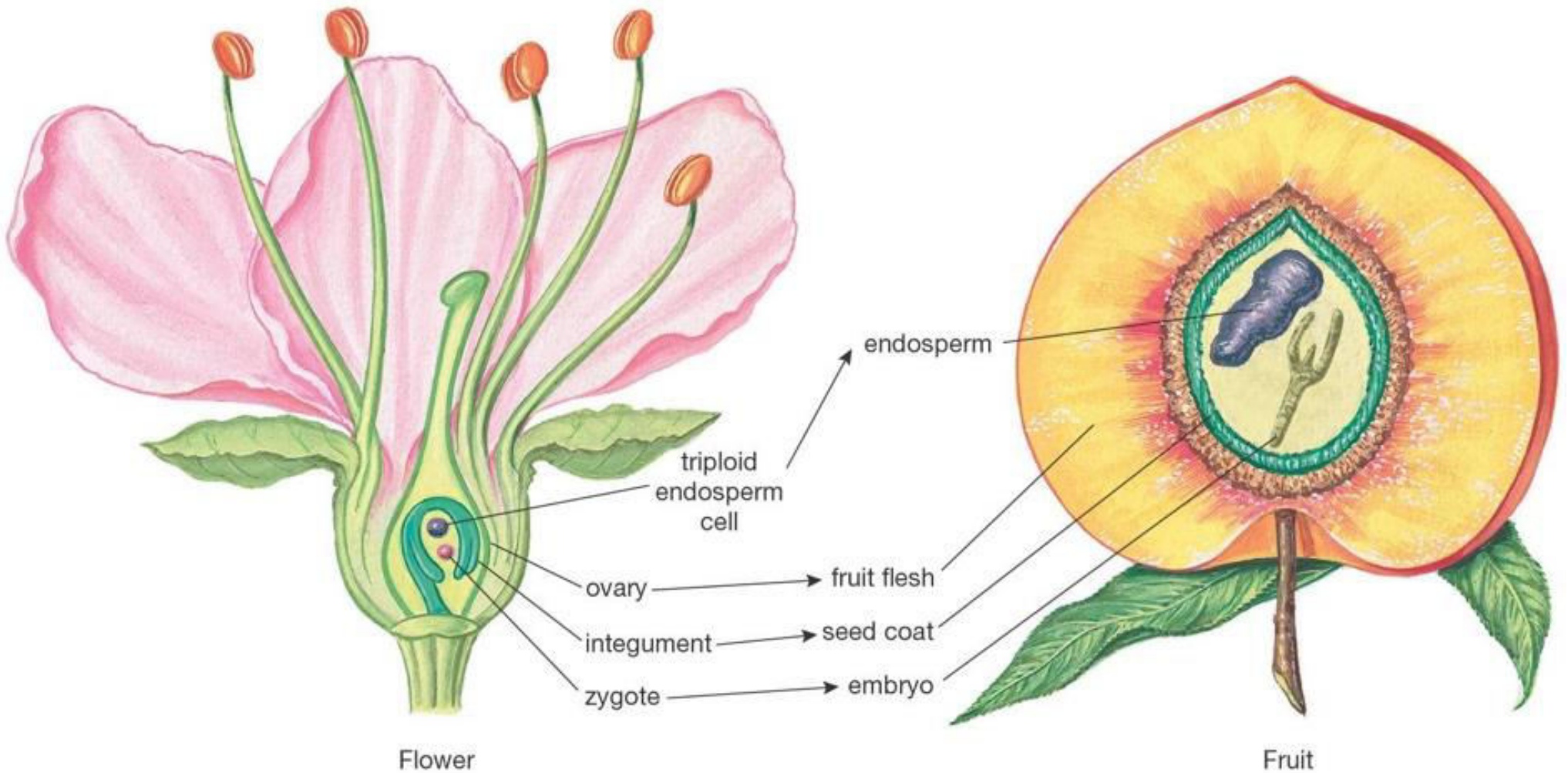# Fruits and Seeds

Fruits

From ovary to fruit

- The ovary of the flower contains the ovules.

