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Method of preventing the formation of frost

Abstract

A method for producing a fog to extract freezable moisture from plants and to increase the ambient humidity and temperature surrounding plants comprising the steps of providing a mixture of silicon tetrachloride and an emulsifier in the proportion of between about 20% to 90% of silicon tetrachloride and between about 80% and 10% of emulsifier, combining the silicon tetrachloride-emulsifier mixture with an aqueous ammonia solution containing between 28% and 33% of ammonia in an amount of between about 1 part of the silicon tetrachloride-emulsifier solution to between about 2.5 and 3 parts of the ammonia solution to produce a fog containing ammonium chloride which removes moisture from the plants and increases the ambient humidity surrounding the plants to thereby raise the ambient temperature.

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solution and wherein said ammonia is of a concentration of between about 28% and 33% by weight.

9. A method as set forth in claim 7 wherein said ammonia is in the form of an aqueous ammonia solution.

10. A method as set forth in claim 1 wherein said silicon tetrachloride is present relative to said emulsion in an amount of about 33% by weight and said emulsifier is present relative to said silicon tetrachloride in an amount of about 67% by weight.

11. A method as set forth in claim 10 wherein said ammonia is in the form of an aqueous solution and is combined with said silicon tetrachloride-emulsion in an amount of between about one part silicon tetrachloride-emulsion by volume to 2-3 parts of aqueous ammonia of a concentration of 28% by weight.

12. A method as set forth in claim 10 wherein said ammonia is in the form of an aqueous ammonia solution.

13. A method as set forth in claim 1 wherein said ammonia is in the form of an aqueous ammonia solution.

14. A method as set forth in claim 13 wherein said aqueous ammonia solution contains between about 25% and 30% of ammonia by weight.

15. A method as set forth in claim 1 wherein said ammonia is in the form of a gas.

16. A method as set forth in claim 1 wherein said forcible combining is effected by a turbofan.

17. A method as set forth in claim 1 wherein said silicon tetrachloride is present relative to said emulsion in an amount of between about 20% and 45% by weight and wherein said emulsifier relative to said silicon tetrachloride is present in an amount of between 80% and 55% by weight.

18. A method as set forth in claim 17 wherein said ammonia is in the form of an aqueous ammonia

solution.

Description

The present invention refers to a method for forming an artificial haze or clouds, capable of increasing the humidity and/or surrounding temperature and intended to neutralize or offset the hurtful effects of the frosts, specially during spring, when the plants are in bloom. During the quiet serene nights, due to the loss of sun warmth, the temperature drops rapidly and results in the freezing of the sap in the plants with the corresponding increase of its volume, and the consequent destruction of the cellular tissues of the plants, which can be partial or sometimes total.

The methods available to combat the frosts, are generally based on the use of different types of heaters, conveniently located at some regular distances on the ground, which heat and dry the air. However, these methods have the important disadvantage of producing ascendent air flows, substituted by very dry descendent flows of low temperature, thus instead of improving the air conditions, they make them worse -- increasing the frost magnitude on the ground surface.

Another system used for the above purpose, is the irrigation by aspersion, intended to increase rapidly the humidity of the surrounding air, but this method has the great inconvenience of sweeping the pollen from the flowers, thus preventing the process of pollinization.

There is another method that can be used to impede the rapid radiation of the soil, which consists in producing clouds of an intense smoke, thus diminishing the air transparence, but its instability and difficulties for achieving a correct dispersion, make it almost impossible to obtain satisfactory results.

Therefore effects were made to obtain a method without the above inconveniences to efficiently solve the above problem.

As a result of numerous experiments and testings, the desired solution was obtained by means of an

relative to the silicone tetrachloride, and between 2.5 and 3 parts by volume, as a maximum, of the ammonia relative to one part by volume of the silicon tetrachloride emulsion. The most preferable range mixture would be about 33% of silicon tetrachloride and 67% of emulsifiers by weight relative to each other with the silicon tetrachloride-emulsifier being in the ratio of one part by volume to 2.5 - 3 parts by volume of aqueous ammonia solution having a concentration of 28%.

During the above mentioned experiments it was verified that the great capacity of expansion of the *artificial clouds* in question, produced with one liter of the mixture of tetrachloride and emulsifiers and with the addition of two and half liters of the ammonium hydroxide, atomized in one minute, covers approximately four hectares, with a rapid initiation of the chemical reaction and natural expansion, raising the ambient temperature from -4.degree.C to 0.degree.C or 0.5.degree.C or maintaining the temperature at 0.degree.C, depending on the original conditions, and increasing the humidity to 97%. The raise of the temperature and humidity is gradual and takes from a quarter of an hour to half an hour, but the conditions of the activity are maintained, even when the white colour of the ammonium chloride dissipates. It is obvious that in the exposed method some changes in its details can be introduced, but naturally without turning away from the scope of the present invention, which is clearly determined in the following claims.

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