

Method for mulching an agricultural soil bed using a biodegradable protein material, and a mulched agricultural crop growing plot produced thereby

Abstract

A method is provided for mulching an agricultural soil bed using a biodegradable protein mulch material. The method includes the preparation of a film forming solution of a film forming protein material. The film forming protein solution is then sprayed directly onto a surface of an agricultural soil bed. The solution dries to form a thin film of protein material on the surface of the agricultural soil bed. The protein material may comprise a plant protein, a milk protein, an animal protein, a whey protein, casein, an egg protein or gelatin. Following a harvest, the mulch material, which is biodegradable, may simply be plowed under.

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SUMMARY OF THE INVENTION

It is a primary objective of the present invention to provide a method for mulching an agricultural soil bed using a thin protein film. In accordance with the method a film forming solution of a film forming protein material is prepared. A quantity of the protein solution is then spread directly over a surface of an agricultural soil bed. The quantity preferably is sufficient to provide a thin mulching film of the protein material on the surface of the agricultural soil bed after the solution has dried. The protein solution on the surface may then be allowed to dry to thereby form a thin film of protein material on the surface.

In one preferred form of the invention, the film forming protein solution may comprise an aqueous solution of soy protein isolate. In a particularly preferred form of the invention the protein solution may be alkaline and may comprise from about 2 to about 10% by weight glycerine and from about 5 to about 15% by weight of the protein isolate.

In another preferred form of the invention, the film forming protein solution may comprise an aqueous solution of wheat gluten. In a particularly preferred form of this aspect of the invention, the solution may be alkaline and may comprise from about 2 to about 10% by weight glycerine, from about 35 to about 70% by weight ethanol, from about 35 to about 70% by weight water and from about 2 to about 15% by weight of the wheat gluten.

In accordance with the invention, the protein material used to form the thin film of protein material may comprise one or more of a plant protein, a milk protein, an animal protein, a whey protein, casein, an egg protein and a gelatin.

Generally speaking the film forming solution may be an alkaline aqueous solution, a soy bean protein isolate solution may comprise from about 8 to about 12 weight % solids and a wheat gluten solution may comprise from about 4 to about 6 weight % solids.

A sufficient amount of the soy bean protein isolate solution may be spread uniformly over the surface of an agricultural soil bed to provide a film of soy bean protein isolate material weighing from about 175 to about 225 pounds per acre on the surface of the plot after the solution has dried. Similarly, a sufficient amount of the wheat gluten protein solution may be spread over the surface of the agricultural plot to provide a film of wheat gluten protein material weighing from about 75 to about 125 pounds per acre on the surface of the plot after the solution has dried.

In accordance with another form of the invention, a method for producing an agricultural crop product is provided. This method comprises planting a potential agricultural product in a soil bed, spreading a quantity of a film forming solution of a film forming protein material directly over a surface of the planted soil bed, and allowing the protein solution on the surface to dry whereby to form a thin mulching film of protein material on the surface. Suffice it to say that in accordance with this form of the invention, the quantity of film forming solution spread on the surface of the planted soil bed should be sufficient to provide a thin mulching film of the protein material on the surface after the solution has dried.

In another form of the invention, an agricultural crop growing plot is provided. The agricultural crop growing plot may comprise a bed of soil and a planted potential agricultural product in the soil bed. In accordance with the invention, the agricultural crop growing plot also includes a thin film of protein material mulch on a surface of the soil bed over the product. The film may be formed by spreading a quantity of a film forming solution of a film forming protein material directly over the surface of the planted soil bed and allowing the protein solution on the surface to dry.