Kale Variety Trial On White and Black Plastic Mulch
Fall Plantings at Two Locations in Mississippi

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Introduction: Kale (*Brassica oleracea*) is a popular cold season vegetable crop that is high yielding and nutrient dense. Kale is usually grown under black plastic mulch when transplanted in the spring or fall growing season. Differences in plastic mulch color, such as black and white, can give advantages to vegetable crop growth, yield, and quality in either season. Therefore, the purpose of this project is to evaluate 13 kale varieties (Table 1) for marketable yield and quality in the fall 2015 and spring 2016 seasons under black or white plastic mulch.

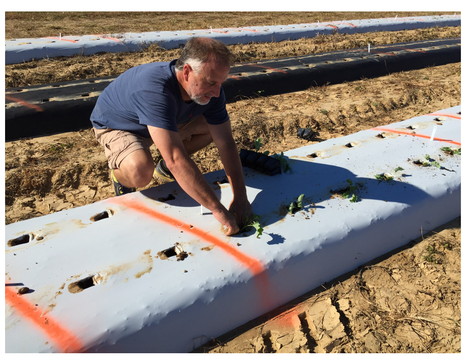
Methods: Evaluation of 13 kale varieties were seeded n the greenhouse 1 Sept. 2015 at NMREC and transplanted to the field 22 Sept. The Beaumont fall kale was seeded in the greenhouse on 29 Sept. and transplanted to the field 22 Oct. Kale transplants were grown under black or white plastic mulch at the North Mississippi Research and Extension Center (NMREC), Verona, MS and the Beaumont Horticulture Unit, Beaumont, MS. All plots were fertilized with conventional fertilizers according to Mississippi State Soil Testing Lab results (60N, 50P, 200K lbs/ac). The experimental design was a 13 (kale varieties) x 2 (plastic mulch) factorial design arranged in randomized complete block with 4 replications. Plant beds were formed with a press-pan-type bed shaper, 6 inches high and 30 inches wide. In-row plant spacing was 1.0 ft with 2 staggered rows on each bed and beds were spaced 8.0 ft apart. Every plot consisted of 10 plants with the center 6 plants harvested for data. Spring 2016 plantings will be identical to compare the two seasons and locations.

Table 1. Cultivar name, source, type and picture of the 13 Kale varieties grown in Mississippi (Verona & Beaumont) during the Fall of 2015.

Variety	Source	Kale Type	Variety	Source	Kale Type
1. Blue Knight	Twilley's	Curly 	8. Vates	Southern Exposure Seed Exchange	Curly 
2. Black Magic	Twilley's	Dinosaur 	9. Starbor	Johnny's	Curly 
3. Hanover Salad	Southern Exposure Seed Exchange	Loose Leaf 	10. Scarlet	Johnny's	Curly 
4. Red Russian	Southern Exposure Seed Exchange	Loose Leaf 	11. Olympic Red	Johnny's	Loose Leaf 
5. Premier	Southern Exposure Seed Exchange	Loose Leaf 	12. Toscano	Johnny's	Dinosaur 
6. Siberian	Southern Exposure Seed Exchange	Curly 	13. Beira	Johnny's	Cabbage 
7. Lacinto	Southern Exposure Seed Exchange	Dinosaur 			

Table 2. Kale varieties grown under plastic mulch at NMREC and the Beaumont Horticulture Unit.

	Verona			Beaumont		
Cultivar	6 Plant Yield (kg)	Height (cm)	Stem Diameter (cm)	6 Plant Yield (kg)	Height (cm)	Stem Diameter (cm)
Dinosaur Type						
Black Magic	2.3 bcd	53.0 de	17.4 de	1.0 bcd	35.3 bcd	11.8 d
Lacinto	2.0 de	52.1 ef	14.5 g	0.8 d	35.9 bcd	10.6 d
Toscano	2.1 cde	57.4 c	17.1 de	0.8 cd	36.8 bc	11.3 d
Loose Leaf Type						
Hanover Salad	3.4 a	74.3 a	25.0 b	2.4 a	57.8 a	20.4 a
Red Russian	3.2 a	74.3 a	22.1 c	2.1 a	52.3 a	15.8 b
Premier	3.6 a	74.8 a	27.9 a	2.6 a	57.7 a	20.4 a
Olympic Red	2.2 bcde	57.2 c	14.9 fg	1.0 bcd	39.1 b	11.0 d
Curly Type						
Blue Knight	2.5 b	55.2 cd	18.0 d	1.4 bc	38.9 b	12.6 cd
Vates	2.4 bcd	47.7 g	15.4 efg	1.2 bcd	30.5 cd	11.3 d
Starbor	2.5 bc	44.3 h	15.9 efg	1.3 bcd	29.7 d	12.3 d
Scarlet	1.9 e	55.8 c	16.9 def	0.8 d	36.3 bcd	10.9 d
Siberian	3.5 a	73.1 a	24.9 b	2.3 a	55.2 a	18.8 a
Cabbage Type						
Beira	3.2 a	50.0 fg	17.3 de	1.5 b	40.9 b	14.5 bc
P-Value	≤0.0001	≤0.0001	≤0.0001	≤0.0001	≤0.0001	≤0.0001
SE	0.37	0.87	0.8262	0.44	2.44	0.70



Results: There were significant differences in plant height and stem weight when comparing kale variety (Table 2) and plastic mulch treatments (data not shown) at the NMREC location. The highest yielding varieties at the NMREC were Premier (3.6 kg), Siberian (3.5 kg), and Hanover Salad (3.2 kg) (Table 2). The highest yielding dinosaur kale variety was Black Magic (2.5 kg) (Table 2). At the Beaumont Horticulture Unit, significant differences were observed in the categories of plant dry matter and stem weight (Table 2) when comparing the plastic mulch treatments (data not shown). The highest yielding varieties proved to be Siberian (2.3 kg), Hanover Salad (2.4 kg), and Premier (2.6 kg) (Table 2). Black Magic was also shown to be the largest producing dinosaur kale variety with an average weight of 1.0 kg. The spring 2016 study will evaluate the same treatments and will be compared to the 2015 study at both locations.