- As fertilized ovules develop into seeds, the ovary wall develops into the fruit.

- In science, the term "fruit" refers to a mature ovary that contains seeds.

Fruit anatomy

endosperm

triploid endosperm cell → endosperm

ovary → fruit flesh

integument → seed coat

zygote → embryo

Flower

Fruit

Types of dry fruits

Legume
(Bean pod)

Capsule
(Poppy)

Achene
(Sunflower)

Silique
(Money Plant)

Follicle
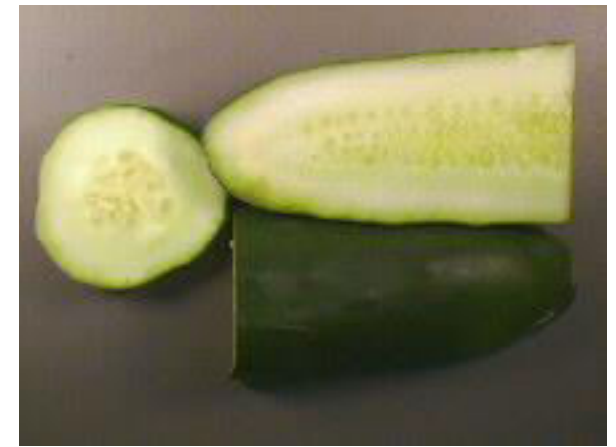(Columbine)

Nut
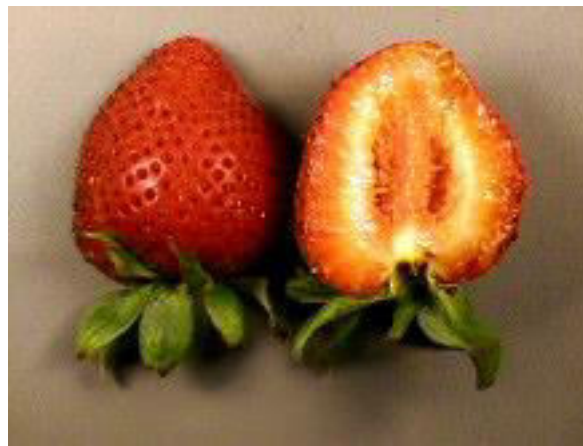(Hazelnut)

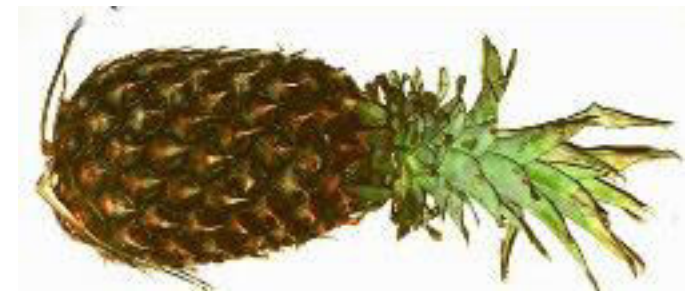# Types of fleshy fruits

Drupe
(Peach)

Pome
(Apple)

Pepo
(Cucumber)

Berry
(Tomato)

Aggregate
(Strawberry)

Multiple
(Pineapple)

Fruit dispersal

- The form of the fruit gives clues about its dispersal.

- Small, dry fruits with "wings" or "parachutes" may be wind-dispersed. Fleshy fruits are often animal dispersed. Explosive fruits can fling seeds away. Floating fruits may be water dispersed.

How are these fruits dispersed?

