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STRAWBERRY VARIETY TRIALS UNDER COVER

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STRAWBERRY VARIETY TRIALS UNDER COVER

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SUMMARY

The performance of the strawberry cultivars Chandler, Tustin, Selva, Douglas, Parker, Santana, Aliso (DA), Dover (DA) and Douglas (DA) was tested under cover. Chandler was the most productive cultivar. Best quality fruit was obtained from Douglas and Chandler which were early fruiting with fruits of good flavor and aroma, even colouring, uniform shape and size and of excellent transit and handling qualities. The varieties Chandler and Douglas are recommended for commercial production.

ΠΕΡΙΛΗΨΗ

Δοκιμάστηκαν οι ποικιλίες φράουλας Chandler, Tustin, Selva, Douglas, Parker, Santana, Aliso(DA), Dover(DA) and Douglas (DA) υπο κάλυψη μέσα σε θερμοκήπιο. Την πιο υψηλή παραγωγή έδωσε η Chandler. Εκτός από το ύψος της παραγωγής, βασικά κριτήρια στην εξαγωγή συμπερασμάτων ήταν η ποιότητα των φρούτων και η πρωιμότητα της παραγωγής. Συστήνονται οι ποικιλίες Chandler και Douglas που ήταν πρώιμες ποικιλίες με φρούτα εξαιρετικής ποιότητας. Τα φρούτα των ποικιλιών αυτών είχαν ομοιόμορφο χρωματισμό, σχήμα και μέγεθος, καλή γεύση και άρωμα και η σάρκα τους ήταν συνεκτική που εξασφάλιζε αντοχή στη μεταχείριση και μεταφορά.

INTRODUCTION

Strawberry production in Cyprus has been recently increased substantially, from 5.4 ha in 1970 to 33 ha in 1990 with an annual production of 500 t. Twelve ha of strawberries are grown in plastic greenhouses, 4 ha under plastic tunnels and 17 ha in the open field. Although more than 50% of the cultivated area is in the open field the production of this area is only 35% of the total production.

Although the entire strawberry production is consumed locally as fresh fruits there is also a good export potential especially during the period December to April.

Testing and evaluation of strawberry varieties is a continuous process. Emphasis is given on earliness, quality and yield; varieties selected for commercial production in Cyprus must meet these requirements in order to satisfy demand in local and foreign markets especially in continental Europe.

The present work describes the performance of some varieties planted as fresh plants in greenhouses.

MATERIALS AND METHODS

The experiments were carried out at Zyghi Station in the southern coastal part of Cyprus. The soil contains about 40% clay throughout the profile, about 50% calcium

carbonate and its pH is 8.0 to 8.3. The soil was fumigated before planting with a mixture of methylbromide and chloropicrin.

The area has mean maximum air temperature ranging from 15.0 °C in January to 32.5 °C in July, and mean minimum temperature ranging from 6.0 °C to 19.5 °C. Relative humidity ranges from 55% to 75% during the winter months and from 55% to 60% in summer.

The pH of the irrigation water was 8.1 and its EC_w 0.8 dS/m. It contains 49 ppm Cl, 40 ppm Na, 24 ppm Ca, 46 ppm Mg, 116 ppm SO₄ and 110 ppm HCO₃. Irrigation was applied by trickle every two or three days.

The varieties Chandler, Tustin, Selva, Parker, Santana, Douglas, Aliso (DA), Dover (DA) and Douglas (DA) were tested in high plastic greenhouses 27 m long, 20 m wide and 2 m high using fresh plants as planting materials. The experiments were carried out during three seasons (1987 to 1990).

A randomized complete block design with four blocks was used. Block size was 14.4 m². Planting distance was 1.20 m between, and 0.3 m within rows. Blatt (1984) found that marketable strawberry yield was increased significantly by double row and therefore two plants were planted at each spot, i.e. 80 plants in each block. This is equivalent to 55,555 plants/ha.

The strawberry varieties were tested under cover only and not in the open field because previous experiments revealed that production under cover was higher and of better quality than in the open field (Economides and Gregoriou, 1988; Pollard and Cundari, 1988). Also the plantations were kept one year only because it was found that strawberries grown as an annual, rather than as a 2-year crop, result in higher quality as many small fruits were produced in the second year (Bochud, 1983; Economides and Gregoriou, 1988).

