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Studies on growth performance of amaranth (*Amaranthus spp.*) genotypes under Konkan agro-climatic conditions

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Abstract

Field experiment was conducted on “Studies on growth and yield performance of amaranth (*Amaranthus spp.*) genotypes under Konkan agro-climatic conditions.” at Department of Horticulture, College of agriculture, Dapoli, Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli, Dist. Ratnagiri, (M.S.) during the *winter* season of 2015-16. The experiment was laid out in a Randomized Block Design (R.B.D.) with fourteen treatments as genotypes replicated thrice. The sowing of the seeds of genotypes in the field during November 2015 with spacing 30 cm between lines to line. Significant difference were observed among the genotypes for growth and yield parameters. While studying the growth character, genotype T₃, T₄, T₆, T₈, T₉ and T₁₀ found to be earliest harvest for green yield.

Keywords: Amaranth genotypes and growth parameter

Introduction

Amaranth (*Amaranthus spp.*) is the most common leafy vegetable belongs to the family Amaranthaceae, grown during summer and rainy season in India. It is also known as pig weed, Chinese spinach and Tampala. It is native to the India or Indo-Chinese region. Two prominent colored amaranth are grown, one is red and another is green colored. It is grown for vegetable throughout the world and they bear names in various countries.

In Konkan region amaranth are grown during *rabi* and summer season after harvesting of *kharif* rice. However, it shows variation in growth character and yield character in relation to plant height, leaf shape and color, behaviour of inflorescence development, method of harvesting either as single cut or multicut. However, in Konkan region mainly Ratnagiri and Sindhudurga districts, there is great scope for selection of amaranth genotype due to its wide variation in morphological, flowering behaviour and yield. By taking into consideration above strength of amaranth in Konkan region. It is proposed to conduct experiment entitled “Studies on growth and yield performance of amaranth (*Amaranthus spp.*) genotypes under Konkan agro-climatic conditions.”

Materials and Methods

The experimental site was conducted at the Department of Horticulture, College of Agriculture, Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli (Maharashtra) during the summer season, 2015-16. The basic material for the study involved fourteen genotypes of Amaranth were grown in RBD plot design with three replications during winter season 2015-16. The spacing adopted was 30 cm between lines to line. After field preparation, the seeds were sown on the raised beds at 30 cm spacing between two lines. Seeds were sown in lines at 1cm depth on beds.

Result and Discussion

The performance of various genotypes of Amaranth under konkan agro climatic condition is presented in table 1. the results revealed that differences due to various genotypes were highly significant for all the characters under study. among the different genotypes studied, genotype T₁₄ (196.20 cm) was the tallest at 60 days and T₇ (79.05 cm) was of dwarf at 60 days. The highest leaf area was observed in T₅ (74.13 cm²) and genotype T₁₃ (29.64 cm²) reported the lowest leaf area. T₅ exhibited the highest leaf length of 20.84 cm and genotype T₁ was reported the lowest leaf length (10.70 cm).

The genotype T₅ exhibited the highest leaf breadth of (9.82 cm) and genotype T₆ was reported the lowest leaf breadth (5.73 cm). The genotype T₅ exhibited the highest stem diameter of (20.69 mm) and genotype T₈ was reported the lowest stem diameter (10.13 mm). The genotype T₅ recorded the highest number of branches per plant (15.12). The lowest number of branches per plant was noticed in T₉ (4.93). The highest internodal length was observed in T₆ (11.53 cm) and Genotype T₁₃ reported the lowest internodal length (5.23 cm). The longest root length was observed in T₄ (11.88) and T₁₄ reported the shortest Root length (8.29 cm). The genotype T₆

(32.50) recorded the lowest number of days taken for first flowering while genotype T₁₁ recorded the highest number of days taken for first flowering *i.e.* 44.67 days. Genotype T₅ recorded the highest mean value (73.60 cm) for inflorescence length. Genotype T₇ recorded the lowest mean value (32.33 cm) for inflorescence length. Genotype T₄ recorded the highest (27.47 cm) for length of terminal inflorescence stalk length while, the lowest length was in genotype T₇ (14.40 cm). Genotype T₄ recorded the highest (21.57 cm) for lateral inflorescence length Genotype T₇ recorded the lowest mean value (8.27cm) for lateral inflorescence length.

Table 1: “Study on growth parameters of amaranth (*Amaranthus spp.*) genotypes under Konkan agro-climatic conditions.” (Winter 2015-16)

Genotypes	Plant height	Leaf area	Leaf length	Leaf breadth	Stem Diameter	No. of branches per plant	Internodal length	Root length	Days to flower initiation	Length of inflorescence (cm)	Terminal inflorescence stalk length (cm)	Lateral inflorescence length (cm)
T1	126.67	45.93	10.70	5.92	10.71	9.87	7.73	10.14	37.80	48.97	14.90	16.00
T2	142.62	49.95	13.82	7.39	10.73	11.63	9.87	10.44	38.70	59.80	20.43	14.63
T3	136.00	60.27	14.91	7.18	16.86	9.63	8.84	10.54	33.07	54.27	23.80	21.07
T4	159.30	62.44	13.98	7.13	16.23	10.20	10.32	11.88	34.93	57.40	27.47	21.57
T5	154.68	74.13	20.84	9.82	20.69	15.12	11.14	11.46	38.00	73.60	26.83	11.80
T6	121.23	45.80	12.93	5.73	11.03	7.53	11.53	10.28	32.50	53.33	15.87	18.23
T7	79.05	51.56	13.32	8.38	15.87	12.10	6.64	9.34	44.07	32.33	14.40	8.27
T8	139.85	39.41	11.86	6.07	10.13	8.03	7.65	11.24	32.70	52.00	19.73	18.03
T9	127.42	51.78	13.74	7.40	10.41	4.93	10.13	11.20	32.67	50.70	15.00	14.07
T10	128.73	34.89	12.94	8.00	12.00	8.43	10.01	11.76	39.10	58.20	15.63	18.33
T11	79.24	39.18	11.15	7.70	18.13	14.91	9.13	10.88	44.67	45.60	14.47	12.47
T12	84.73	30.44	12.46	7.19	15.55	14.93	6.84	8.79	43.43	46.73	14.67	14.30
T13	89.83	29.64	11.61	6.52	15.60	13.12	5.23	10.71	43.70	38.23	16.00	15.97
T14	196.20	61.54	19.03	8.06	16.57	9.17	9.03	8.29	38.53	69.77	20.23	14.77
Range	79.05-196.2	29.64-74.13	10.70-20.84	5.73-9.82	10.13-20.69	4.93-15.12	5.23-11.53	8.29-11.88	32.50-44.67	32.33-73.60	14.40-27.47	8.27-21.57
Mean	126.11	48.35	13.81	7.16	14.32	10.63	8.86	10.50	38.13	52.92	18.52	15.68
Result	SIG	SIG	SIG	SIG	SIG	SIG	SIG	SIG	SIG	SIG	SIG	SIG
S.Em++	2.11	2.00	0.49	0.16	0.50	0.36	1.11	0.74	0.91	1.04	0.48	0.49
CD@5%	6.12	5.81	1.44	0.46	1.45	1.04	3.22	2.15	2.12	3.02	1.40	1.44

Conclusion

Thus, while studying the 14 genotypes of amaranth, it was concluded that all the characters viz. growth parameters, flowering behavior were varied significantly. Further, while studying the growth character, genotype T₃, T₄, T₆, T₈, T₉ and T₁₀ found to be earliest harvest for green yield.

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