Cover Crops and Bare-Ground Fallow as Management Tools for Weeds and *Pestalotia* Leaf Spot and Fruit Rot

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Summary

On-farm trials were conducted to evaluate the effects of sunnhemp, sorghum-sudangrass, and clay pea planted at 40, 40, and 50 lbs/acre on weeds and *Pestalotia* leaf spot. Cover crops were terminated approximately 30 days after planting and results represent early season effects. Cover crop plant density varied with seed size as expected with the highest plant density observed with the sorghum-sudangrass hybrid. Early season ground cover did not differ between cover crop species. Cover crop biomass did not differ at one site but sorghum-sudangrass produced more biomass than the other species at the other site. Cover crops had no effect on weed density but weed biomass tended to be lower where cover crops were grown.

Methods

Materials and Methods

Replicated experiments were conducted on 2 commercial farms where there is a history *Pestalotia*. Treatments included: 1) glyphosate applications as needed to keep the ground weed-free, and 2) sunnhemp cover crop, 3) sorghum-sudangrass cover crop, and 4) iron clay pea cover crop. Cover crops were planted in June and incorporated in July. Seeding rates were 40, 40, and 50 lbs/acre for sunnhemp, sorghum-sudangrass, and clay pea, respectively.

Data Collection

Cover crop density was measured 14 days after planting. Cover crop and weed dry biomass were measured in a 0.5m x 1m quadrat. At each sampling date, the number of weeds in the same quadrat were counted and dry biomass measured. In the bare-ground plots, the same weed data will be collected.

Data Analysis

Data were analyzed using the Proc Mixed procedure in SAS (version 9.4; SAS Institute, Cary, NC). Block was considered a random variable.

Results

Cover Crop Growth

All three cover crops had similar early season ground cover although plant density tended to be higher with the sorghum-sudangrass cover crop (Table 1). Cover crop biomass did not differ at one site but sorghum-sudangrass had higher biomass at the second site.

Weed density did not differ between sites (data not shown) but weed biomass was significantly reduced by the presence of the cover crop at 1 of 2 sites and tended to be lower at the second (Table 2). This is significant as it demonstrates that even small cover crops can have a significant effect on weed growth. Though not significant, the sorghum-sudangrass cover crop tended to have the least number of weeds.

No *Pestalotia* was observed in the following strawberry crop and therefore the effects of cover cropping on disease presence could not be determined.

Table 1. Cover crop plant density 14 days after planting and cover crop ground cover averaged over time of three cover crop species grown on commercial strawberry farms in 2021-2022.

Cover crop	Plant Density		Ground Cover	
	Site 1	Site 2	Site 1	Site 2
	----------#/m^2----------		----------%----------	
None	-	-	-	-
Sunnhemp	54 b[1]	46 ab	33 b	26
Sorghum-sudangrass hybrid	80 a	77 a	44 a	29
Clay Pea	41 b	39 b	35 b	34
P value	0.0017	0.0274	0.010	0.096

[1]Numbers followed by different letters are significantly different at $p<0.05$.

Table 2. Weed and cover crop biomass 21-30 days after planting on commercial strawberry farms in 2021-2022.

Cover crop	Cover Crop Biomass		Weed Biomass	
	Site 1	Site 2	Site 1	Site 2
	----------g/m^2----------			
None	0	0	3.6	12.7 a
Sunnhemp	31 b	26	1.7	3.5 ab
Sorghum-sudangrass hybrid	90 a	18	0.1	0.2 b
Clay Pea	38 b	32	12.0	1.3 b
P value	00113	0.208	0.5836	0.0289

[1]Numbers followed by different letters are significantly different at $p<0.05$.

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