Dandelion

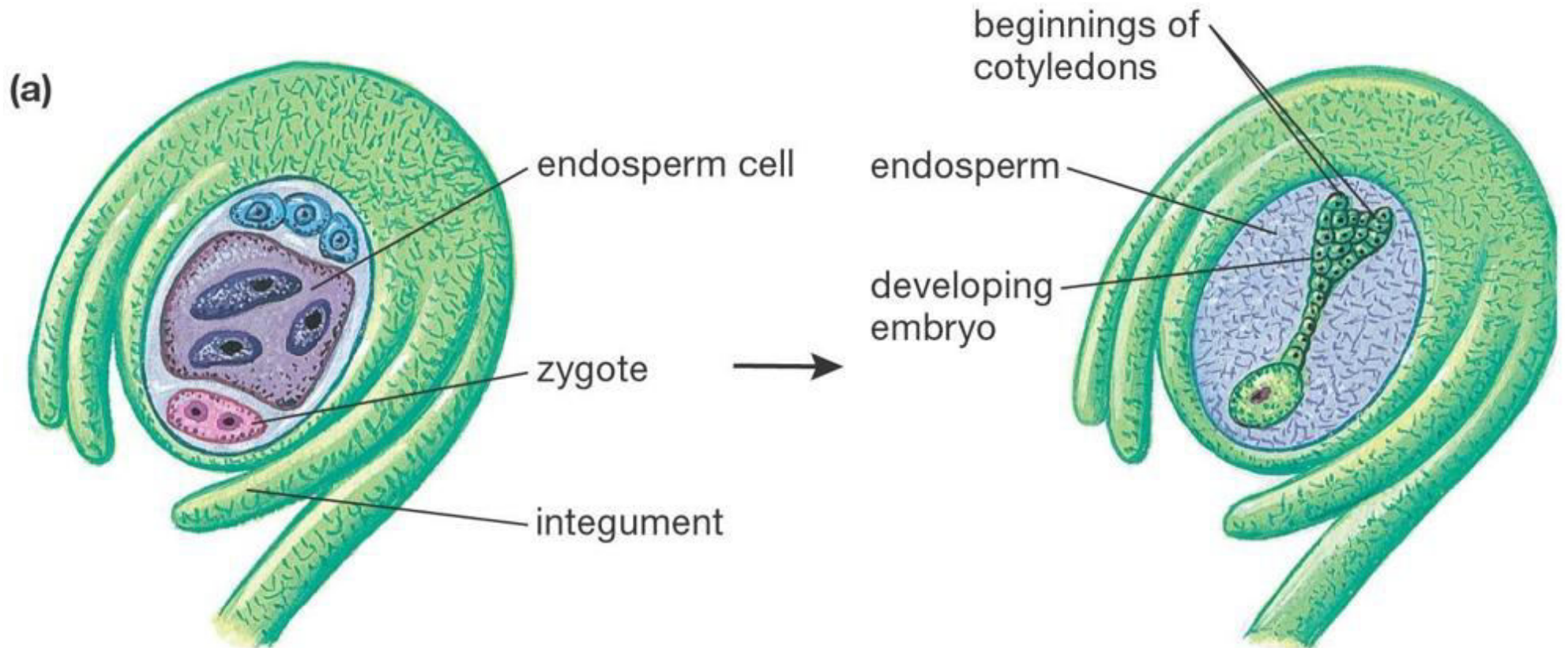Coconut

Maple

Cocklebur

Jewelweed

Thinking question:

