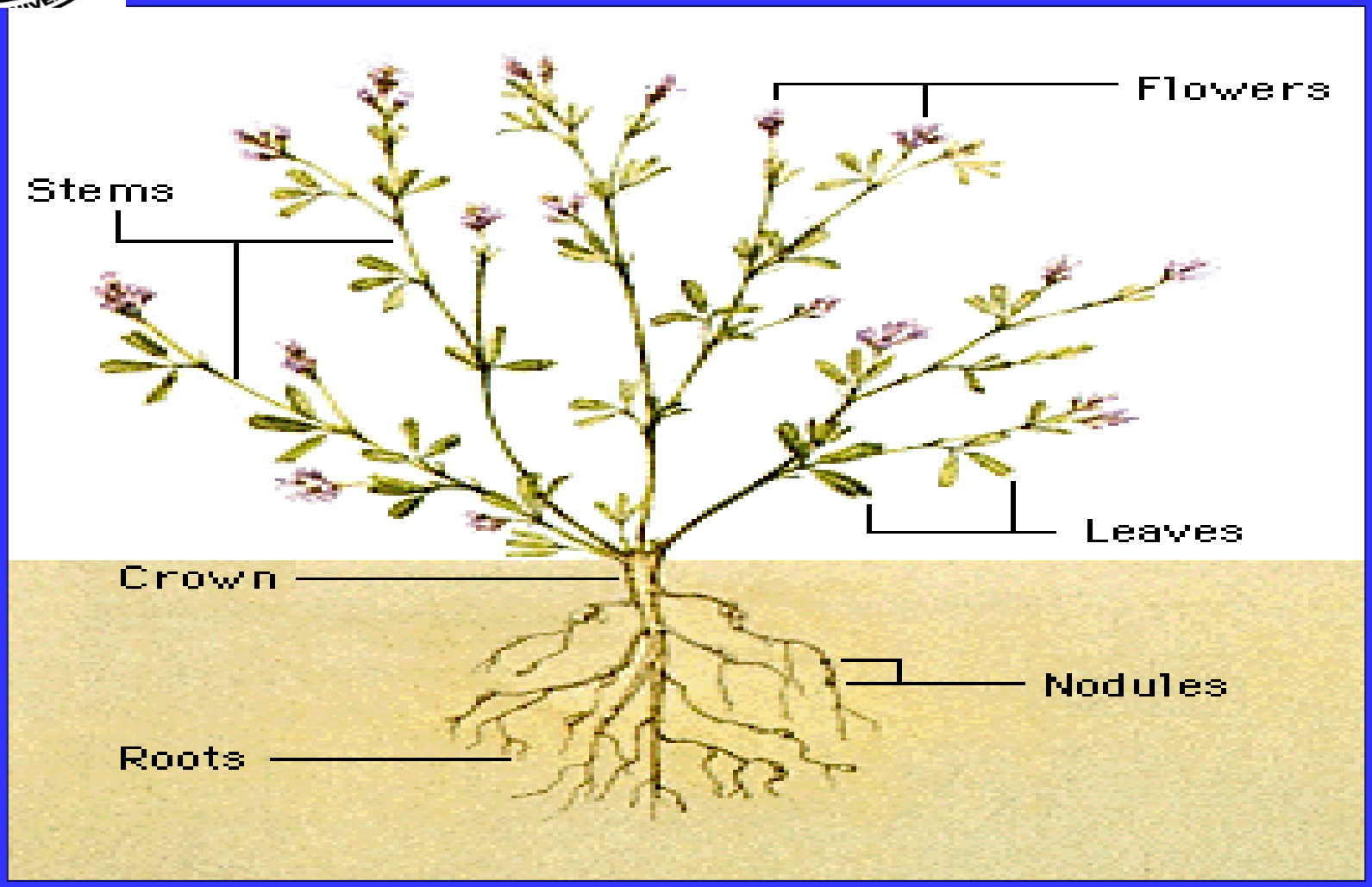
Germination stages of Alfalfa

Root:

The main root, which when old is an inch or so thick and rather woody, finds its way down to a considerable depth if the soil permits. On the roots are found the nodules, typical of the leguminous plants. They are on the finer branches and are clustered together into irregular bunches *Rhizopus melleoti*

Tap root of Lucerne

Bacterial nudels



Lucerne plant parts

Leaves:

The true leaves are trifoliate, with 3 leaflets with lightly serrated edges. All leaflet are borne on short stalks, the stalk of the terminal leaflet is longer than the side leaflets, at about 4 mm. The leaflets are a pointed oval shape, 8 - 28 mm long and 3 - 15 mm wide. The leaves are borne on stems 20 to 40 mm long.

