2008 Tall Spindle Apple System Trial

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In 2008, a system/cultivar demonstration trial was established at the NJAES Rutgers Snyder Research and Extension Farm in Pittstown, NJ. The trial consisted of five cultivars/strains grown to the tall spindle system utilizing full dwarfing rootstocks at a spacing of 3 feet x 14 feet, or 1,037 trees per acre.

The objective of this 10-year project is to establish a grower demonstration of a tall-spindle apple system and to evaluate the performance of five apple cultivars under northern New Jersey conditions in a tall-spindle system. A secondary goal will be to evaluate the systems profitability and determine its cash flow. Our goal is to recommend the best complete systems to growers to ensure their economic sustainability.

Materials & Methods

Treatments are listed in Table 1. The land was prepared the year before planting in 2007. Primary tillage was done with deep sub-soiling followed by chisel plowing, deep discing, fertilizer and high calcium limestone applied as per soil tests, disked again, roller harrow and seeding of turf type tall fescue cv. Titan with a Brillion Seeder (Brillion Farm Equipment, Brillion, WI) at 300 pounds per acre. The trees were planted with Mechanical Tree Planter for Orchards and Nurseries (Phil Brown Welding, Conklin, MI) on April 24, 2008. Trees were set with the graft union 6 inches above the soil line. Soil type is a Quakertown silt-loam. Immediately following planting, all trees were hand watered at 3 gallons per tree. A trickle irrigation system using Toro Blue Strip Tubing POS2042-18 orchard tubing with internal 2-gallon-

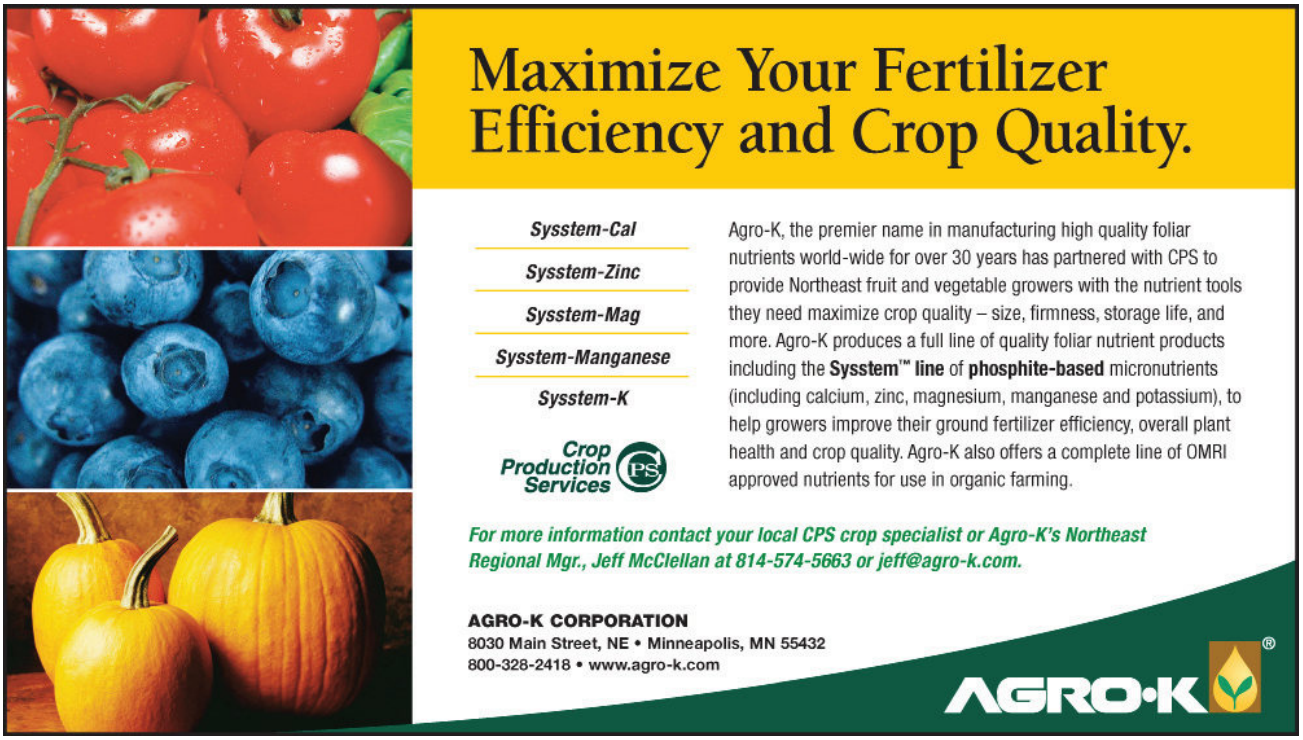
Table 1. Cultivar, strain, rootstock, and number of trees grown to the Tall Spindle System at the Rutgers NJAES Snyder Research and Extension Farm in Pittstown, NJ.

Variety	Strain	Rootstock	Number of trees
Gala	Buckeye	M.9 Nic 29	50
Gala	Gale	B.9	52
Golden Delicious	Gibson	B.9	143
Honeycrisp	Honeycrisp	M.9 Pajam 2	294
McIntosh	Linda Mac	B.9	100

per-minute emitters, spaced at 18 inches, were installed within a week of planting. Bi-weekly irrigations were made to supply the equivalent 1 inch of rain fall per week. Three applications of Calcium nitrate at ¼ lb. per tree were soil applied in year one, two applications in year two. A 2-foot herbicide strip was maintained weed free with split applications of pre-emergent herbicides, spring and fall, the first made 3 days after planting.

During 2008, trees were de-fruited. During 2009, trees were allowed to fruit, but crop load was adjusted with hand thinning using the Cornell University Young Apple Thinning Guide. In 2010, trees were chemically thinning with Sevin XLR at 1 quart per acre, and then crop load was adjusted by hand using the Cornell Guide. Standard orchard production practices were followed, since planting. Pest management was done following New Jersey Tree Fruit IPM guidelines with weekly scouting. Trees were trained with a four-wire system using U-clips to the wire. Branches were tied down with Tougas Clips and Wire Ties available from Oesco Inc. (www.oescoinc.com) and Finger Lakes Trellis Supply (www.fingerlakestrellissupply.com).

Results

Table 2. Cumulative yield per tree, total yield per acre (2010 and cumulatively) by cultivar of trees grown to the Tall Spindle System at the Rutgers NJAES Snyder Research and Extension Farm in Pittstown, NJ.

Variety	Cumulative yield (2009-10, lbs./tree)	Yield (2010, bu/acre)	Cumulative yield (2009-10, bu/acre)
Buckeye Gala	22.4	273	554
Gale Gala	21.8	265	539
Gibson Golden	17.2	249	425
Honeycrisp	22.9	336	567
Linda Mac	17.0	212	420