and two perpendicular widths were recorded weekly whereas chlorophyll fluorescence and SPAD readings were measured bi-weekly. Mature fruit were harvested weekly, and number of fruit and fresh weight (FW) were recorded. Aboveground shoots were harvested at the end of the growing season, and shoot fresh weight (FW) and dry weight (DW) were recorded. Ascorbic acid concentration was determined in mature fruit only. Data were analyzed with a factorial ANOVA at an $\alpha = 0.05$ using SPSS statistics software. Results showed that plant height was different among treatments. At harvest, the manure treatment at 60 t/ha had the highest average fruit FW of 523.74 g per plant, shoot FW of 447.09 g per plant and shoot DW of 104.34 g per plant, while the Supreme compost treatment had the lowest average values of 371.3, 338.2, and 80.9 g per plant for fruit FW, shoot FW, and shoot DW, respectively. Chili pepper treated with manure at 60 t/ha had the lowest concentration of ascorbic acid (6.03 mg/g DW), while that in the control treatment had the highest ascorbic acid content (7.54 mg/g DW).

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(344) Sudangrass and Sorghum Sudangrass Hybrids As Summer Cover Crops for Rotational Plantings and Soil Health Improvement

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Sorghum and sorghum-sudangrass hybrids (*Sorghum bicolor* x *S. sudanense*) can be used as summer annual cover crops in vegetable crop rotations since they may fit into a second crop or in between crop. They may increase soil organic matter when grown properly and incorporated. Sudangrass and sorghum-sudangrass hybrids are annual warm season grasses that are heat and drought tolerant; making excellent summer cover crop choices. Both can grow from 1.83 m to 2.44m tall and produce large amounts of dry matter. Management considerations, like providing nitrogen fertility and mowing to increase biomass production via regrowth, can increase organic matter contribution to soil. Both of these cover crops winter kill with the first hard rost. Sundangrass and sorghum-sudangrass hybrids offer several benefits as a cover crop. They can be used to store residual nitrogen, suppress weeds, improve soil quality, and may suppress some nematodes. Research and grower experiences with sudangrass and sorghum-sudangrass for summer cover cropping has proven effective in improving soil health and subsequent crop yields and quality. Researched showed, when grown for a 62-day period, at a seeding rate of 56.7 kg/ha, on sandy loam soils in Southern New Jersey, sudangrass (*Sorghum bicolor var. sudanense*) cv. 'Piper', yielded 4022.23 kg/ha dry matter. Although shown to provide multiple benefits, even when grown for a short period during a production system, wide scale adoption of sudangrass and sorghum-sudangrass hybrids has not occurred. The reason is mainly due to farmer time management in summer. Increased promotion and education about this practice is needed. For more information see the Rutgers NJAES fact sheet 994 at http://njaes.rutgers.edu/pubs/publication.asp?pid=FS994.

(345) Strip Tillage and Cover Crop Effects on Tomato and Pepper Crop Productivity

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Standard vegetable production systems include raised beds topped with drip irrigation and plastic mulch is extremely popular; however, it also requires intense tillage, which degrades soil structure, contributes to runoff and erosion, and intensifies reliance on non-renewable resources. Reduced tillage systems, on the other hand, lack these negatives but also have been less productive than standard systems. The type, condition, and location of the cover crop or its residue strongly influence the performance of strip-till systems. Two paired studies were completed in 2015 at the OARDC in Wooster, OH, specifically to document the productivity of pepper and tomato plants grown in plots representing different tillage and cover crop combinations. Each study (tomato, pepper) was a spilt-plot design with four replications, having system (raised bed and plastic mulch vs. flat strip-till) as the main factor and cover crop type (living mulch vs. dead mulch) as the sub-factor. The experimental area was sown to winter wheat in Fall 2014. In Spring 2015, regular plastic beds were shaped in experimental replicates after by moldboard plowing, herbicide and fertilizer application. Then, ryegrass seed was broadcast over the top and into the furrow of half of all raised-bed plots as living mulch; wind moved ryegrass seed to bed edges. For strip-till plots, wheat was mowed to promote tillering at regrowth. Two weeks later, wheat was killed with herbicide in the strip-till-dead mulch plots; while wheat was mowed a second time in strip-till-living mulch plots. Then, a PTO-driven roto-tiller with only one pair of tines was used to create 25-cm wide by 15-cm deep strips in the living and dead wheat plots. Tomato 'Mountain Fresh' and pepper 'Aristotle' were transplanted into the standard or strip-till plots in single rows. Plant growth and fruit yield were monitored in all plots. The tillage-cover interaction was not significant in either experiment (tomato, pepper). Tomato fruit yield and fruit number were similar between standard and strip-till plots but total and marketable fruit number and yield were greater in plots with dead compared to living mulch. Pepper values were more affected by system as marketable fruit number and yield values in strip-till plots tended to be 25% of those in standard plots. Also, for both crops, the harvest at which yield was greatest occurred later in strip-till than standard plots. Follow-up research will investigate additional factors that may influence the productivity of reduced tillage as systems as they apply to specific vegetable crops.