- Why must fruits be dispersed away from the parent plant?
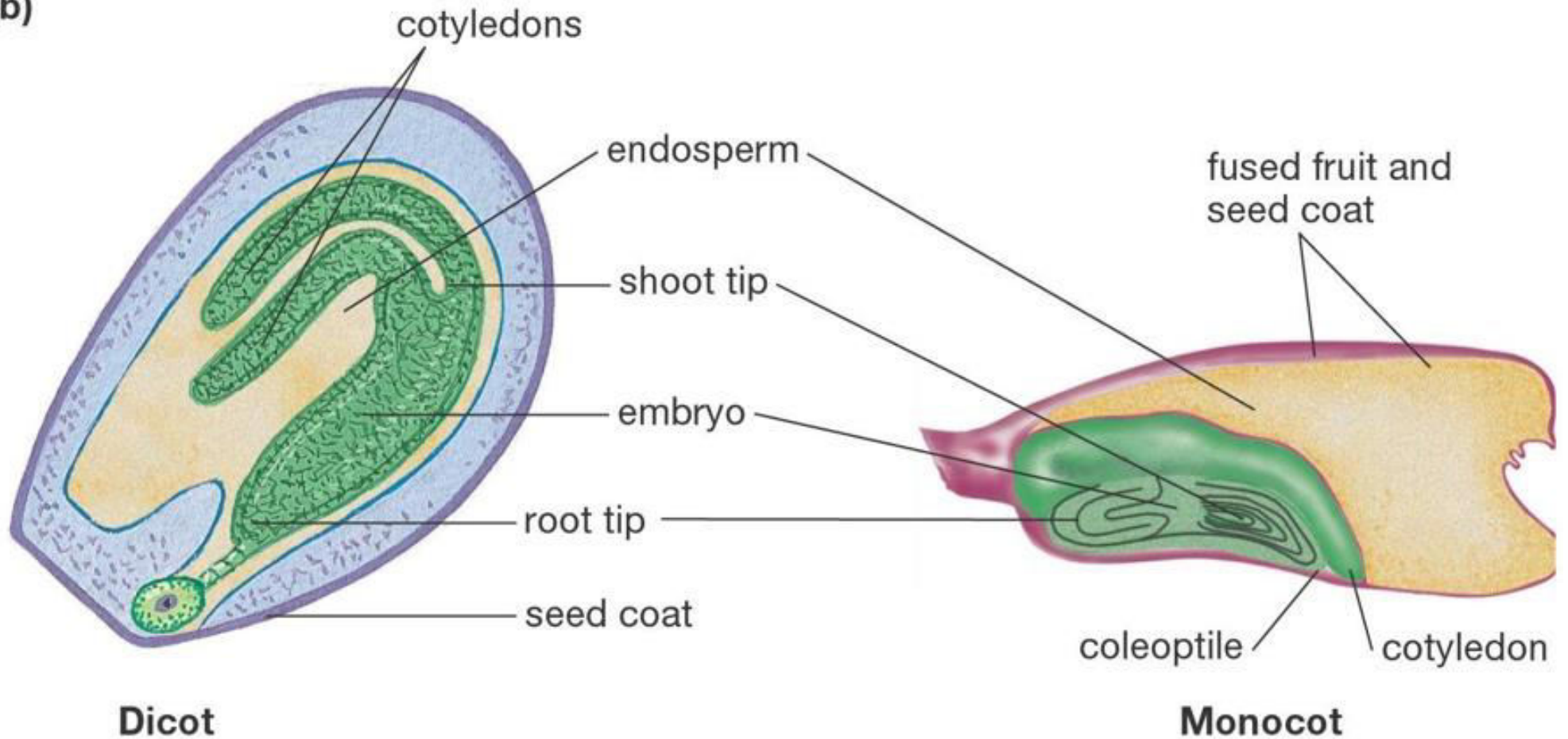
Seeds

Ovule to seed

(a)

endosperm cell

zygote

integument

beginnings of cotyledons

endosperm

developing embryo

Mature Seed

(b)

