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Strawberry Productivity of Peri-Urban and Urban Locations across Southeast Michigan, USA

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Abstract : Human populations in urban environments have rapidly grown in recent decades. Consequently, the intensity of land-use and development has also increased in many urban and peri-urban environments. Some cities, such as Detroit, Michigan, USA, have embraced urban agriculture and local food production. Little is known, however, about how the local and landscape scale environmental factors influence crop productivity on urban farms. Our study aims to evaluate factors influencing the productivity of strawberries on community farms and gardens in the Detroit metropolitan area. Strawberries are one of few fruits that can provide an abundant harvest just after the first season of being planted, which is ideal for urban gardeners in developed areas. In the spring of 2016, we planted six different strawberry cultivars (three everbearing and three June bearing varieties) at five farm sites in Wayne and Oakland County (six replicate plants per cultivar per site). We surveyed flower and fruit phenology and production for everbearing varieties weekly (flowers for June bearing varieties were removed to enhance productivity in the coming growing season). Additionally, we conducted one initial 36hr pollinator survey in mid-September during peak fruit production and characterized local and landscape scale land-cover data. Preliminary results and observations from this first year of our study revealed that strawberry production varied significantly by site. Specifically, productivity at our most northern site appeared to suffer from delayed phenology and early frost damage to ripening strawberries. Bee abundance and diversity also differed among farms, though further surveys are needed to adequately inventory the pollinator community. Finally, strawberry cultivars demonstrated significant differences in the number and size of fruits produced. We plan to continue this study in the coming years, increasing the number of sites surveyed and number of pollinator sampling events. Our study aims to inform strategies for enhancing crop productivity on urban and peri-urban farms.

Keywords : insect pollination, strawberry productivity, sustainable agriculture, urban gardening
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