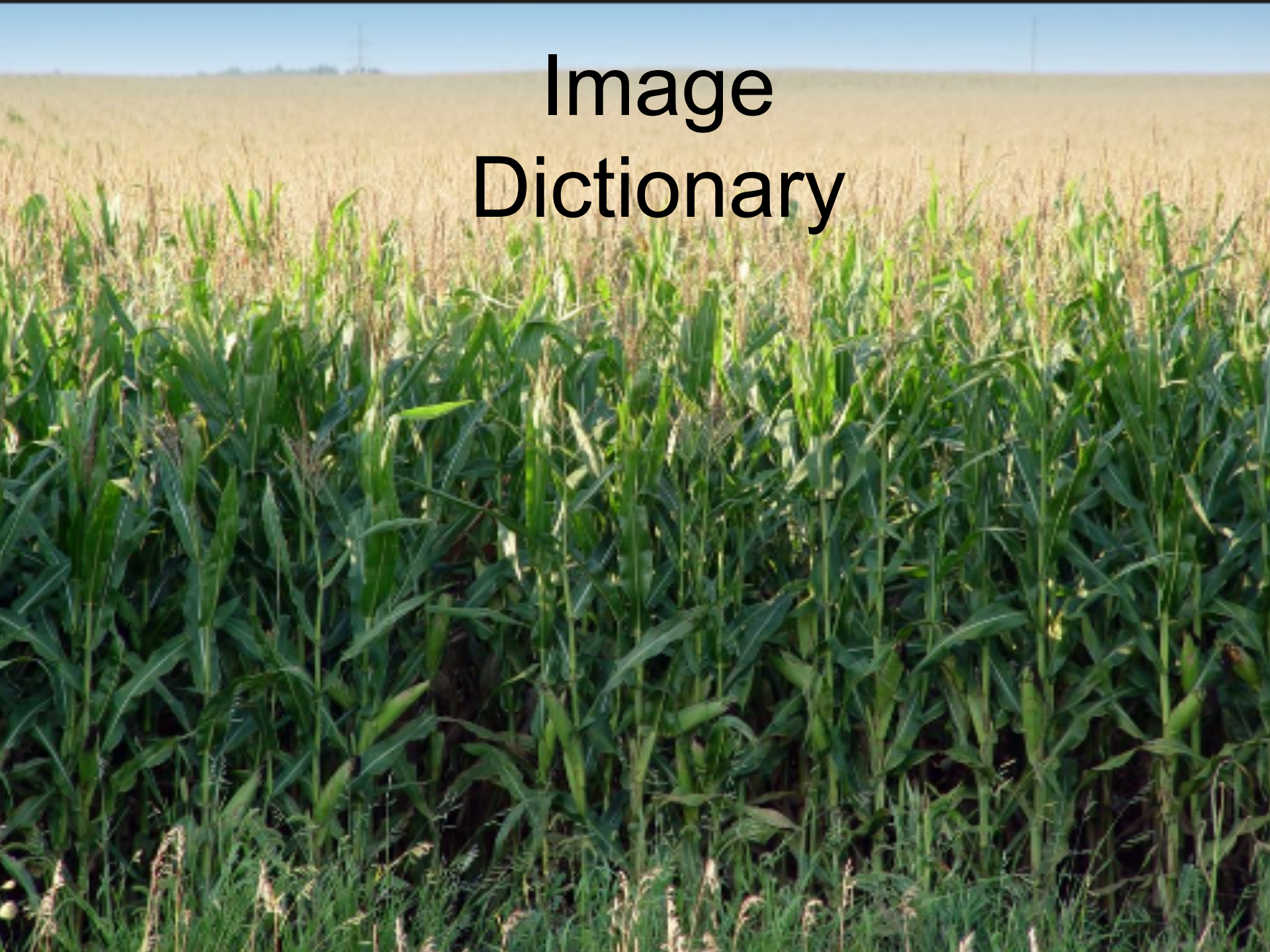
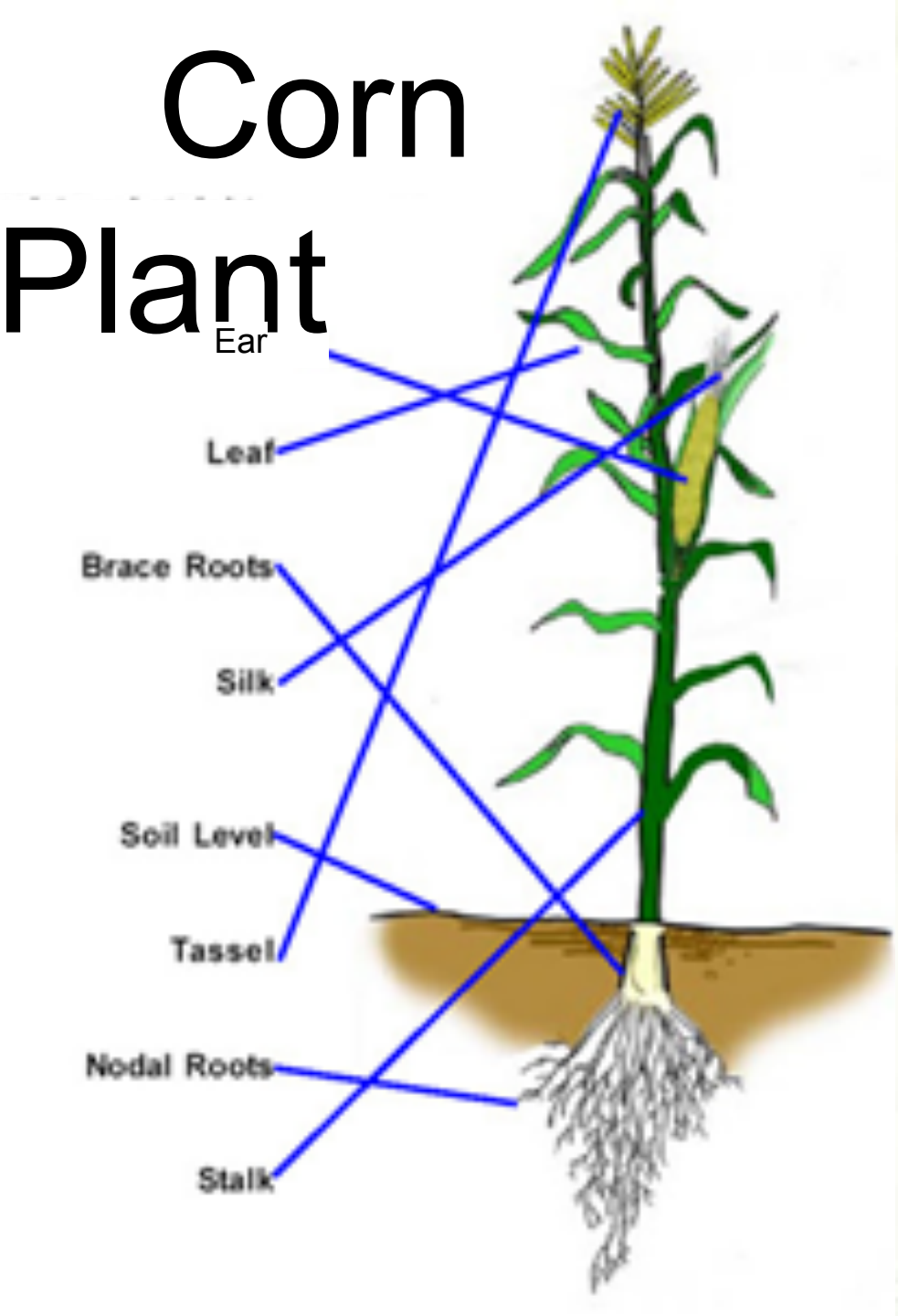
