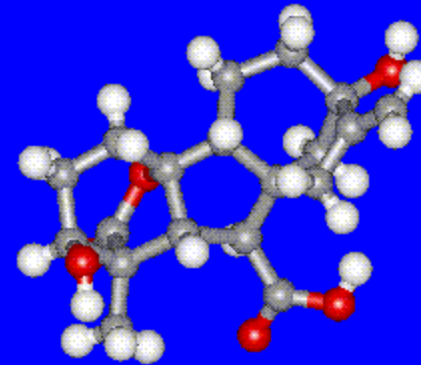
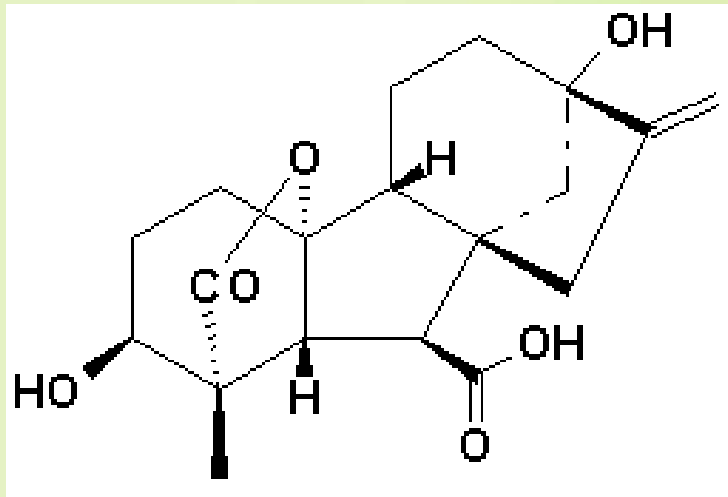


Gibberellin



Discovered in association with In 1930's, bakanae or foolish seedling disease of rice (*Gibberella fujikuroi*)



- In 1930's, Ewiti Kurosawa and colleagues were studying plants suffering from bakanae, or "foolish seedling" disease in rice.
- Disease caused by fungus called, *Gibberella fujikuroi*, which was stimulating cell elongation and division.
- Compound secreted by fungus could cause bakanae disease in uninfected plants. Kurosawa named this compound gibberellin.
 - *Gibberella fujikuroi* also causes stalk rot in corn, sorghum and other plants.
 - Secondary metabolites produced by the fungus include mycotoxins, like fumonisin, which when ingested by horses can cause equine leukoencephalomalacia - necrotic brain or crazy horse or hole in the head disease.
 - Fumonisin is considered to be a carcinogen.



Gibberellins

- **Gibberellins** are named after the fungus *Gibberella fujikuroi* which causes rice plants to grow abnormally tall.
 - synthesized in apical portions of stems and roots
 - important effects on stem elongation
 - in some cases, hastens seed germination



Effects of Gibberellins

- Cell elongation.
 - GA induces cellular division and cellular elongation; auxin induces cellular elongation alone.
 - GA-stimulated elongation does not involve the cell wall acidification characteristic of auxin-induced elongation
 - Breaking of dormancy in buds and seeds.
 - Seed Germination - Especially in cereal grasses, like barley. Not necessarily as critical in dicot seeds.
 - sex determination
- Promotion of flowering.
- Transport is non-polar, bidirectional producing general responses.

Internode Elongation

- Gibberellins cause internodes to stretch in relation to light intensity.
- High light intensity = no stretch
- Low light intensity = long internodes. Leaves are raised to capture light



