COLOR IMAGE FILTERING METHODS FOR VARIABLE SPRAY SYSTEMS

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ABSTRACT—The color images of the actual field were collected and processed in the variable spray system based on machine vision. The variable spray decision was made according to the identified results. The variable spraying was realized by the sprayer for the variable spray decision. However, there were many noises in the field images because of the complexity of the field image acquisition condition. The identification result could be affected by the noises. By analyzing the noise distribution of the color images that were acquisitioned in the actual field, it could be found that there were more noises in the images which were collected in sunny day and with shadows. Meanwhile, there were fewer noises in the images which were collected in cloudy and with the simple soil background. There was mainly random impulse noise in the actual field images. According to the noises characteristics in the color images, four color image filtering algorithms were tested. The test results showed that the filter based on RGB scalar had poor effect because some new colors appeared, and it was the slowest; the rest filters nearly had no difference, the filter based on RGB vector was the fastest.

Key Words: Variable spray system, Color image, Filter algorithm, Noises