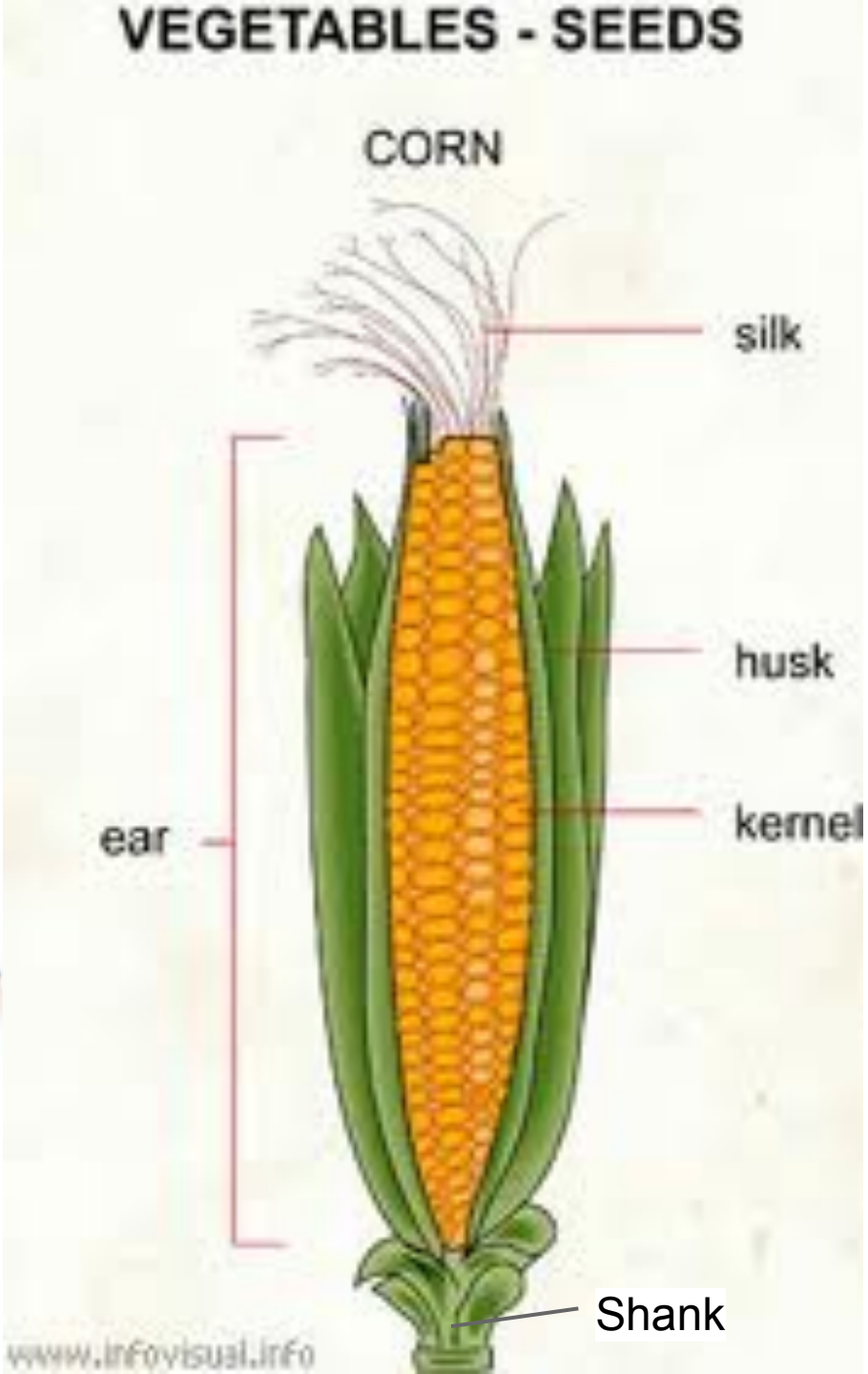