Difference Between Lucerne and Berseem

Difference between Leaves of Berseem (On Left) and Lucerne (On Right)

The leaf of berseem and Lucerne

Lucerne plants

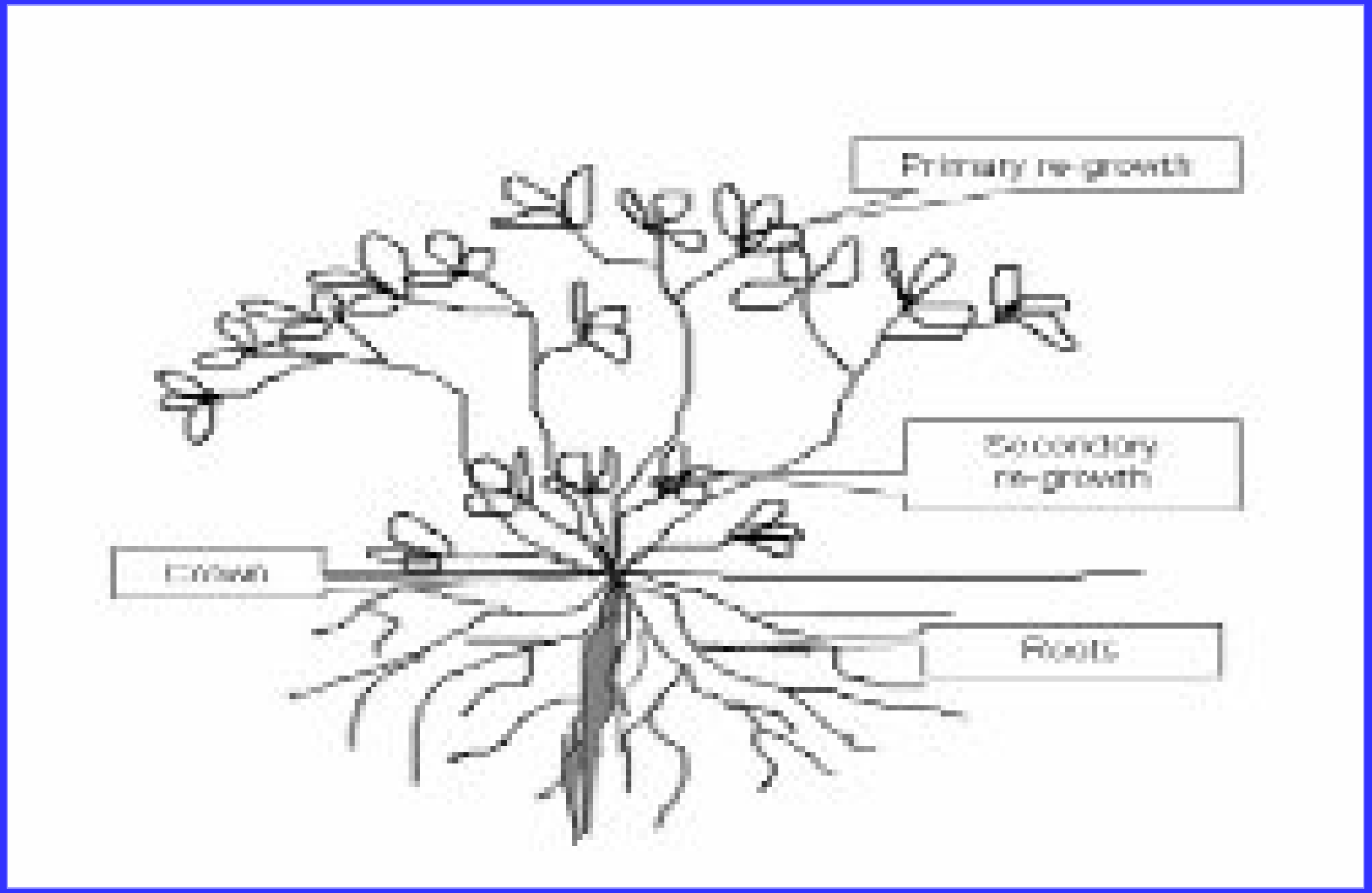
Lucerne leaf and inflorescences

Plants:

Plant an erect, multi-branched perennial plant with a very deep tap root. Plants develop a woody crown at ground level, with stems rising from the crown to around 1 m height. Lucerne has a crown with multiple stems, and primary and secondary re-growth. Alfalfa has a single taproot, the crown of which generally stands a little above ground. Being thus exposed, it might easily be injured by tramping, especially when the ground is soft from heavy rains. As the new stems come from the crown, Alfalfa is liable to be seriously damaged by close pasturing with sheep.

