Growth and Flowering of Heliconia psittacorum cv. Parrot in Hawaii

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ABSTRACT

Growth and flowering of Heliconia psittacorum cv. Parrot occurs throughout the year in Hawaii. Maximum shoot (8.1 shoots/plant/month) and flower (5.5 flowers/plant/month) production occurred during the third quarter (July-August-September) of 1986. The cultivar has a spreading growth habit with an average increase in area of 0.07 m²/month. After 18 months of growth each plant produced an average of 67.6 shoots and 38.8 flowers and occupied 1.18 m². A harvestable flower was produced 16 to 18 weeks after shoot emergence. If actual second, third, and fourth quarters of 1986 averaged 7.4, 3.5, 2.8, and 2.4 flowers/m²/month. If the actual area provided each plant (1.4m²) was used, production averaged 2.0, 1.7, 4.0, and 1.7 fl/m²/month in each quarter, respectively.

INTRODUCTION

In recent years interest in growth of heliconias as cut flowers has increased. However, there has been little horticultural research on heliconias. Broschat, Donselman and coworkers have published research concerned with the growth, flowering and production of Heliconia psittacorum cv. Andromeda and H. psittacorum cv. Golden Torch grown in solid barrier bordered beds. Their work was conducted in South Florida where growth and production decreased or ceased during the winter. The study reported here was conducted in Hawaii where growth occurs throughout the year.

MATERIALS AND METHODS

Single rhizomes of Heliconia psittacorum cv. Parrot were planted in beds of 6 inches of soil placed over a ripped rocky soil at the Agricultural Farm Laboratory of the University of Hawaii at Hilo, located in Panaea on the Island of Hawaii. Fertilizer (10-5-20) was applied at the rate of .23 kg/plant/2 months. Total natural rainfall during 1986 was 174 inches. Distribution in inches of rainfall per month was as follows: J-4.95; F-0.58; M-15.37; A-43.24; M-8.61; J-9.11; J-11.17; A-10.64; S-14.38; O-11.53; N-35.7; D-8.59. The six inch soil layer tended to dry very rapidly during times of low rainfall and plants exhibited leave curling symptoms characteristic of water stress. Plants were hand watered during these times of water stress, however, the results presented here may not be optimum growth and production figures.

Measurement of total area, number of new shoots, and number of flowers were taken monthly. All new shoots were date tagged at emergence. At harvest, days from shoot emergence to flowering was determined. Data presented are the mean values of 5 plants.

RESULTS AND DISCUSSION

Growth and flowering of H. psittacorum ‘Parrot’ occurs throughout the year in Hawaii. However, shoot and flower production appears to be greater in the summer (Figs. 1 and 2). Mean shoot and flower production reached a yearly high of 8.1 shoots/plant/month and 5.5 flowers/plant/month in the third quarter of 1986 (July-Aug-Sept).
able flower was produced 9 to 10 weeks after shoot emergence. In the study reported here, 19 weeks were required in the first quarter, 16 weeks in the second quarter and third quarter, and 18 weeks in the last quarter of 1986. This is six to seven weeks longer in Hawaii during the summer than in Florida.

The cultivar ‘Parrot’ has a spreading growth habit. At the end of 18 months of growth in December, 1986, each plant occupied an area of 1.18 m² (12.7 sq. ft.; Fig. 3). This is an average increase in area of 0.066 m²/month. Each new rhizome forms an aerial shoot and at least two lateral rhizomes in an hexagonal pattern (Bell and Tomlinson, 1980). Thus, the number of rhizomes and shoots doubles with each new set of shoots.

FIG. 2

shoot and flower production for the first quarter (J–F–M) were 3.5 sh/pl/mo and 2.9 fl/pl/mo; second quarter (A–M–J), 4.1 sh/pl/mo and 2.3 fl/pl/mo; and fourth quarter (O–N–D), 2.4 sh/pl/mo and 1.8 fl/pl/mo.

This greater shoot and flower production in the summer months appears to be a factor of both higher temperature and greater total sunlight. The recorded average maximum and minimum temperatures in January, 1986 were 25.9 C and 17.5 C, respectively, and in August, 1986 29.8 C and 21.8 C. Time between sunrise and sunset was 13 hours and 20 minutes on June 21, and 10 hours and 56 minutes on Dec. 21. Researchers in Florida working with a similar cultivar, ‘Golden Torch’, also reported a peak in production from July to September (Broschat, Donselman, and Will, 1984a).

The optimum temperature for growth of ‘Golden Torch’ was between 32 C and 21 C. Reduced growth occurred at lower temperatures and at 10 C growth stopped (Donselman and Broschat, 1986). A decrease in production was also reported under lower light conditions (Broschat, Donselman, and Will, 1984b).

Under the daylengths in Hawaii, photoperiod does not appear to be a factor in growth and flowering. Production can be achieved throughout the year in heated greenhouses in Florida (Broschat, Donselman, and Will, 1984a), which has a shorter daylength in the winter than Hawaii. Also, the flowering season for ‘Parrot’ and ‘Golden Torch’ at the Fairchild Tropical Garden in South Florida is reported to be year round (Watson, 1986). Criley (1986) also reports the availability of ‘Parrot’ cut flowers on the Los Angeles Flower Market throughout the year.

Growth rates for ‘Golden Torch’ in South Florida appear to be more rapid than those of ‘Parrot’ reported here in Hawaii. Broschat and Donselman (1983) found that in South Florida a harvest-

FIG. 3

In Florida, Broschat and coworkers (1984b) recommend that ‘Golden Torch’ be grown in ground beds that are surrounded by solid barriers not less than 30 cm in depth to prevent the rhizomes from growing into the aisles. The optimum bed width is 75 cm. Narrower beds are inefficient and wider beds result in reduced light penetration to the center of the beds and subsequent plant stretching.

Using these beds, Florida researchers report production of 84 flowers/m²/yr. If actual area occupied by each plant is used, in the present study, production is in the first, second, third, and fourth quarters averaged 7.4, 3.5, 5.8, and 2.4 fl/m²/mo. These figures projected to a yearly basis equal 89, 42, 70, and 28 fl/m²/yr. However, the plants were originally planted on 1.2 meter centers, with 1.4 m²/plant. Using 1.4 m²/plant, production in the first, second, third, and fourth quarters averaged 2.0, 1.7, 4.0, and 1.3 fl/m²/mo. or 24, 20, 48, and 16 fl/m²/yr.

Florida researchers recommend digging up the beds and replanting every
1-1/2 to 2 years. In Hawaii some growers use wider spacing in beds without side boards and replant less often. However, in the present study, the clumps of plants, originally spaced 1.2 m apart, had begun to grow together and had covered part of the aisles after 18 months. Because the solid barriers around the beds act to redirect growth back into the center of the beds and thus insure shoot and flower production in all areas of the bed, it appears that the solid barriers recommended by Florida researchers for the cultivar 'Golden Torch' might also be a sound management practice in Hawaii for the cultivar 'Parrot'. The use of 20 cm clumps at 30 cm spacing in 75 cm beds in Florida certainly result in maximum use of space and increased production per unit area. However, cost of barriers and replanting, along with available land should be considered in planning a heliconia nursery in Hawaii where flower production is year round without heating costs.

LITERATURE CITED