Image
Dictionary

Corn Plant


Ear
Leaf
Brace Roots
Silk
Soil Level
Tassel
Nodal Roots
Stalk

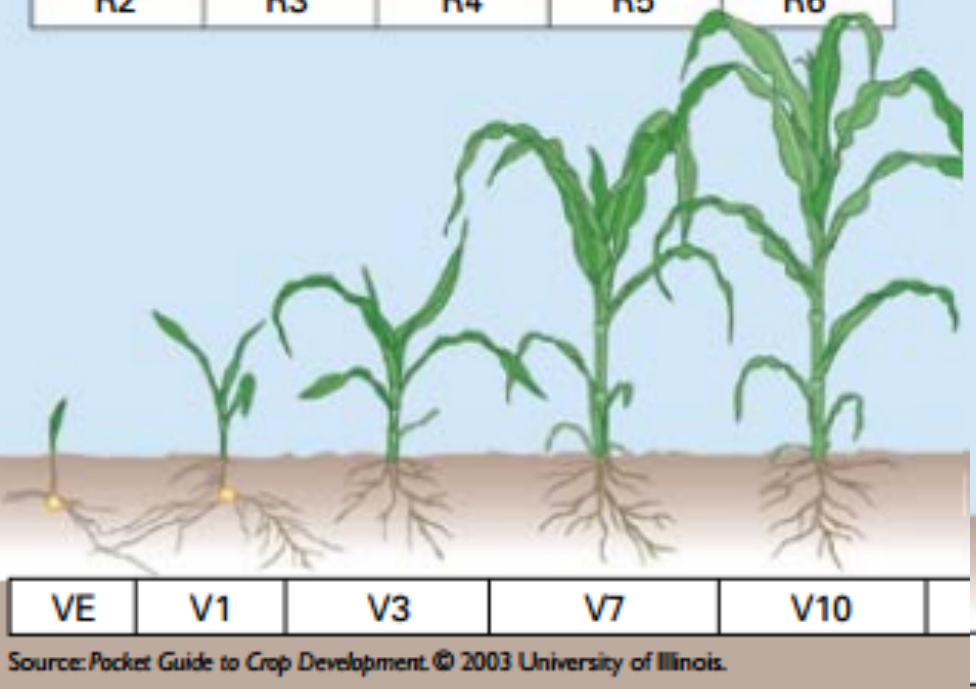

VEGETABLES - SEEDS
CORN
silk
husk
kernel
ear
Shank
www.infovisual.info

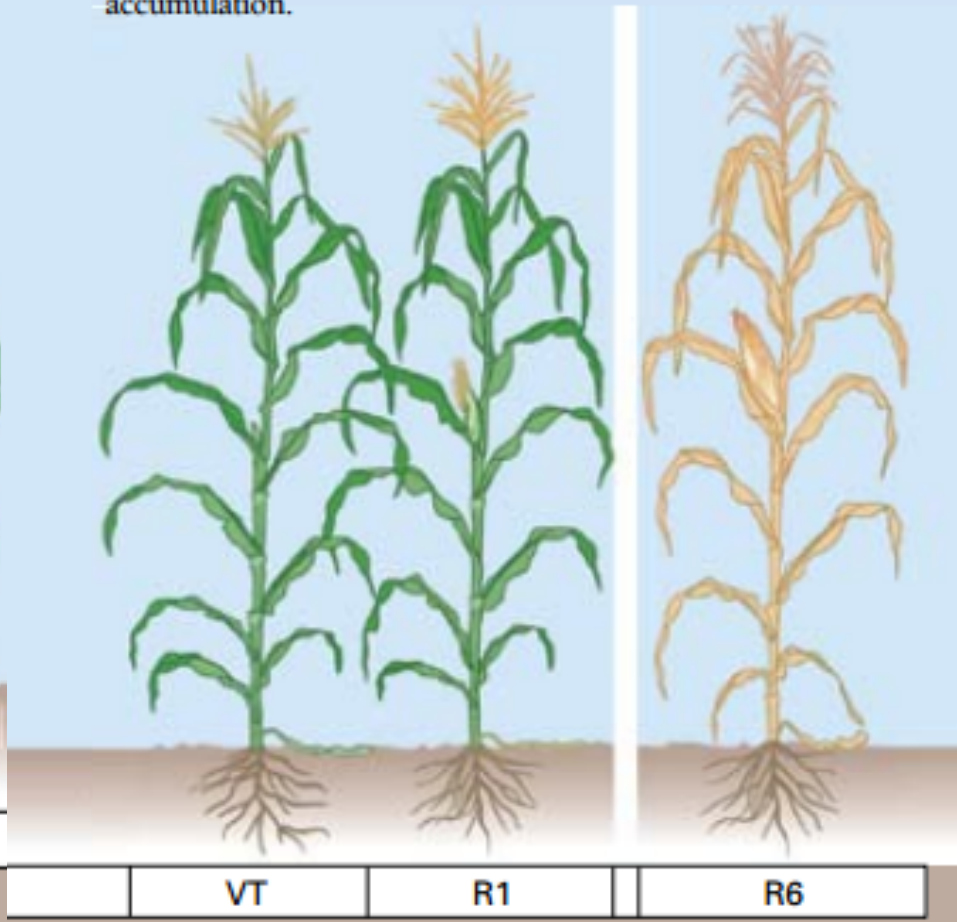
Vegetative stages

- **VE:** emergence of the shoot from the soil.
- **V1:** lowest leaf has a visible collar; this leaf has a rounded tip, unlike subsequent pointed leaves.
- **V2:** two lowest leaves have a visible collar.
- **V(n):** "n" leaf collars present; there are 17 to 22 V stages before tassel emergence.
- **VT:** lowest branch of the tassel is visible, but silks have not emerged.