cotyledons
endosperm
shoot tip
embryo
root tip
seed coat

Dicot

fused fruit and seed coat

coleoptile   cotyledon

Monocot

Seed anatomy

Bean

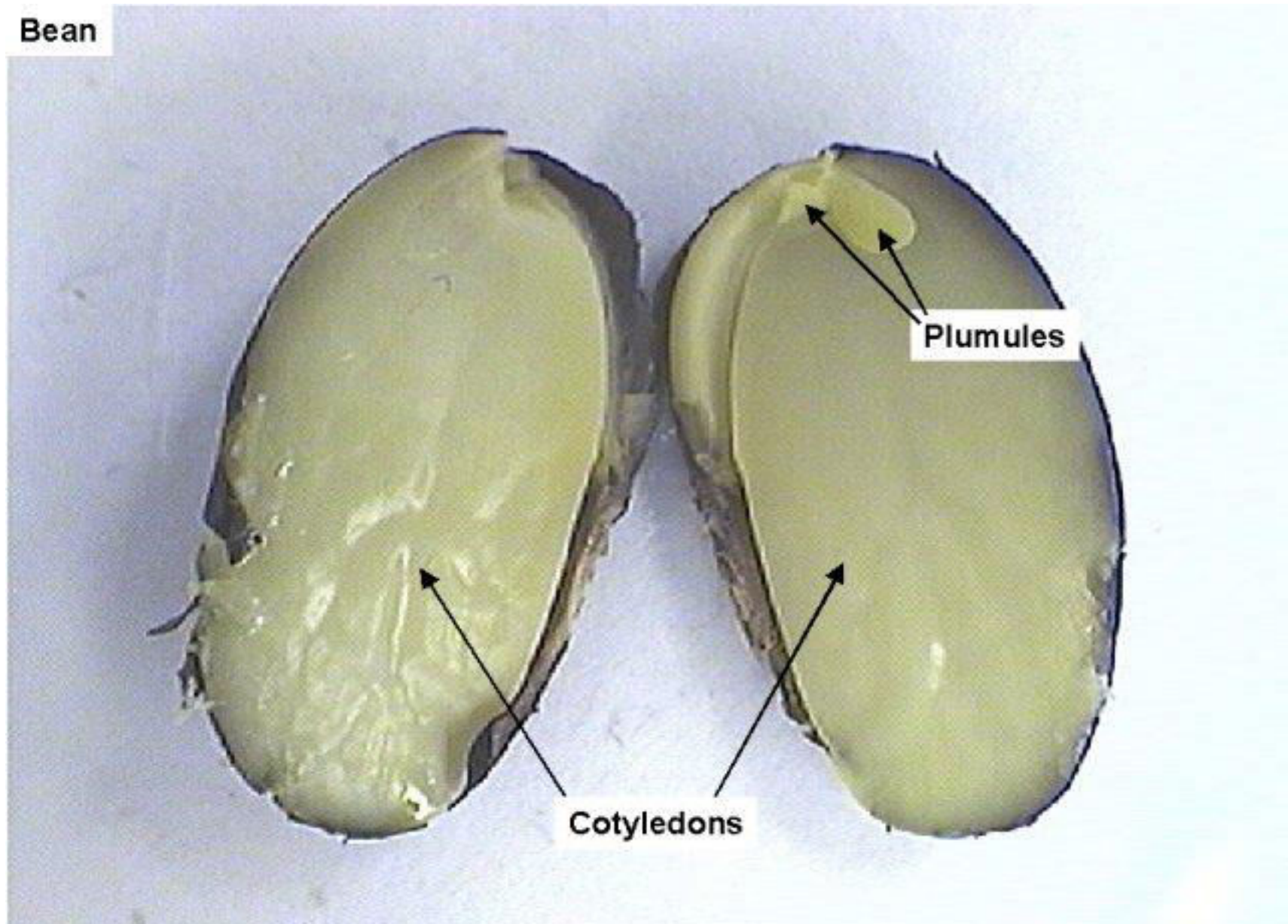Plumules

Cotyledons

Seed dormancy

- Seeds can remain dormant in the soil for long periods of time. Dormancy helps ensure that seeds only germinate when conditions are right.