Records were taken on yield, time of maturity and fruit characteristics, whereas growth habit and plant vigour were estimated visually.

RESULTS AND DISCUSSION

The yield of the nine varieties are shown

Table 1. Yield of nine strawberry varieties (t/ha) grown under cover

Variety	1987-88	1988-89	1989-90
Chandler	34.2a	35.1a	15.5abc
Tustin	17.1c	16.6c	7.8d
Selva	26.7b	27.2b	16.2ab
Parker	22.7b	24.2b	15.5abc
Santana	17.3c	22.2b	-
Douglas	25.4b	23.9b	17.4a
Aliso (D.A.)	-	-	13.3c
Dover A (D.A.)	-	-	17.8a
Douglas (D.A.)	-	-	14.0bc
SE	1.8	2.1	0.9

Means within the same column followed by the same letter do not differ significantly at $P < 0.05$. (Duncan's multiple range test).

in Table 1. In 1987/88 Chandler gave the highest yield. Yield of Selva, Douglas and Parker were similar but higher than that of Tustin and Santana. In 1988/89 the results were similar as in 1987/88 except that yield of Santana did not differ from Selva, Douglas and Parker. In 1989/90 yields of Douglas, Dover A (DA), Parker, Selva and Chandler were similar but significantly higher than those of Douglas (DA), Aliso (DA) and Tustin. The variety Tustin gave the lowest yield. The overall yields of the varieties in the last experiment (1989/90) were low because harvesting period ended in May due to

lack of labourers whereas in the first two trials continued up to the end of June. Mean weight of strawberry fruit of the nine varieties is shown in Table 2. There were no significant differences in fruit size between the

Table 2. Mean weight of strawberry fruit (g) of nine varieties grown under cover

Variety	Average 1987-89	1989/90
Chandler	11.0 ^{N.S.}	11.6 ^{N.S.}
Tustin	14.2	10.3
Selva	14.6	12.5
Parker	14.6	12.3
Santana	11.0	-
Douglas	11.0	11.8
Aliso (D.A.)	-	11.6
Dover A (D.A.)	-	11.8
Douglas (D.A.)	-	10.7
S.E.	1.4	1.5

N.S. = Not significant

varieties.

Monthly distribution of production of the six varieties is shown in Table 3. All varieties started production in January and except of Tustin and Parker produced almost 50% of their yield by the end of April, over a period in which strawberries fetch high prices in the local and foreign market.

Chandler is early fruiting variety. Plants are semi-erect in growth habit. Chandler flowers are borne on semi-erect peduncles which are brought down quickly by the fruit

Table 3. Percentage of cumulative yield of six strawberry varieties during the yielding period

Variety	Jan.	Feb.	Mar.	Apr.	May.	Jun.
Chandler	4.2	9.8	24.8	45.2	83.4	100.0
Tustin	3.4	8.0	14.6	33.3	70.0	100.0
Selva	4.2	10.2	22.0	44.4	67.9	100.0
Parker	1.3	4.4	11.0	35.1	65.4	100.0
Santana	6.4	14.2	31.6	54.8	87.4	100.0
Douglas	3.4	10.7	22.4	45.9	79.2	100.0

weight. Fruit is long conic to long flat wedgy. The fruit has good flavor and aroma and is attractive in appearance with even colouring and has a firmness which gives it superior transit and handling qualities.

Douglas is early fruiting variety. Plants are vigorous and semi-erect in growth habit.

Fruit is more oval in shape and fruit skin is smooth and glossy and of very attractive appearance. The berries are uniform and hold their size well throughout the picking season. Fruit is firm and with good shipping and handling qualities and of pleasant aroma and flavor.

Selva and Santana are early fruiting whereas Tustin and Parker are middle-season varieties. Plants are medium in size with a bush growth habit. Fruit shape is round but not uniform through the entire picking season. Fruit colouring is not even and makes them not attractive varieties. Berry flesh is soft and the internal colour is not uniformly red.

Dover A (DA), Douglas (DA) and Aliso (DA) are early fruiting varieties. Plants are vigorous with a bush growth habit. Fruit shape is oval but not uniform in size and shape. Flesh is firm and are good shipping and handling varieties. Fruit colouring is not even.

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