The main energy storage substances in seeds

With seed germination, oil bodies and other substances gradually degraded to supply energy; this was consistent with the content of storage substances. In parallel to electron microscopy and physiological analyses, transcriptome analysis showed that 80-90 % of differentially expressed genes (DEGs) appeared after seed imbibition, reflecting ...

Soybean is an important oilseed crop and major dietary protein resource, yet the molecular processes and regulatory mechanisms involved in biosynthesis of seed storage substances are not fully ...

This review summarizes the divergent processes of storage protein accumulation in monocot and dicot seeds. Furthermore, it provides systematical comparisons about storage protein characteristics, regulatory networks, and genetic improvements between seeds of monocot and dicot plants. Finally, future perspectives and challenges for improving storage protein ...

Triacylglycerols are highly concentrated stores of metabolic energy because they are reduced and anhydrous. The yield from the complete oxidation of fatty acids is about 9 kcal g -1 (38 kJ g -1), in contrast with about ...

Further elaboration of oleoyl-CoA to produce polyunsaturates, hydroxylates or very long chain acyl-CoAs occurs on the endoplasmic reticulum, as does the esterification of acyl-CoAs to glycerol-3-phosphate to produce the final triacylglycerol storage oil. The temporal and hormonal regulation of storage lipid accumulation in seeds is discussed.

Starch, a substance stored in seeds, is the main source of energy for germination in sorghum seeds. However, as the seeds age, the catabolism of seed starch is affected, thereby seriously damaging germination ...

Glucose can be used in respiration to provide energy. Converted to sucrose for transport in the phloem. As nectar to attract insects for pollination. Plants can also convert the carbohydrates made into lipids for an ...

Starch is the storage form of glucose in plants, stored in seeds, roots, and tubers for later use as an energy source for the plant to reproduce. When a seed is buried deep in the soil, this starch can be broken down into glucose to be used for energy for the seed to sprout.

The energy supply in the seed germination stage comes from the decomposition of storage substances in the seeds, which is starch in the case of sorghum grains. Our experiment found that the starch content in aged sorghum seeds was lower than that in normal seeds before germination, suggesting that starch was consumed during the aging ...

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Carbohydrates are one of the main energy sources for both plant and animal cells and play a fundamental role in seed development, human nutrition and the food industry. Many studies have focused on the molecular pathways that control carbohydrate flow during seed development in ...

DEPs involved in storage substance mobilization and energy supply. The main physiological characteristics of the three phases during seed germination were storage degradation, physiological processes/morphogenesis, and photosynthesis (Bewley, 1997). In Phase I, proteins involved in storage substance mobilization and energy generation were ...

Background Starch is the main storage substance in rice caryopsis and its properties will determine the quality of rice. Super rice has been extensively studied due to its high-yield characteristics, but the knowledge of amyloplast development and starch quality in caryopsis of super rice especially with large panicle is limited. Results To address this, large ...

The interconversion of starch and sugar provided energy storage substances in mature seeds and further acted as energy sources to support seed germination and seedling growth. ... Thus, effective protection and active restoration engineering are becoming increasingly important. Seed restoration is the main method to repair damaged seagrass ...

During seed development, storage compounds containing carbohydrates, storage proteins, and lipids are synthesized. These storage reserves provide about 70% of the energy intake derived from food and animal feed. Seed supplies provide an important agriculture source with regard to economic development and guarantee global food security.

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Germination inhibitors, which inhibit the germination of seeds, spores and other plant reproductive material, are abundant in the plant kingdom and include phenols, cyanides, alkaloids, essential oils, amino acids, etc. These inhibitors can be classified as germination destructors and germination retarders depending on whether they harm the morphology, ...

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