

## **Wheat as a cover crop to manage *Macrophomina* root rot of strawberry: 2021-2022**

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Preliminary studies have shown the potential for wheat to help manage *Macrophomina* root rot because of hypothesized *Pseudomonas* spp. bacteria activity. The first year of the field trial to investigate this potential is currently being conducted in Field 35b at Cal Poly, San Luis Obispo, which has been inoculated with *Macrophomina phaseolina* in several previous years. The field trial consists of 4 blocks, each block containing one 55-foot bed of each of four treatments: ‘WB 9229’ wheat, ‘Summit 515’ wheat, no-treatment control, and fumigated control. The average wheat seeding rate was 358 lb/acre and the cover crop was grown from 5 Nov 2021 until 22 Feb 2022. Non-treatment control beds were not planted with wheat nor fumigated. Fumigated beds were bed-fumigated on 19 Oct 2021 with Tri-Clor EC (chloropicrin 94%). ‘Albion’ bareroot transplants were planted in 3 rows of all 16 beds on 2 Mar 2022, following wheat mowing and incorporation of wheat root material into the soil with a rototiller. Standard management practices have been employed for strawberry plants, except for drought stress consisting of 3 consecutive days without irrigation every week beginning 27 May 2021. Ongoing strawberry plant mortality assessment is conducted weekly in all beds, along with diagnosis for *M. phaseolina*. Molecular assays to assess soil microbiome changes and soil plating to quantify *M. phaseolina* are being conducted.



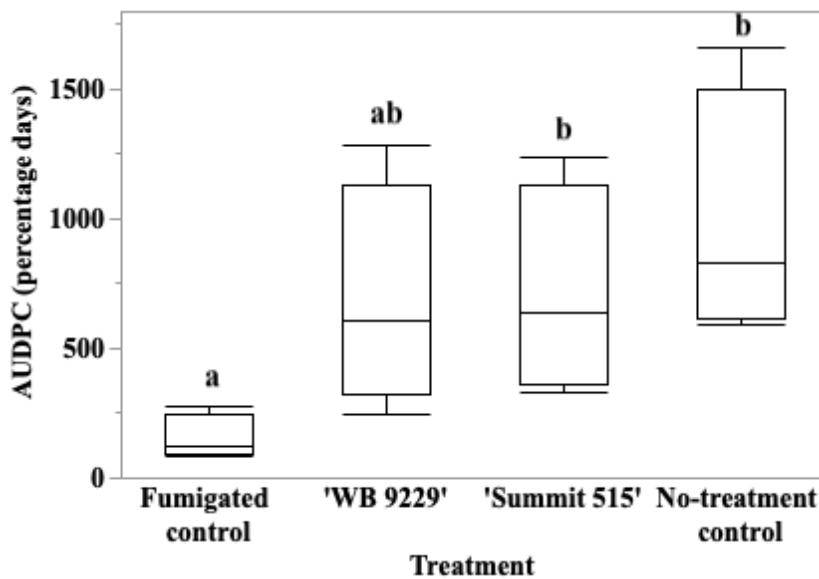
**Figure 1.** Wheat seeding on 5 Nov 2021 (left) and wheat on 4 Feb 2022 (right).



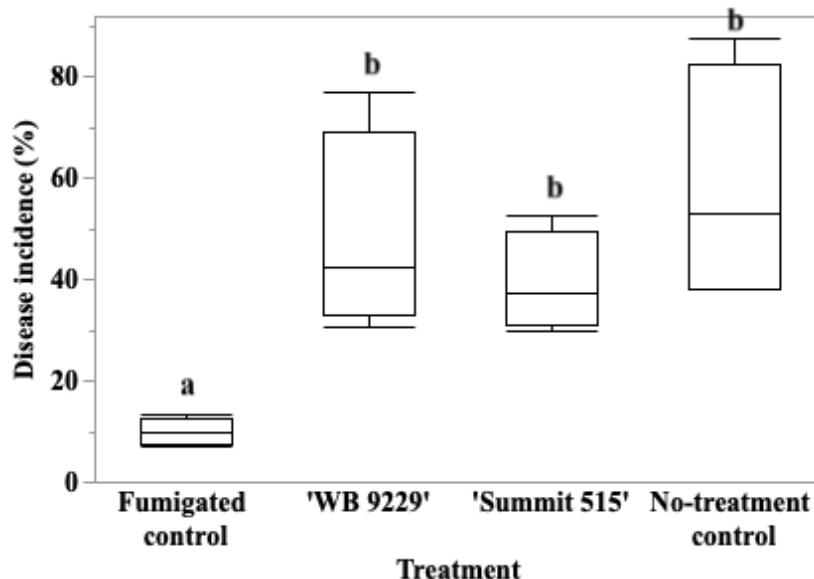
**Figure 2.** Strawberry plants immediately following transplanting on 2 Mar 2022 (left) and approximately 4 months after transplanting on 28 Jun 2022 (right).

Treatment	Average plant canopy diameter (inches)
Fumigated control	9.57 a
No-treatment control	9.27 a
'WB 9229'	8.49 b
'Summit 515'	7.74 c

**Table 1.** Average strawberry plant canopy diameter across treatments on 13 May 2022. Different letters represent statistical significance through analysis of variance (F was significant at  $P = 0.05$ ).



**Figure 3.** Average area under the disease progress curve across treatments as of 14 Jul 2022. Bars sharing the same letters are not significantly different according to ANOVA ( $P = 0.05$ ).



**Figure 4.** Average disease incidence across treatments as of 14 Jul 2022. Bars sharing the same letters are not significantly different according to ANOVA ( $P = 0.05$ ).