- When we weed or cultivate a bare patch of soil, the weeds that sprout up immediately usually come from the "seed bank" already in the soil.
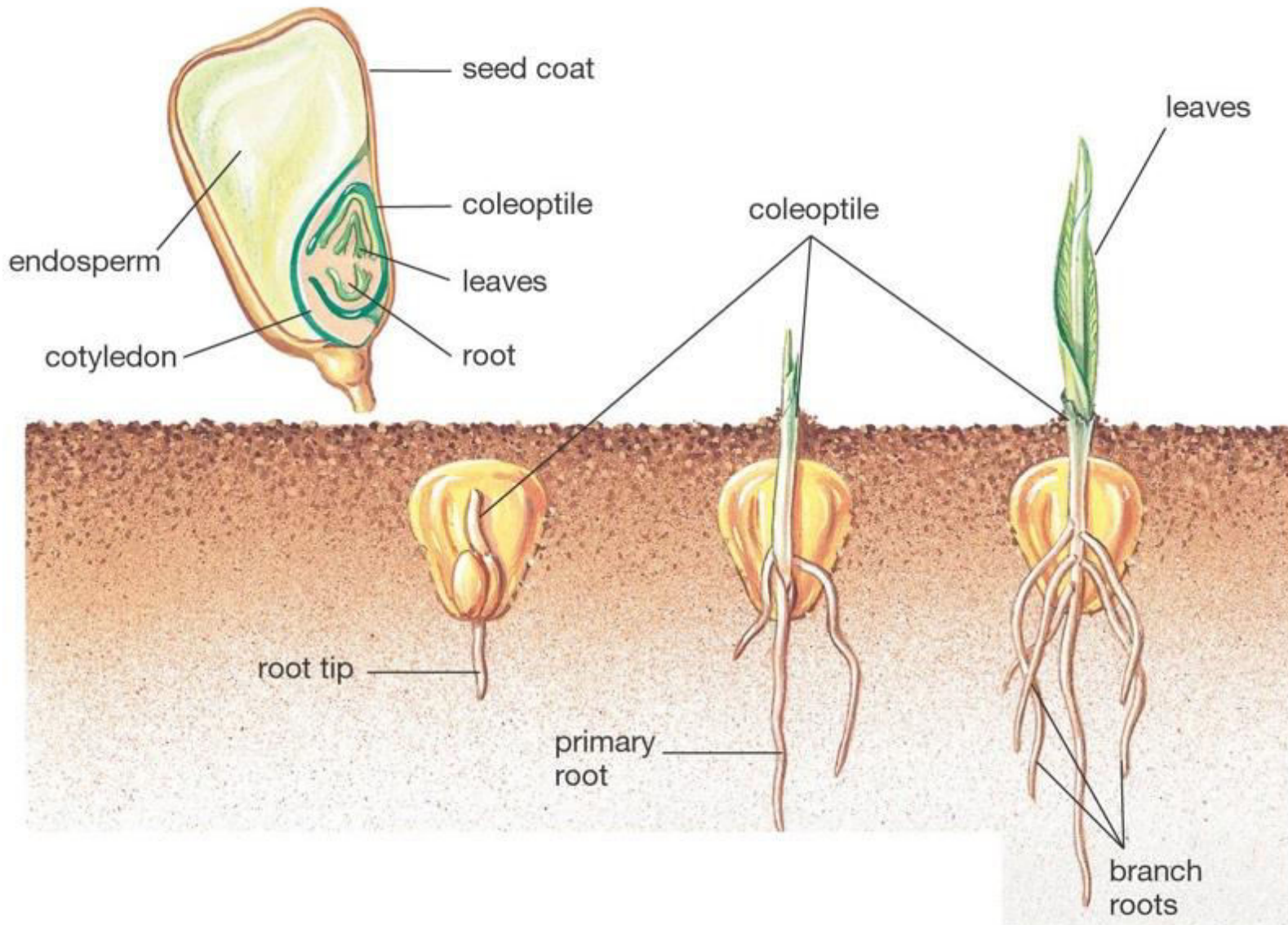
Breaking dormancy

- Seeds require moisture and the right temperature to germinate.

- In addition, some seeds germinate only after certain environmental signals:

  - Drying

  - Temperature (period of cold or heat)

  - Disruption of the seed coat

Thinking question

- What could be the advantage of waiting for each of these signals to germinate?