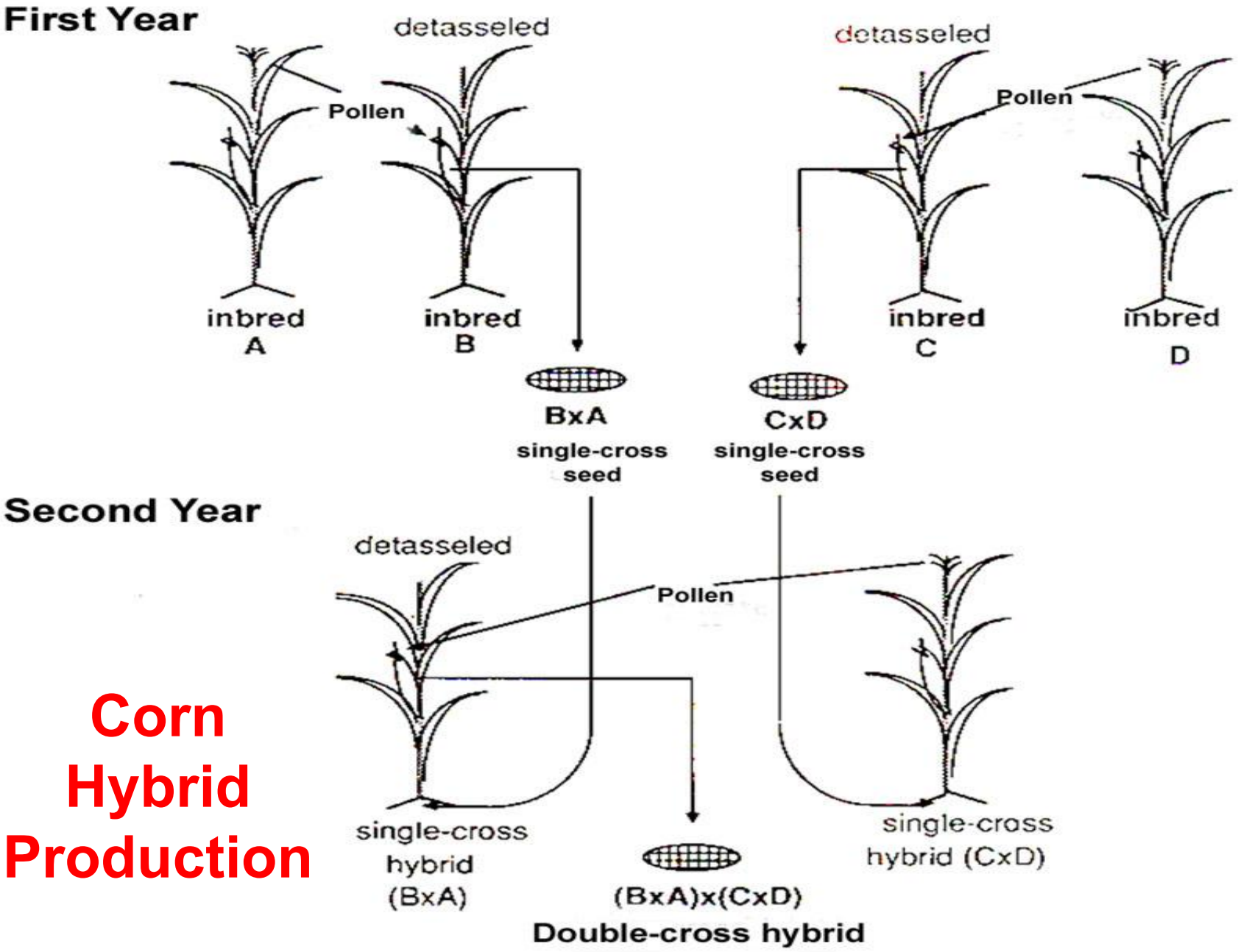
Reproductive stages

- **R1 (silk):** any silk is visible.
- **R2 (blister):** kernels are small and white; the endosperm (kernel fluid) is clear.
- **R3 (milk):** kernels are yellow with milky white fluid.
- **R4 (dough):** kernel contents are pasty as starch accumulates.
- **R5 (dent):** most kernels are dented due to the starch hardening at the top of the kernel. As maturity progresses, the starch hardens and the milk line moves toward the cob.
- **R6 (black layer or physiological maturity):** the milk line is no longer visible; a black layer forms at the kernel's attachment, which signifies the end of dry matter accumulation.





Corn Hybrid Production



Genetically Modified (GM) Corn

'Biochemical scissors' called restriction enzymes

Gene (in red) from bacteria '**cut**' out using 'biochemical scissors' and '**pasted**' into plant DNA using molecular techniques

START 1

Bacterial cell with gene (in red) that produces pest-killing protein

Normal plant cell becomes genetically modified to carry bacterial gene. This new gene enables the genetically modified cell to produce the pest-killing protein

