Geranylgeranyl pyrophosphate synthases

Description of Technology: This invention is in the field of plant molecular biology. More specifically, this invention pertains to nucleic acid fragments encoding geranylgeranyl pyrophosphate synthase or geranylgeranyl pyrophosphate synthase-related protein in plants and seeds.

Patent Listing:

1. **US Patent No. 6,855,868**, Issued February 15, 2005, "Geranylgeranyl pyrophosphate synthases"
http://patft.uspto.gov/netacgi/nph-Parser?Sect2=PTO1&Sect2=HITOFF&p=1&u=%2Fnetahtml%2FPTO%2Fsearch-bool.html&r=1&f=G&l=50&d=PALL&RefSrch=yes&Query=PN%2F6855868
2. **US Patent No. 7,199,283**, Issued April 3, 2007, "Geranylgeranyl pyrophosphate synthases"
http://patft.uspto.gov/netacgi/nph-Parser?Sect2=PTO1&Sect2=HITOFF&p=1&u=%2Fnetahtml%2FPTO%2Fsearch-bool.html&r=1&f=G&l=50&d=PALL&RefSrch=yes&Query=PN%2F7199283
3. **US Patent No. 7,217,862**, Issued May 15, 2007, "Geranylgeranyl pyrophosphate synthases"
http://patft.uspto.gov/netacgi/nph-Parser?Sect2=PTO1&Sect2=HITOFF&p=1&u=%2Fnetahtml%2FPTO%2Fsearch-bool.html&r=1&f=G&l=50&d=PALL&RefSrch=yes&Query=PN%2F7217862

Market Potential: Geranylgeranyl pyrophosphate (GGPP) synthase, also known as geranylgeranyl-diphosphate synthase, farnesyl transferase and geranylgeranyl synthetase is a key enzyme in plant terpenoid biosynthesis. The final product, GGPP, is the key precursor of several holoterpenoids such as carotenoids and meroterpenoids. One fate of GGPP is conversion to phytoene by phytoene synthase, the first committed step in carotenoid biosynthesis. Although not specific to carotenoid biosynthesis, GGPP synthase may be important in determining the total catorenoid content of a specific tissue. Expression of the GGPP synthase gene is strongly induced during the chloroplast to chromoplast transition which occurs in ripening peppers which have a high carotenoid content (Kuntz, M., et al. (1992) Plant J. 2:25-34).

Manipulation of the corn gene in endosperm could result in increased xanthophyll content, which has value as coloring agent in poultry feed

Benefits:

- Alters plant functions

Applications:

- Plant molecular biology

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