

# Saponins of *Chenopodium quinoa* (097094) Fact sheet

## Summary

Saponins are a group of chemicals with detergent-like properties that plants produce to help them resist microbial pathogens such as fungi. As a pesticide active ingredient, saponins extracted from *Chenopodium quinoa* plants are applied pre-planting to seeds of food crops such as beans and cereals, and to tomato seedlings before transplant. This treatment is intended to prevent the seeds and tomato plants from developing diseases caused by fungi, as well as by certain bacteria and viruses. *Chenopodium quinoa* seeds have a long history of use in South America as a dietary supplement, and are marketed in the U.S. as the cereal product "Quinoa." Based on toxicity studies and the presence of these saponins in many food products, this active ingredient is not expected to harm humans, other non-target organisms, or the environment.

## I. Description of the Active Ingredient

Saponins of *Chenopodium quinoa* are a group of chemicals present in the seeds of this plant species. These saponins are a cream beige solid with a meaty odor of finely ground protein. Seeds from *C. quinoa* are used as the cereal crop 'Quinoa', which has been cultivated as a dietary supplement in the Andean highlands since 3,000 B.C. Quinoa is considered a nutritional food, based on its amino acid composition; high content of calcium, phosphorus, and iron; and low sodium content. With their detergent-like properties, saponins may act against pathogens by disrupting their cell membranes. Plant cells are generally not affected because the saponins do not disrupt the cell walls surrounding plant cells.

Some saponins have medical uses, such as the saponin digitalis from the foxglove plant, which is used for certain heart ailments. Saponins also act as foaming agents in such disparate products as beer, fire extinguishers, and laundry products

## II. Use Sites, Target Pests, and Application Methods

- **Use Sites:** Saponins of *Chenopodium quinoa* is intended for use on tuber (e.g., potato seed pieces), legume (e.g. bean, pea), and cereal (e.g. wheat) seeds, and for root dip or foliar application to tomato seedlings shorter than 12 inches prior to transplanting.
- **Target pests:** Primarily disease-causing fungi, as well as certain bacteria and viruses.
- **Application Methods:** Seeds are treated by dip or spray; pre-transplant tomato seedlings are treated by root dip or foliar spray.

## III. Assessing Risks to Human Health

No adverse effects to humans are known or expected from use of saponins of *Chenopodium quinoa* in pesticide products. Saponins of *C. quinoa*: 1) are eaten regularly by humans with no known adverse effects, and 2) have no known toxic effects when tested in laboratory studies.

#### **IV. Assessing Risks to the Environment**

Based on published scientific information, no toxic effects have been identified in mammals, birds, or fish exposed to saponins of *Chenopodium quinoa*. Saponins of *C. quinoa* degrade within three to five days in the environment, further strengthening the conclusion that no harmful effects are expected to wildlife or the environment if users follow the directions for use on the label.

#### **V. Regulatory Information**

Date first product containing saponins of *Chenopodium quinoa* as the active ingredient was registered (licensed for sale): September 16, 2005

End use product as of November 2005: Heads Up® Plant Protectant. EPA Reg # 81853-1

#### **VI. Registrant Information**

**Heads Up Plant Protectants, Inc.**

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#### **VII. Additional Contact Information**

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