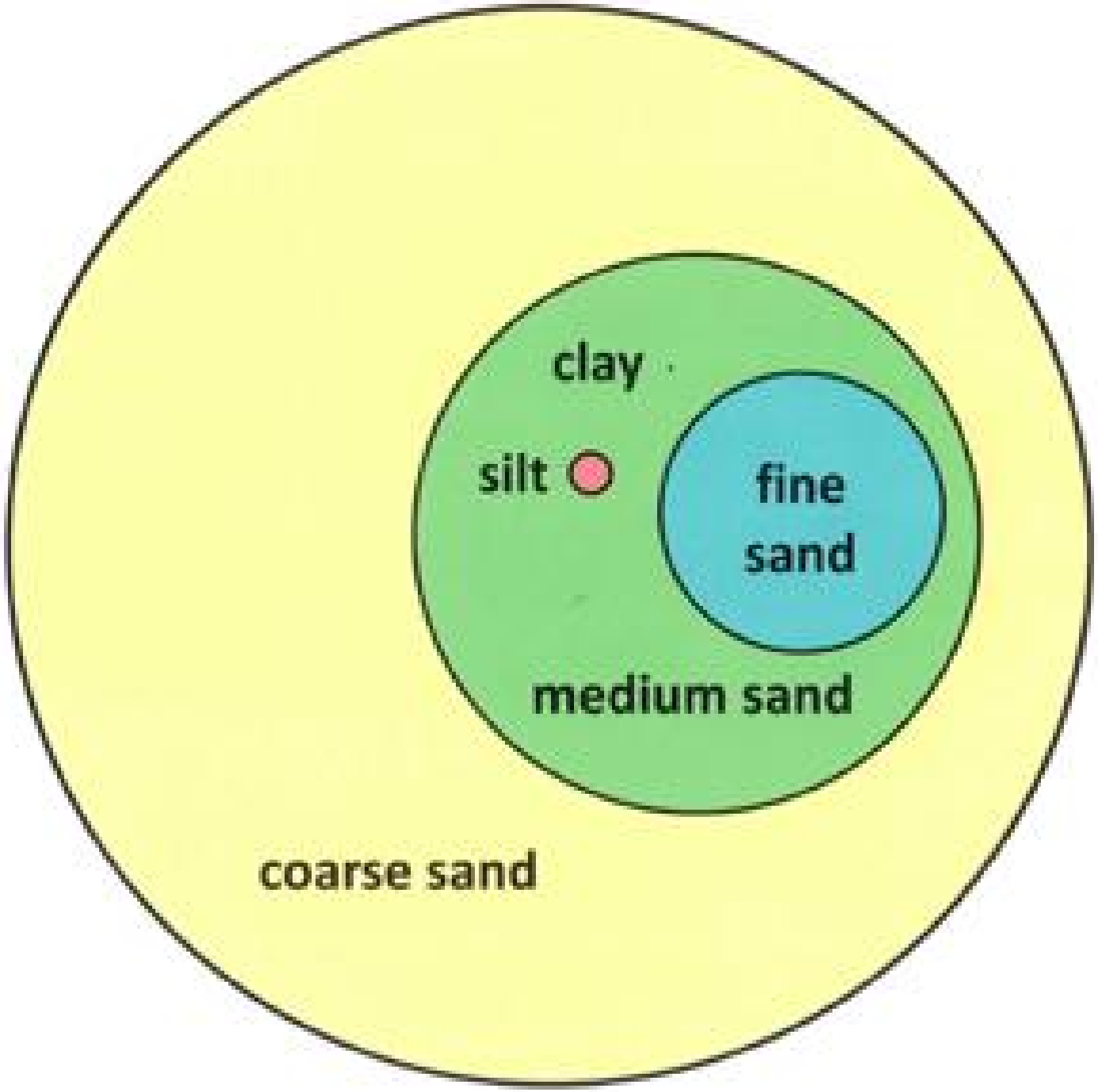
2

A whole plant can be produced from a single genetically modified cell

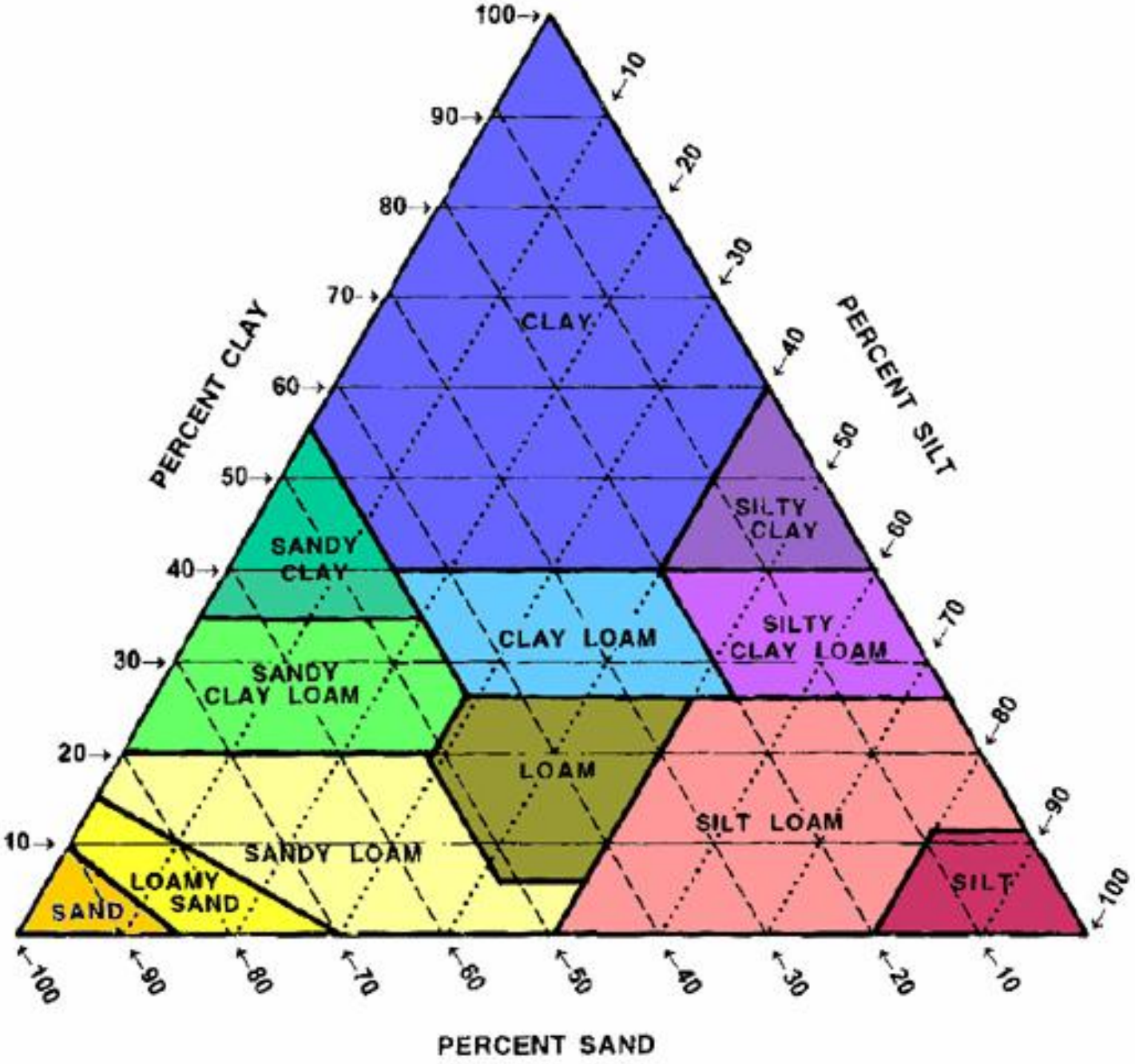
END 3