Morphology of Lucerne Plant

- Lucerne is an erect, multi-branched, perennial plant 2-3 feet tall.
- Plant has deep tap root.
- Leaves are long, dull, serrated (saw-tooth) in shape.
- Leaves are Trifoliate with petiole.



Crown with multiple

Inflorescences:

The inflorescences are terminal racemes bearing 4-8 orange-yellow flowers with butterfly-shaped corollas, with the flowers being the largest within the genus.

Fruits:

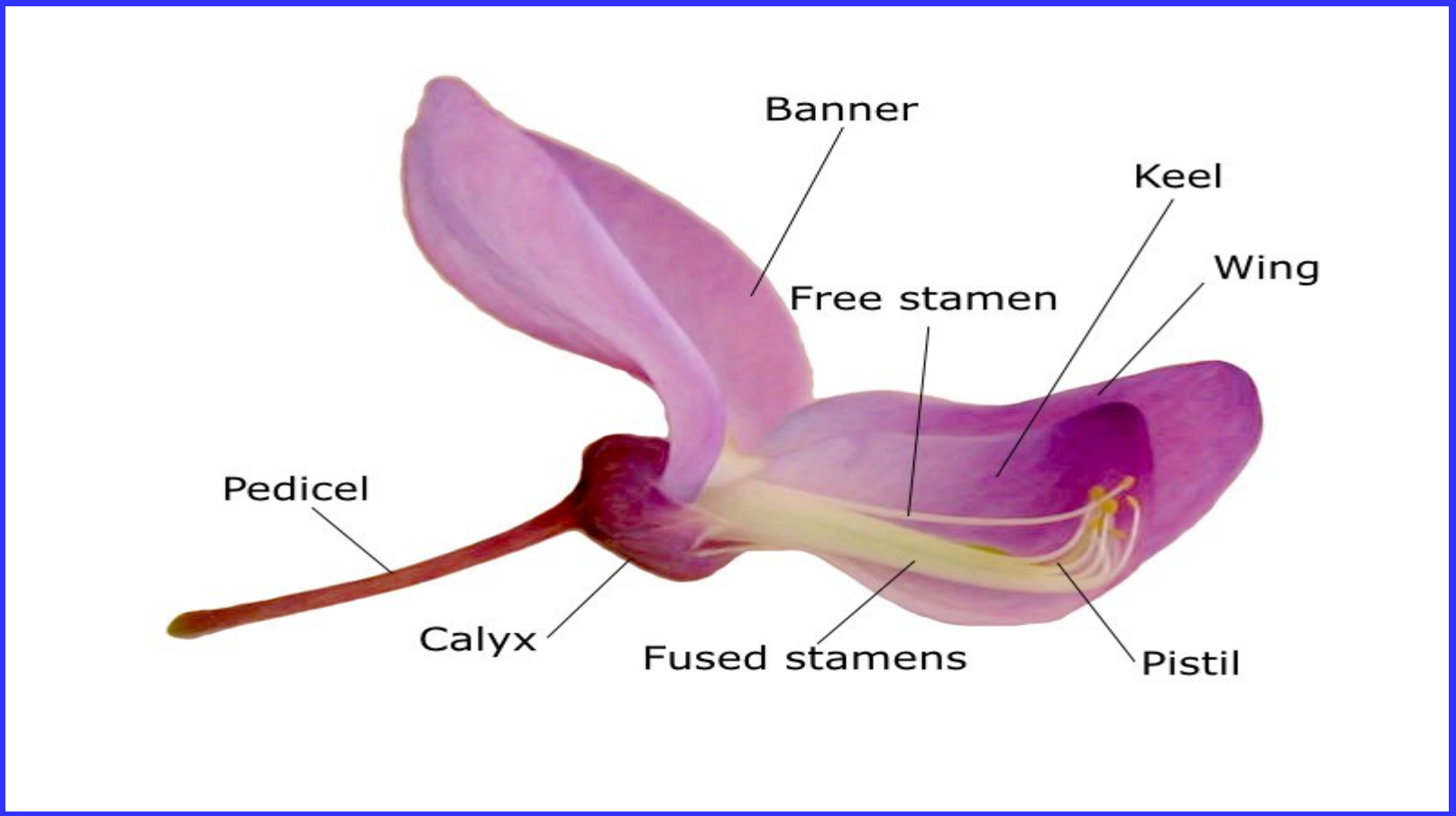
These fruits are flat and spiral-shaped, with the spiral having from 0.5 to 1.5 rotations or coils. Each legume contains 2-3 seeds. Pods are initially green, but become brown and tough as they mature.