Wild Radish - Rosette & Bolt

A FLOWERING ANNUAL



YEAR ONE



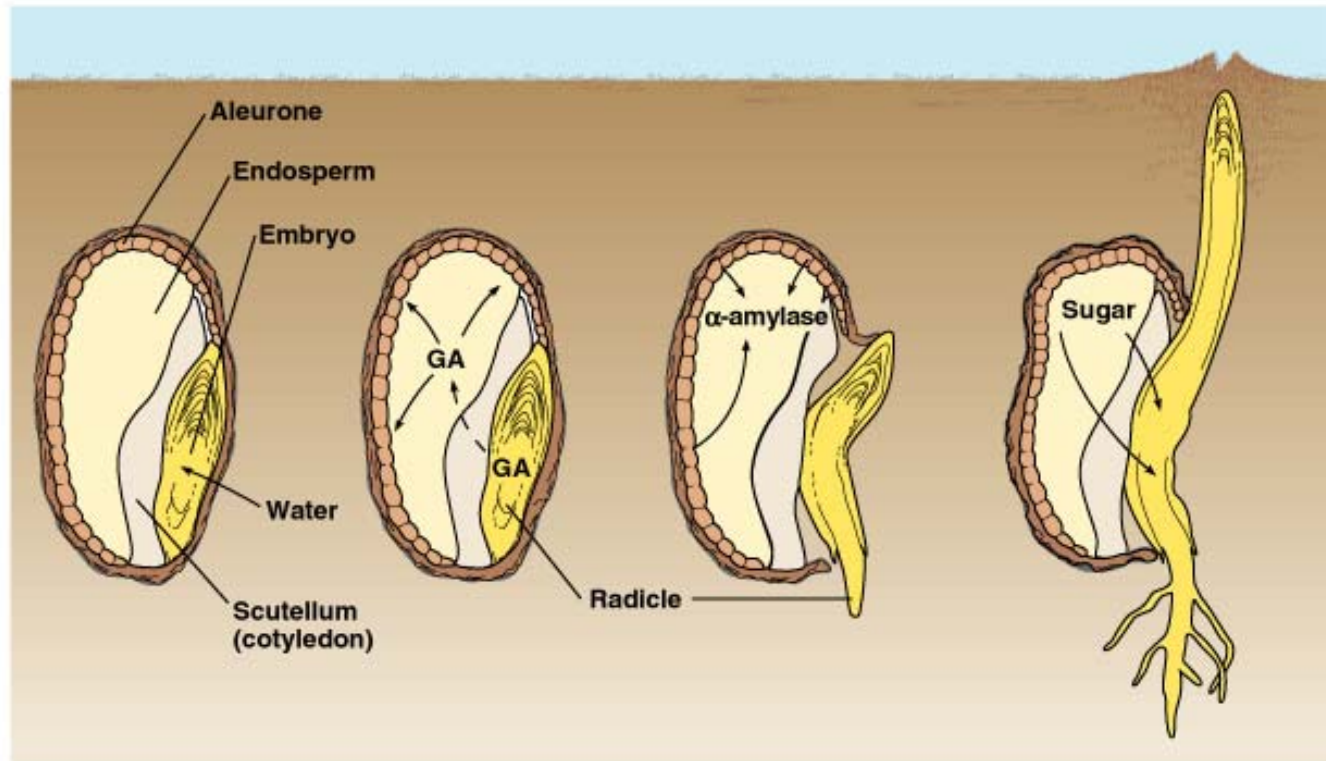
YEAR ONE

Gibberellins

- Cell elongation and cell division
- Stimulate development of flowers (as in “gibbing” camelias)
- Cause internodes to stretch
- Produced in stem and root apical meristems, seed embryos, young leaves



