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BROCCOLI PLANTING METHOD AND PLANTING DATE STUDY - SPRING 1986

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INTRODUCTION

The acceptance of broccoli as a vegetable has increased since the 1940's. Today it is the fastest growing vegetable in terms of popularity in the United States (Hall and Fuller, 1988). Nearly all commercial production in Texas is located in the Rio Grande Valley, with some acreage in the Coastal Bend, Winter Garden and High Plains areas (Hartz and Longbrake, 1983). Earhart et al. (1985) found broccoli could be produced in the East Texas area as an alternate crop. It was later determined that broccoli seeded between the middle of January and the middle of February resulted in good quality and yields (Earhart et al., 1987).

As with any new crop in an area, certain problems need to be solved before grower acceptance. When to plant and by what method (transplant or direct seed) are two major questions. A study was begun in the spring of 1986 to determine the optimum planting date and its relationship to method of planting for broccoli production in the East Texas area.

METHODS AND MATERIALS

A planting date and planting method study was conducted in the spring of 1986 at the Texas A&M University Agricultural Research and Extension Center at Overton. Eight planting dates and 2 planting methods were evaluated in a randomized complete block design with 4 replications on a Bowie fine sandy loam soil. The variety 'Southern Comet', which showed excellent adaptability and yields in previous variety trials (Earhart et al., 1985), was selected for this study. Greenhouse seeding dates for transplant production, dates of field transplanting, and field seeding are listed (Table 1). Transplants were hand set at a 6 in. spacing in plots 102 in. long on 40 in. wide beds. Seeding was done with a push type planter. Direct seeded plots were thinned to 6 in. at the 4th true leaf stage. Irrigation was used as needed by overhead sprinkler. A commercial blend of 6-24-24 fertilizer was broadcast applied prior to bedding at the rate of 1000 lbs/ac. An additional 50 lbs/ac nitrogen from ammonium nitrate was side-dressed by hand 3 weeks after transplanting and at seedling

thinning. Insect and weed control was by recommended methods (Hartz and Longbrake, 1983).

Harvest was initiated prior to floret opening and continued until all mature heads were harvested. Stand count was recorded at the time of first harvest. Head number, head weight, and head diameter were recorded at each harvest.

RESULTS AND DISCUSSION

Planting method as well as date of planting interacted to influence yield, head size, head number, head weight, and percent stand of spring planted broccoli (Table 2). Planting date had less of an effect on yield and percent stand of direct seeded broccoli than transplanted. This observation appeared to correlate more with head number which would be a function of plant stand. The largest head weights and head size were obtained from the 12 March planting of both transplanted and seeded broccoli. This could be attributed to increased day length accelerating head initiation leading to more plant nutrients being used for head development rather than foliage. The increase in head weight and head size for the 12 February planting was probably a function of plant stand. This would tend to decrease competition for nutrients which in turn would allow more nutrients available for head development. Seeded plots produced higher yields than transplants from earlier planting dates (22 Jan. - 19 Feb.) and transplants higher yields than direct seeded from later plantings (26 Feb. - 12 Mar.).

Greater differences in yield between planting dates were noted when broccoli was transplanted rather than seeded. From the data it appeared this was due to plant stand reduction resulting from severe cold weather conditions encountered during the period of January to the middle of February. This condition was an exception and not a rule. Less of an effect on plant stand was noted when broccoli was seeded.

As expected, days to harvest were less when broccoli was transplanted rather than seeded. Head maturity was more uniform when broccoli was transplanted as depicted by harvest period. One exception was the 12 February transplant date which was influenced by plant stand. Each planting date after 22 January tended to decreased the days to 1st harvest due to increased day length which accelerated maturity. Uniform maturity, represented by harvest period, was more pronounced when broccoli was seeded rather than transplanted.

CONCLUSIONS

The results of this study suggest that broccoli can be produced in East Texas during the spring from either transplanting or direct seeding. Transplanting should be delayed until around 19 February, after which planting can be done at any time up to 12 March with possibilities of excellent yields and quality. Direct seeding can be done from January to March with the possibility of good results. The most favorable period appears to be from 6 February to 26 February after which yields tend to decline. Early March is probably the latest to transplant or direct seed due to increasing day length which tends to accelerate maturity that leads to bolting and an unsalable product.

LITERATURE CITED

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3. Hall, C. R. AND S. Fuller. 1988. Trends of the broccoli industry in Texas and the United States. 26p. Dept. of Agri. Eco. Texas A&M Univ.

4. Hartz, Tim, and Tom Longbrake. 1983. Keys to profitable broccoli production. TAEX Bul. L-2091.

Table 1. Dates of greenhouse seeding for transplants and field planting of spring planted broccoli. Transplants were planted or crop was direct seeded on each field planting date.

Seeding of transplants	Field planting
Dec 4	Jan 22
Dec 11	Jan 28
Dec 26	Feb 6
Jan 1	Feb 12
Jan 8	Feb 19
Jan 15	Feb 26
Jan 23	March 5
Jan 28	March 12

Table 2. Influence of planting method and planting date on yield, head size, head weight, percent stand, first harvest date, days to first harvest, and harvest period.

Planting date	Yield per acre (lbs)	Head size (in)	Head no. (ac)	Head wt. (oz)	Percent[y] stand	1st harvest date	Days to 1st harvest	Harvest period (days)
				TRANSPLANTS				
Jan 22	0 c[z]	0.0 c	0 c	0.0 c	0 d	--	--	--
Jan 28	3233 b	3.9 b	9959 b	5.2 b	35 b	Apr 2	65	8
Feb 6	1693 bc	3.5 b	5347 bc	5.6 b	28 bc	Apr 10	64	14
Feb 12	776 c	4.9 a	1634 c	7.6 a	13 cd	Apr 18	66	1
Feb 19	6657 a	3.4 b	20827 a	5.1 b	84 a	Apr 18	59	11
Feb 26	7841 a	3.1 b	26136 a	4.8 b	97 a	Apr 25	59	12
Mar 5	7637 a	3.2 b	23277 a	5.2 b	99 a	May 1	58	12
Mar 12	7963 a	3.2 b	22461 a	5.8 b	99 a	May 9	59	11
AVG	4474 b	3.2 b	13705 b	5.0 b	58 b			
				DIRECT SEEDED				
Jan 22	6902 a	3.4 b	20419 a	5.5 bc	94 a	Apr 28	97	16
Jan 28	5799 a	3.5 b	20011 a	4.7 c	96 a	Apr 23	86	14
Feb 6	6657 a	3.5 b	18377 a	5.8 bc	100 a	May 1	85	15
Feb 12	6697 a	3.1 b	22052 a	4.9 bc	96 a	May 1	79	16
Feb 19	7310 a	3.3 b	20828 a	5.6 bc	96 a	May 9	80	13
Feb 26	6575 a	3.7 b	15110 ab	7.2 b	90 a	May 27	91	7
Mar 5	5962 a	3.5 b	13885 ab	6.8 bc	93 a	May 27	84	7
Mar 12	5472 a	4.2 a	9393 b	10.0 a	88 a	June 3	84	1
AVG	6422 a	3.5 a	17509 a	6.3 a	94 a			

[z]Means followed by the same letter are not significantly different at the 0.5% level by Duncan's multiple range test.
[y]Based on 17 plants/plot.