Improved Pod Shattering and Controlled Seed Release Properties

Tech ID: 19371 / UC Case 1999-100-0

BACKGROUND

In many agricultural seed products—such as oilseed crops, grains, and legumes, as well as seed for planting—the premature release of seeds prior to harvest results in serious losses. Prior to this invention, visual examination of the crops and other agricultural techniques, such as determination of moisture content, have been the primary means to indicate timing of the seed harvest. This invention uses antisense genetic manipulation to achieve rational control of the natural regulatory mechanism of seed release.

TECHNOLOGY DESCRIPTION

A scientist at UC San Diego has discovered that blocking expression of certain floral organ genes prevents the normal senescence of replum cells required for pod valve release and seed dispersal. Plants bearing this transgene construct do not release their otherwise normal, mature seeds without external applied mechanical effort. Thus, complete control of shattering in the field is achieved. Since premature seed dispersal can lead to serious losses of yield, it would be beneficial for producers of agricultural seed crops to gain control of the process using this technology.

ADVANTAGES

Faster, more efficient seed harvesting will result from controlling seed-pod shattering. The technology has advantage both for direct seed products such as oilseeds, and for seeds to be used for propagation.

STATE OF DEVELOPMENT

Studies have focused primarily on recently characterized Arabidopsis genes that are strongly expressed in the valve/replum boundary and INDY1, a gene that is involved in fruiting body size. Mutant alleles of these genes have recently been characterized and newly created transgenic plants show a complete lack of replum structures, thus assuring that the valves can not come apart and disperse seeds.

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	8,993,843	03/31/2015	1999-100
United States Of America	Issued Patent	7,897,848	03/01/2011	1999-100
United States Of America	Issued Patent	7,135,621	11/14/2006	1999-100
United States Of America	Issued Patent	6,998,517	02/14/2006	1999-100

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- Use of AGLI I Gene to Suppress Seed Pod Shatter in Commercially Important Plants
- Plant Dehiscence Zone-Specific Promoter and Methods of Using Same
- Control Premature Seed-Pod Breakage in Crop Species

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OTHER INFORMATION

CATEGORIZED AS

- **Agriculture & Animal Science**
  - Other
  - Plant Traits

RELATED CASES

1999-100-0

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