Mobilization of reserves



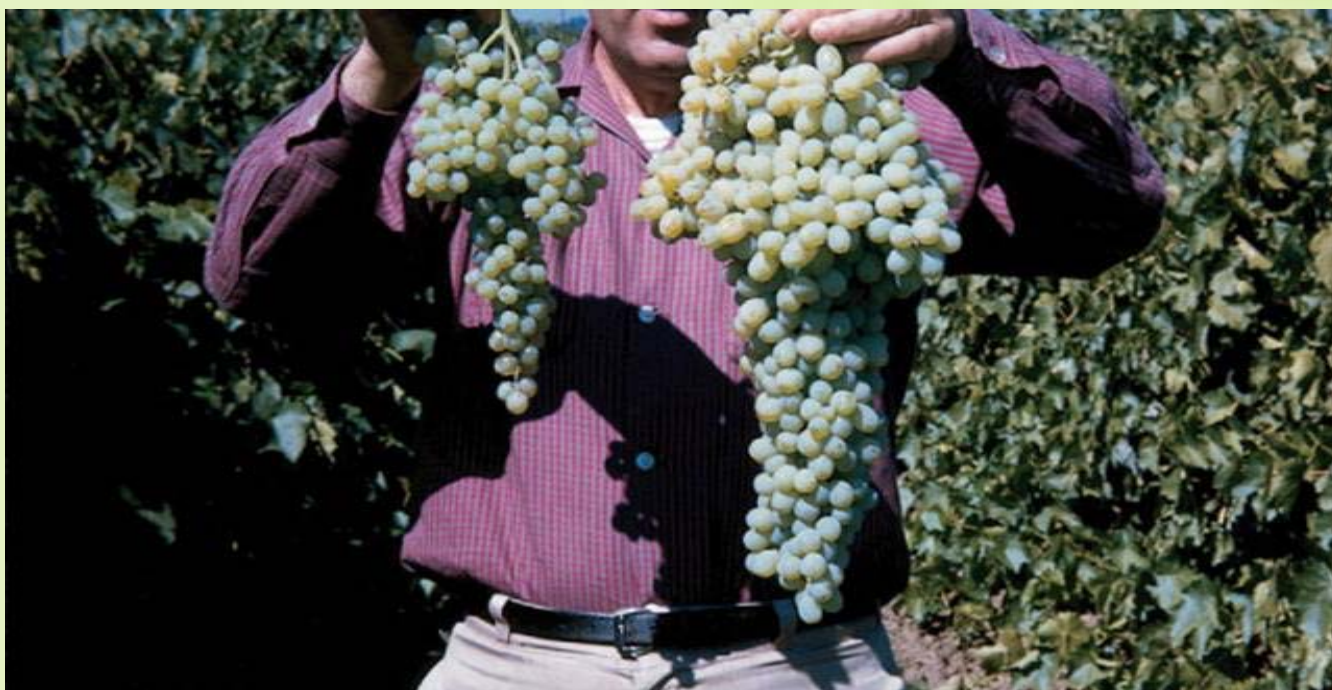
© 1999 Addison Wesley Longman, Inc.



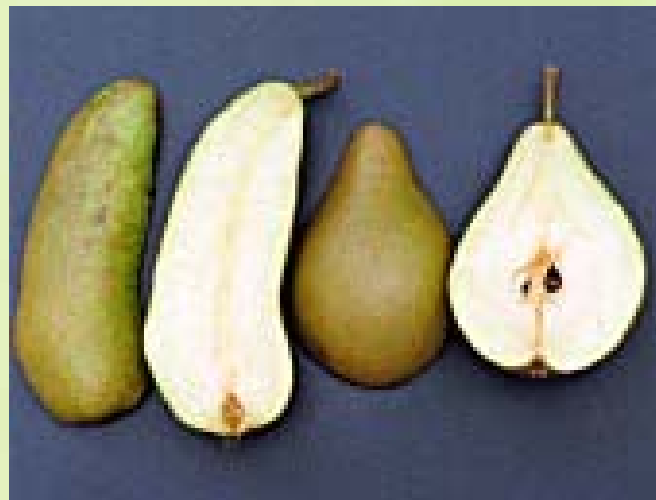


©08Toni Leland

The tiny remnants of seeds in these grapes are the shriveled husks.



Parthenocarpic Fruits





Dwarf

Tall

High yielding semi-dwarf rice has reduced endogenous gibberellin

-GA



+GA



Fewer flowers and larger fruit

Delayed fruit harvest

Increased fruit size

GAs are used commercially to increase fruit size in table grapes and to regulate citrus flowering and rind maturation



The effects of paclobutrazol, an inhibitor of gibberellin biosynthesis, on shoot growth and flowering of poinsettia