DELINEATION OF COTTON ROOT ROT BASED ON UAV REMOTE SENSING

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Abstract

Cotton root rot (CRR) is a persistent soil-borne fungal disease that is devastating to cotton crops in certain fields, predominantly in Texas. Research has shown that CRR can be prevented or mitigated by applying fungicide at planting, but fungicide application is expensive. The potential infected area within a field has been shown to be predictable, so it is possible to apply the fungicide only at locations where CRR exists, thus minimizing the amount of fungicide applied across the field. Previous studies have shown that remote sensing from manned aircraft is an effective means of delineating CRR-infected field areas. In 2015, an unmanned aerial vehicle (UAV) was used to collect high-resolution remote-sensing images in Thrall, TX, in 83.3-acre field known to be infected with CRR. A prescription map was developed for cotton root rot fungicide application during planting of cotton in 2017. Results show the prescription map helped to reduce 89.1% of the fungicide applied area. The proportion of disease infected area in the field was reduced from 5.8% to 0.58% in 2017.