Seeds:

Seeds form in a pod which develops in a whorl shape 5 – 9 mm across with 2 to 4 loose coils. The seeds are a typical bean shape, light- to mid-brown in colour, 2 – 3 mm in length, with 2 – 6 per pod.

Lucerne a: stem; b: leaf with 3 folioles; c: stipule; d: inflorescence; e: fruit (pod).

Alfalfa Flower



Flower Stracture

Alfalfa flowers, pods and seed

Distinguishing Traits of Diploid and Tetraploid species of M. sativa

M. sativa (4x) and *caerulea* (2x)	*M. falcata* (4x and 2x)
• Pods with Multiple Coils	• Falcate (Sickle Shaped) Pods

	Alfalfa or Lucerne (*Medicago sativa* L.) Leguminosae Fabaceae
Germination	Germination is Epigeal, Seed leave (cotyledon) above the ground.
Root	Root is tap root 150 cm in the soil, branched included bacterial noodles. *Rhizobium melotii*.
Stem	Stems is procumbent, ascending to erect, arising from a woody base, 30–120 cm long
Leaf	The true leaves are trifoliate, with 3 leaflets with lightly serrated edges. All leaflet are borne on short stalks, the stalk of the terminal leaflet is longer than the side leaflets. The leaflets are a pointed oval shape
Inflorescence	Inflorescences in dense racemes with 10–35 flowers, on peduncles 1–5 cm long.
Flowers	Pedicel of flowers 1.5–2 mm long; calyx 5-lobed, 3–6 mm long, tube and pointed teeth about equal in length; corolla purple or blue, rarely white.
Fruits	Pod curled, or pods with multiple colis, indehiscent, not spined, containing 2–6 seeds. Seeds yellow to brown, kidney-shaped to ovoid.

1- lucerne belongs to the genus:

a) Arachide

b) *Medicago*

c) trifolii

d) Leguminosae

2. The scientific name of cultivated alfalfa is

a) Cicer arietinum.

b) Medicago sativa ssp

c) *Medicago album*

d) *vicia faba.*

3-(false)The true leaves are trifoliate, with 3 leaflets without lightly serrated edges.

4-Alfalfa Plant an erect, multi-branched perennial plant with a very deep ……

a- tap root

b-Seminal roots

c- brace roots

d-both a and b

5-(true) alfalfa flowers are in a short and somewhat one-sided cluster.

6- Each cluster of alfalfa contains from …… flowers of the ordinary leguminous shape.

a-5-10 b- 10-20 c-20-30 d)30-50


Thank
You!