Reviews of the measurement method for crop growth by using noncontact sensor

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In recent years, extreme weather and unusual weather events have been more frequent emergence, and then these phenomenon have resulted in a decrease of agriculture production and supply, the most important agricultural policy. To prevent these serious problems, climate change agricultural research has been steadily increasing interest and importance. Climate change research in agriculture vary widely, but the very important and most fundamental studies are monitoring of long-term growth and quantity monitoring of crops grown and observation of the environment in cultivation zone. These studies should be carry out simultaneously in multiple locations because each locations have different climate conditions and soil characteristics. But crop monitoring, until now directly measured by an observer was difficult to carry out in multiple locations simultaneously. Therefore, the purpose of this study is crop growth and development of automatically monitoring techniques in multiple locations simultaneously. As a first step for technology development, and so many different noncontact sensors such as infrared, ultrasound, laser, CCD have examined whether the sensors is suitable for crop monitoring. Also developing technologies for the study was performed. Review the results, the laser sensor showed the most effective for crop growth measurements.

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