FOUR YEAR EVALUATION OF FUNGICIDES OF MANAGEMENT OF COTTON LEAF DISEASES IN COLQUITT COUNTY

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Abstract

Target spot (*Corynespora cassiicola*) has been the most prevalent foliar disease that cotton growers in Georgia have had to manage since approximately 2009. However, there is now increasing concern for management of areolate mildew (*Ramularia gossipii*). In 2019, target spot and areolate mildew cost Georgia cotton growers an estimated $4.3 million in economic loses. In response to the growing concern for management of foliar diseases of cotton, five field experiments were conducted over four years to evaluate relative efficacy of fungicides in the management target spot and areolate mildew.

The five field trials included three to four fungicide treatments. Foliar applied fungicides included azoxystrobin (Abound, 6 fl oz/A), pyraclostrobin + fluxapyroxad (Priaxor) and difenoconazole + pydiflumetofen (Miravis Top, 13.7 fl oz/A). The rate of Priaxor was 4 fl oz/A in 2018 and 2019, but was increased to 6 fl oz/A in 2020 and 2021. The fungicides were applied during the third week of bloom using a tractor-mounted boom sprayer. An untreated control was also included in each field trial. The treatments were replicated three or four times. Plot size was 18 or 36 rows wide, depending on the width of the grower's sprayer, by the length of the field. Percent canopy defoliation was assessed during the season (except in 2018) and yield data were collected at the end of the growing season. Data were analyzed using ANOVA and Fisher's Protected LSD at P= 0.1.

In 2018, the Abound treatment significantly increased lint yield by 144 lb/A as compared to the untreated control. The Priaxor treatment significantly increased lint yield by 132 lb/A as compared to the untreated control. This field had a history of areolate mildew and the cotton variety planted was DPL 1646 B2RF. Areolate mildew was the predominant disease in this field trial.

In 2019, DPL 1646 B2RF was planted in a field with a history of areolate mildew. The plots were rated for canopy defoliation at 50% open boll. The Abound (15%), Priaxor (7%) and Miravis Top (7%) significantly reduced canopy defoliation compared to the untreated check (73%). The Priaxor and Miravis Top significantly increased lint yields per acre, 101 lbs. and 107 lbs. per acre, respectively, compared to the untreated check. No significant yield was noted between the Abound and untreated check. Areolate mildew was the predominant disease in this field trial.

In 2019, DPL 1646 B2RF was planted in a field with a history of target spot. Plots were rated for % canopy defoliation one day before cotton defoliation. The Priaxor (56%) and Miravis Top (56%) significantly reduced canopy defoliation compared to the untreated check (80%). No significant difference in lint yield was noted when compared to the untreated check. Target spot, but not areolate mildew, was observed in this trial.

In 2020, DPL 2055 B3RF was planted in a field with a history of areolate mildew. Plots were rated for % canopy defoliation at 60-70% open boll. Priaxor (11.6%) and Miravis Top (8.3%) significantly reduced canopy defoliation compared to the untreated check (46.6%). Canopy defoliation between untreated plots and plots treated with Abound was not statistically significant. All fungicide treatments increased lint yield by 156 to 180 lb/A as compared to the untreated control. However, the yield from untreated plots and plots treated with Abound was not statistically significant. Areolate mildew was the predominant disease in this field trial.

In 2021, DynaGro 3615 B3FR was planted in a field with a history of areolate mildew. Plots were rated for % canopy defoliation at 37, 51 and 76 days after treatment (DAT). At 37 DAT, Priaxor and Miravis Top significantly reduced canopy defoliation as compared to the untreated check. At 51 DAT, the Abound (45%) significantly reduced canopy defoliation compared to the untreated check (74%). The Priaxor (10%) and Miravus Top (16%) significantly reduced defoliation compared to the Abound. No significant differences in lint yield were noted at harvest but the average lint yield increase across fungicide treatments was 70 lb/A.

In conclusion, areolate mildew has become an important disease affecting cotton production in Georgia. Whether areolate mildew or target spot was predominant, use of fungicides always reduced defoliation at the end of season. In the 4 out of 5 trials where areolate mildew was predominant, lint yields increased by at least 100 lb/A when Priaxor or Miravis Top was applied.