Alternatives to Soil Fumigation for Control of Cylindrocladium Black Rot (CBR) of Peanut.

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The response of Virginia- and runner-type cultivars to control of CBR with Proline 480SC 5.7 fl oz/A (prothioconazole), Propulse 400SC 13.69 fl oz/A (1:1 prothioconazole/fluopyram), and Q8Y78 240SC 23 fl oz/A (picoxystrobin) was compared to soil fumigation with Vapam 42% 7.5 gal/A (metam sodium) in field trials naturally infested with Cylindrocladium parasiticum. Vapam was applied 8 in. under rows with a coulter and trailing chisel shank during strip tillage at least 2 wks prior to planting. All plots were treated with Temik 15G 7 lb/A in-furrow at planting in 2010 and Orthene 97S 12 oz/A in-furrow in 2011. Fungicide treatments were applied to the seed furrow through microtubes in a volume of 5 gal/A at planting.

Bailey had the lowest CBR incidence and highest yield followed by Florida Fancy in Virginia types in 2010, and CHAMPS had the highest CBR incidence and lowest yield. CBR incidence was higher in Virginia types, except Bailey, compared to runner types. Florida 07-R and AP-4 in the runner types had the lowest CBR and highest yield, whereas GA Green had higher CBR incidence and lower yield. Tomato spotted wilt virus was low in both Virginia and runner types in 2010. CBR control and yield with Propulse and Q8Y78 was similar to that with Vapam and significantly better than Proline and untreated plots. None of the treatments increased yield significantly in runner types. Overall, the results in 2010 demonstrated the superior value of Propulse as an alternative to soil fumigation with Vapam and the high level of CBR resistance in the Virginia type, Bailey. The runner types, AP-4 and FL-07R, were not as susceptible to CBR as GA Green or the Virginia-types, CHAMPS and Sugg.

In 2011, the same treatments were compared for control of northern root-knot nematode and CBR in the same Virginia-type cultivars, but in the runner-type cultivars, GA Green was replaced with GA-06G. All plots were treated with Orthene 97S 12 oz/A in furrow or tank mixed with fungicide treatments and applied to the seed furrow as defined for 2010. CHAMPS had significantly more tomato spotted wilt virus (TSWV), stem rot, and Sclerotinia blight than Bailey and Sugg. TSWV in Bailey was significantly lower than in CHAMPS and Sugg. In CHAMPS, Vapam had the lowest number of yellow/dead plants (CBR) followed by Propulse, Q8Y78, and Proline. Root galling by northern root-knot nematode was significantly lower on Bailey compared to Sugg and CHAMPS. Vapam was the only treatment to increase yield significantly in Virginia-type
cultivars. Vapam reduced root-knot galling significantly in both Virginia-type and runner-type cultivars. Bailey was the highest yielding Virginia-type cultivar followed by Sugg, and CHAMPS had the lowest yield. TSWV and CBR incidence was lower in runner types and not significantly different in cultivars. Southern stem rot was significantly lower in AP-4 compared to GA-06G and Tifguard. Root-knot galling and nematode counts in Tifguard were significantly lower compared to AP-4 and GA-06G. There was no significant treatment effect on yield in runner-type cultivars, but Vapam produced the highest yield. GA-06G yielded significantly higher than Tifguard. These results provided additional evidence of superior disease resistance and high yield potential in Bailey, however, the low incidence of CBR in 2011 did not allow for confirmation of significant differences in treatments that were found in 2010.