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Short Communication

Application of Microwaves in Detection of infection and in Disinfection of Soil and Plants

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The Soil and plants gets infected by various infectious sources that effects the properties of soil and growth of plants.

The disinfection of soil and plants is done using chemicals. But longer use of these chemicals may permanently damage the properties of soil and also the growth of the plants.

Another method used for disinfection is increasing the Temperature of Soil and the plant. The heat generated due to increase in temperature will kill the infectious elements that are responsible for infection.

For increasing Temperature the Solar Heating is used. But the limitation is that there are areas where we do not get Sunlight for more than Few Hours. Also the night time the Heating in not possible using Solarisation.

Thus to overcome this limitation. The green Houses are provided So that the soil and plants remain warm in day as well as in night Another method utilized to overcome this limitation of solarisation is by using Electric Bulbs. By using Electric Bulbs the soil and plants get heat in day as well as in Night. This helps in disinfection of soil and plants.

The disinfection of soil and plants also can be done using the Electromagnetic Radiation at Microwave Frequencies.

The Microwave Power at different Frequencies and Power levels can be used to Heat the soil and plants and by this Heating soil and (International Centre For Radio Science) plants can be disinfected. The disinfection of the soil could be achieved up to certain depth if required using Microwave Radiation.

Similarly for the plant the infection not visible on Surface but taking place inside the plant or in the roots can be disinfected by Microwave Radiation. The power levels of the microwave sources also can be varied as per requirement for disinfection.

The infection in the soil and in the plant can be detected using Microwave Radiometer in the field without taking the Samples of soil and plants to the Laboratory. One can detect infection of soil up to certain depth using the Microwave Radio meter operating at Suitable Frequency. Along with the detection of infection of soil the microwave Radiometer will also give information about the percentage of moisture in the soil. This will help in providing input regarding irrigating the soil.

The Microwave Radiometer will also help in detection of infection in the plant which has infection inside the plant but it is not visible on the surface of plant. This is possible because Microwave Radiometer is able to mointar the Microwave radiation that is emitted from certain depth of plant Along with the detection of infection in the plant Microwave Radiometer will also provide information about the amount of water in the plant and so using this information one will be able to decide about watering of the plant and will be able to maintain the health of the plant. This method of monitoring health of the plant will provide input with regard to cause of the poor health of the plant is because of infection or lack of water.

The disinfection of the soil and plant can be done using Microwave Radiation by heating the soil and plant. At the same time using Microwave Radiometer the Moisture in the soil, the infection in the soil on surface as well as at certain depth can be detected. In case of plants also the infection in the plant at certain depth as well as on surface and the water content in the plant can be obtained

using Microwaves Radiometer. The advantage of using Microwave Technique is that one is able to detect infection in situ and water content in soil and plant as well as do disinfection.