Results

Predator Abundance

- Predator abundance was lower in the annual systems than in the perennial systems.
- Predator abundance increased only on the final sampling date.

Predator Diversity (Simpson’s 1-D)

- Predator diversity was lower in the annual systems than in the perennial systems.
- Predator diversity increased as the growing season progressed.

Sentinel Prey Removal

- Sentinel prey removal rates were lower in the annual systems compared to the perennial systems except for the first date when removal rates were depressed.

Discussion

Cover crops did not elevate biocontrol services in corn grown for grain and stover. The cover crop was harvested for cellulosic ethanol production prior to senescence and corn planting, removing the above ground vegetation residue that can improve habitat and prey resources for predators. Also, the Aphid Exclosure Study demonstrated that aphid populations in the cover crop are suppressed by resident natural enemies. Aphid populations never reached a critical level to produce a numerical response from Coccinellidae and other colonizing predators. Thus, cover crops did not become a predator ‘source’ or a ‘sink’ for the subsequent corn crop. Although cover crops do not enhance biological control in corn stover, they may enhance other ecosystem services to levels seen in perennial biofuel systems.

References


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