Plant Density Variation Within Large Scale Variety Trials

ISAAC MADSEN

In addition to collecting yield data, large-scale variety trials can be utilized to collect a variety of other data including plant density. During the summer of 2019 plant counts were collected at all three of the large-scale variety trial locations. Because the plot length and width varied at each location depending on the drill being used, and the size and shape of the field which the trials were established in, each location had a slightly different sampling scheme. In Almira (plot size 40' x 600') four plant counts were taken for times at 120' beginning 60' into the plot. Similarly, in Pullman (plot size 30'x 500') four plant counts were taken four times at 100' intervals resulting 16 counts per plot beginning 50' into the plot. However, at Davenport (plot size 15'x 400') four plant counts were only taken three times at 100' intervals resulting in 12 counts per plot. In total, 320, 256, and 384 plant counts were collected at Almira, Pullman, and Davenport respectively. The number of plants ft-2 varied greatly between location. The highest and the lowest plant counts were found at Davenport ranging from 0.0-15.6 plants ft-2. Pullman plant counts varied to a lesser degree from 1.1-9.3 plants ft-2. At Almira the plant counts ranged from 1.9-13.4 plants ft-2. The plant counts were aggregated to four counts per plot and mapped to the plots using R statistical software (Fig. 1-3). The maps of plant counts demonstrate the large range of range of variability across a single field. However, when compared to yield on a plot by plot basis the plant counts did not predict yield within a single location or between any of the locations (Fig. 4). The lack of correlation between plant density and yield demonstrates, high plant densities are not necessarily required for good yields. However, benefits such

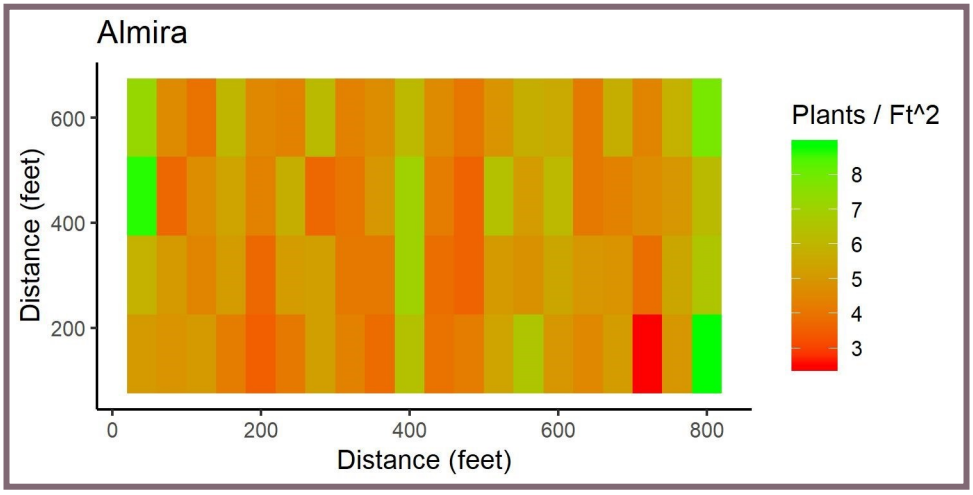

Figure 1. Aggregated plant counts varied from 2.5-8.8 plants per square foot at Davenport, WA.

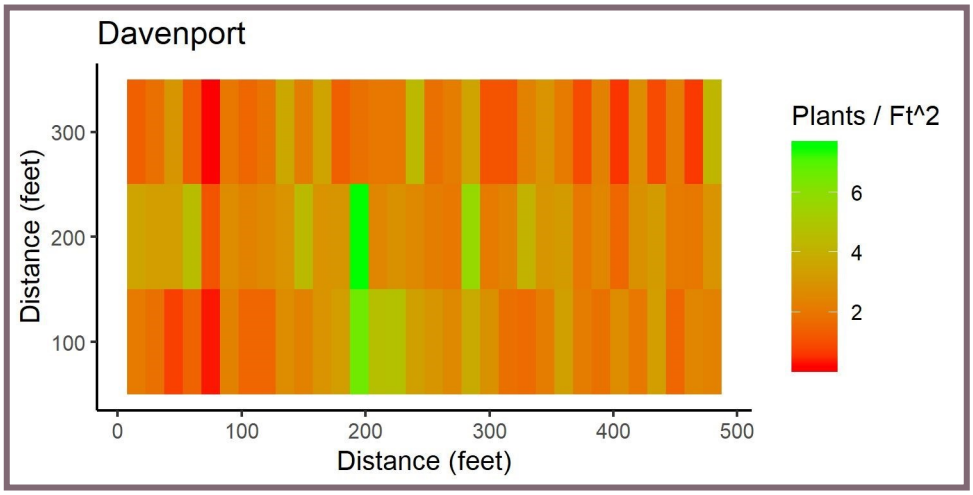

Figure 2. Aggregated plant counts varied from 0.7-7.5 plants per square foot at Davenport, WA.

as competition against weeds may be gained through higher plant density. Future work will focus on linking the yield monitor data from these locations to the plant count data in order to look at relations between plant count and yield at a higher spatial resolution.

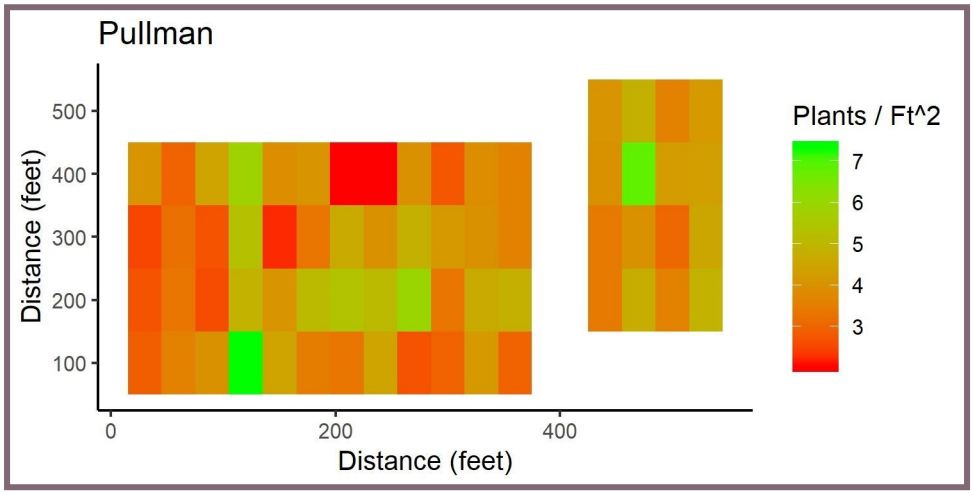

Figure 3. Aggregated plant counts varied from 2.0-7.3 plants per square foot at Davenport, WA.