  - Long period of cold

  - High heat of a forest fire

  - Drying out
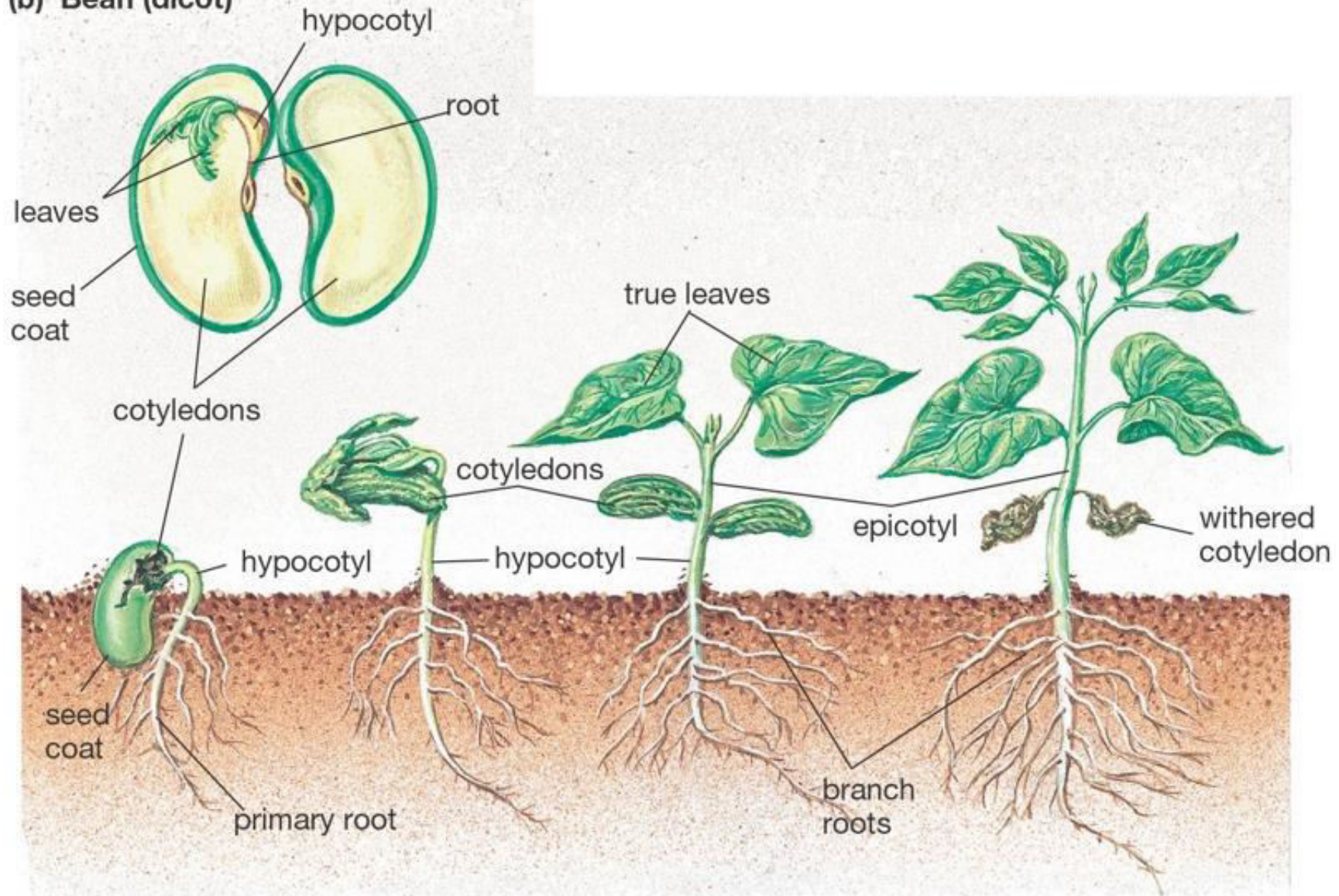
  - Disruption of the seed coat.

Germination: monocot

(a) Corn (monocot)

seed coat

coleoptile

leaves

root

endosperm

cotyledon

coleoptile

leaves

root tip

primary root

branch roots

Germination: dicot

(b) Bean (dicot)

- Concept check:

  - Some students confuse pollination with fruit dispersal. Explain the difference.

  - Some students confuse seed germination with plant growth. Explain the difference.