A VARIABLE-RATE FERTILIZER CONTROL SYSTEM FOR DISC FERTILIZER SPREADERS

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ABSTRACT—Fertilizer application control in reason is the key technology to improve operation quality, reduce fertilizer pollution, and cut down costs of production. A control system of variable rate fertilizer is developed based on microcontroller chip in the paper. The system can automatically control flow dosage by adjusting feed gate opening size and changing hydraulic motor speed of fertilizer conveyor chain at the same time for precise variable rate fertilization. The fact experiments show that the feed gate opening size and fertilizer amount are well linear, which is $R^2=0.988$. Experiments of fertilizer by pre-setting different dosage show that the errors of fertilizer amount are well in fact, and the errors are less than 6.5%. The system resolves well to automatically adjust feed gate size, fertilizer dropping continuously, and reduce error of fertilizer machine system.

Key Words: variable-rate fertilizer, fertilizer spreader, transportation chain, control system