GM plant produces pest-killing proteins, and is thus pest-resistant

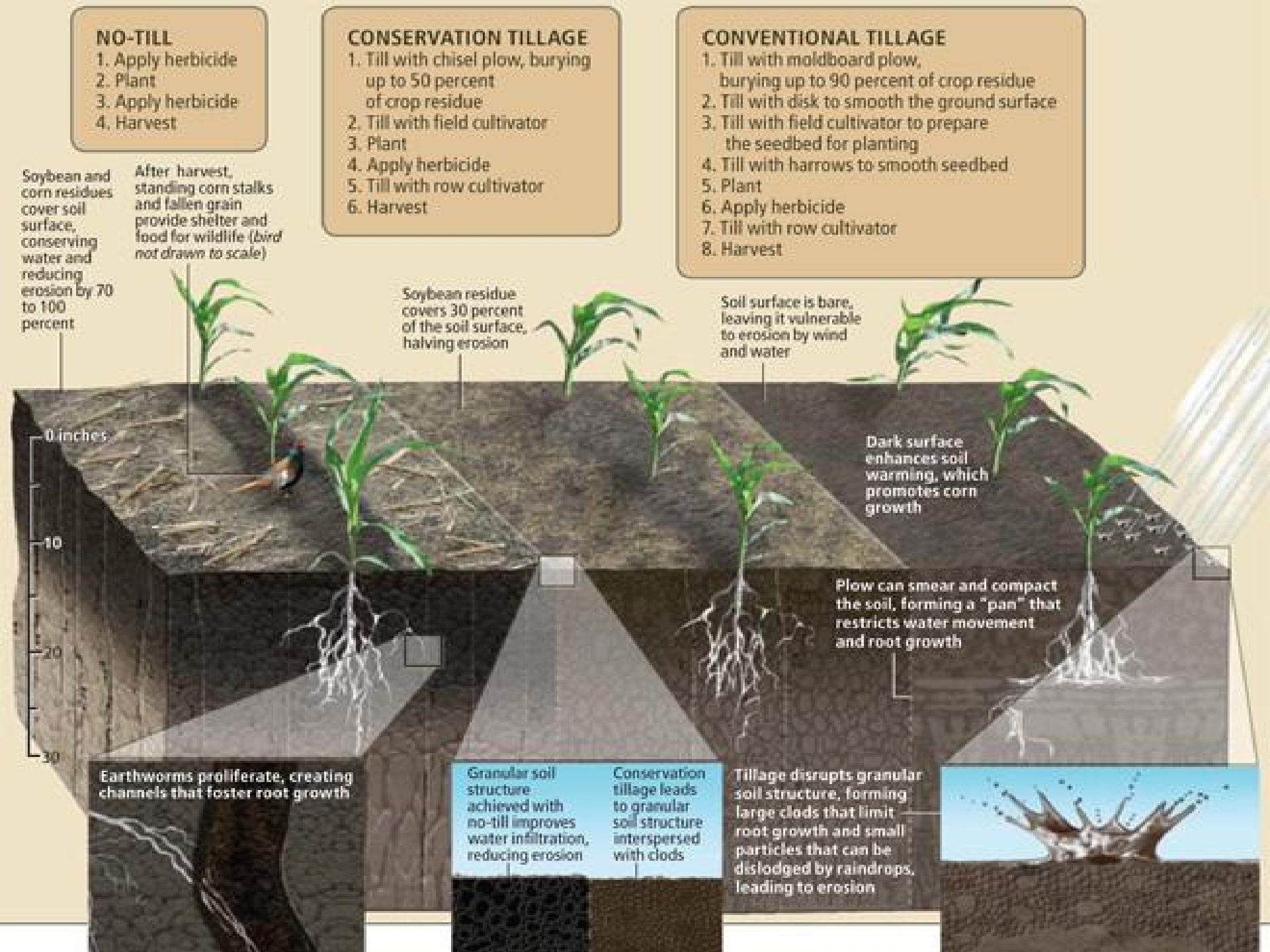
Soil particle size Comparison



Soil Triangle

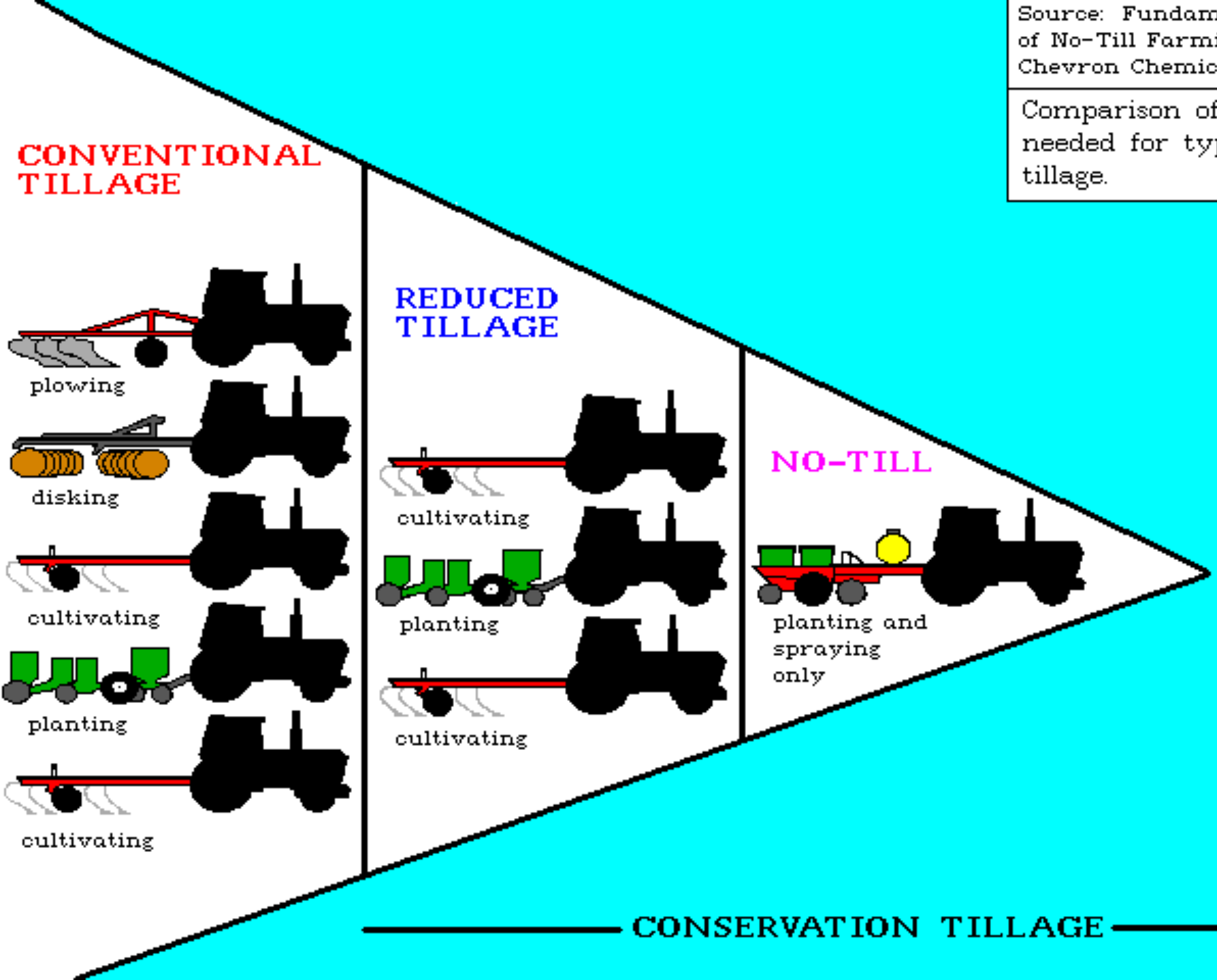


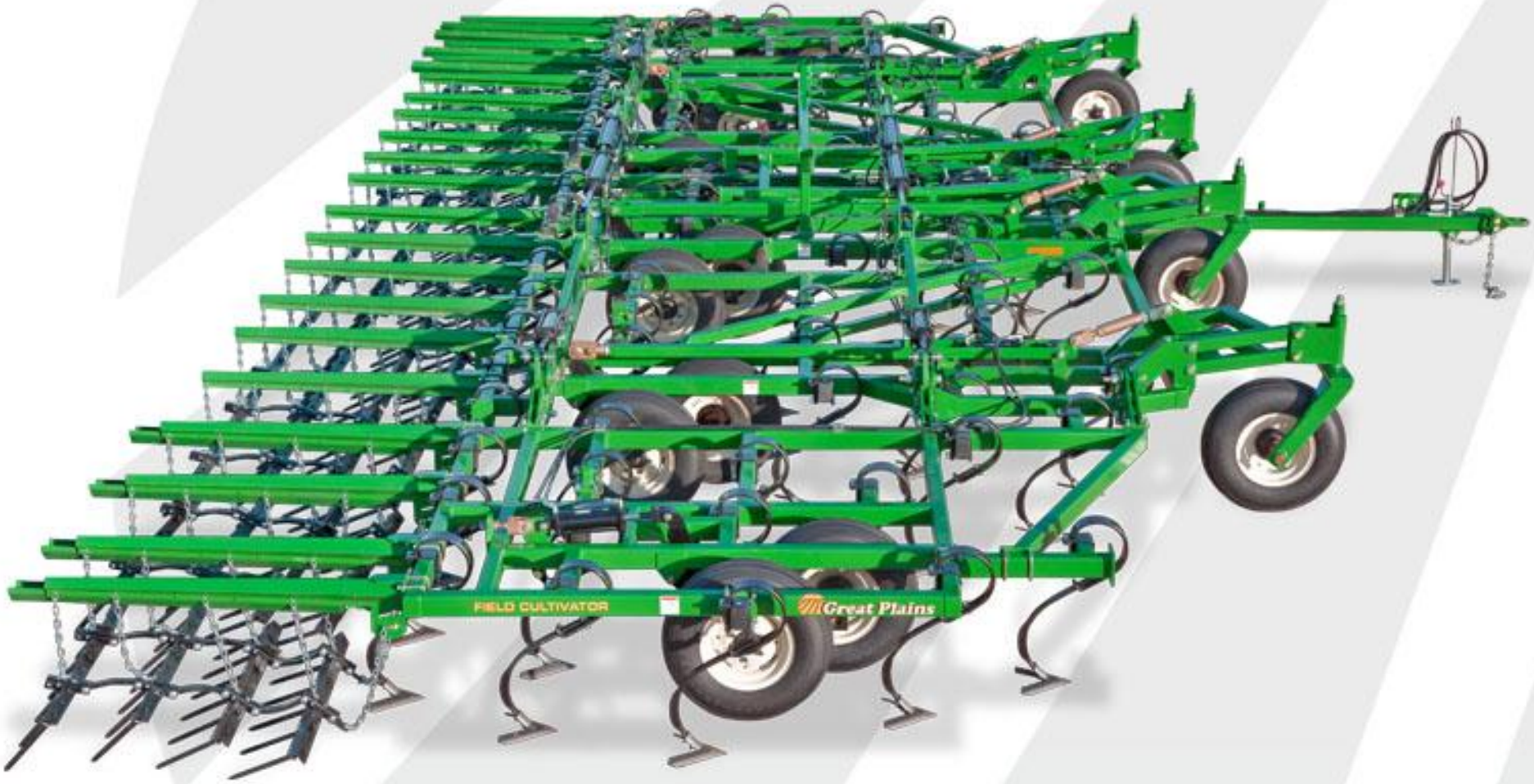
Tractor: a vehicle having a powerful motor and usually large, heavily treaded rear tires, used especially for pulling farm implements or machinery.


NO-TILL
1. Apply herbicide
2. Plant
3. Apply herbicide
4. Harvest
CONSERVATION TILLAGE
1. Till with chisel plow, burying up to 50 percent of crop residue
2. Till with field cultivator
3. Plant
4. Apply herbicide
5. Till with row cultivator
6. Harvest
CONVENTIONAL TILLAGE
1. Till with moldboard plow, burying up to 90 percent of crop residue
2. Till with disk to smooth the ground surface
3. Till with field cultivator to prepare the seedbed for planting
4. Till with harrows to smooth seedbed
5. Plant
6. Apply herbicide
7. Till with row cultivator
8. Harvest
Soybean and corn residues cover soil surface, conserving water and reducing erosion by 70 to 100 percent
After harvest, standing corn stalks and fallen grain provide shelter and food for wildlife (bird not drawn to scale)
Soybean residue covers 30 percent of the soil surface, halving erosion
Soil surface is bare, leaving it vulnerable to erosion by wind and water
0 inches
10
20
30
Dark surface enhances soil warming, which promotes corn growth
Plow can smear and compact the soil, forming a "pan" that restricts water movement and root growth
Earthworms proliferate, creating channels that foster root growth
Granular soil structure achieved with no-till improves water infiltration, reducing erosion
Conservation tillage leads to granular soil structure interspersed with clods
Tillage disrupts granular soil structure, forming large clods that limit root growth and small particles that can be dislodged by raindrops, leading to erosion

Source: Fundamentals of No-Till Farming. Chevron Chemical Co.

Comparison of steps needed for types of tillage.





Field/Row Cultivator:secondary tillage designed to either prepare the seedbed or disturb the soil in careful patterns, sparing the crop but disrupting the weeds.

Disk Harrow: Implement with a number of sharp-edged, concave disks set at an angle so that as the harrow is drawn along the ground they turn the soil, pulverize it, and destroy weeds.

Chisel Plow: a soil tillage device pulled by a tractor or animal, used to break up and stir soil a foot or more beneath the surface without turning it. Also called **chisel**.

Moldboard Plow: designed to cut the soil into furrows and turn the soil over.

Grain Drill:a **drill** for sowing small **grains** (as of **wheat**) or fine seeds (as clover **seed**) that precisely positions seeds in the soil and then covers them.

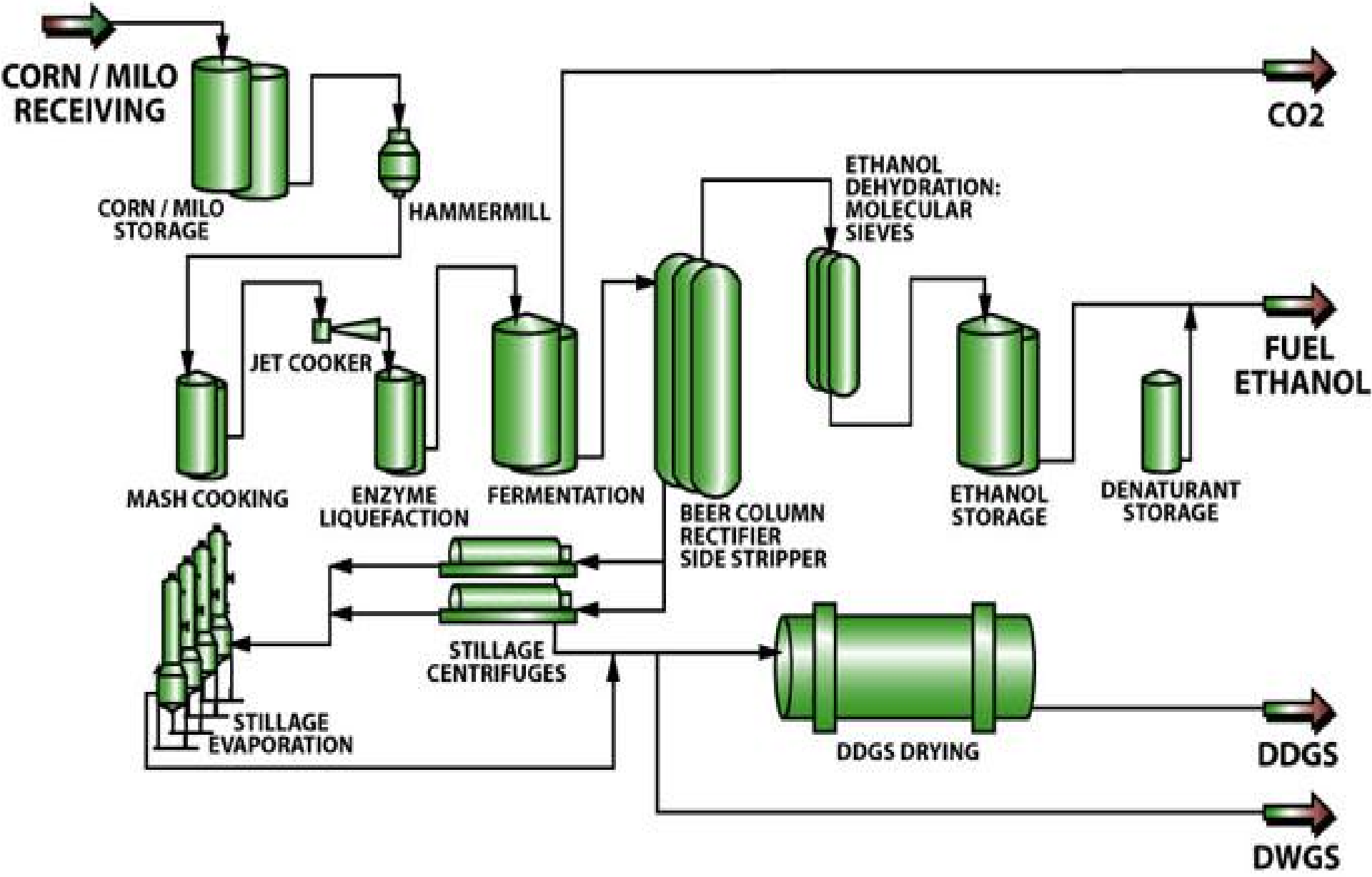
Planter: an agricultural farm implement towed behind a tractor, used for sowing crops through a field

Combine: a machine that harvests grain crops

Ethanol:

also called grain alcohol, or drinking alcohol, is a volatile, flammable, colorless liquid with the structural formula CH_3CH_2OH. Best known as the type of alcohol found in alcoholic beverages, it is also used in thermometers, as a solvent, and as a fuel.

ETHANOL PRODUCTION FROM DRY MILLING



Dried Distiller's Grains (DDGs): high protein livestock feed that increases efficiency and lowers the risk of subacute acidosis in beef cattle. By-product of ethanol production.