

to be reimbursed after a final judgment is made based on validated records.

The choice between adjudication and economic control over pumping can be made separately for each basin and should be a matter of local option. With regard to convenience in integrating management and to efficiency of resource allocation, there appears to be no significant difference between the two approaches. There is a difference in the distribution of the basin's natural yield, or more accurately the benefits from the natural yield. With adjudication these benefits are distributed among pumpers in proportion to the established prescriptive base of each pumper. If extractions are controlled by equalizing the costs of ground- and surface water, benefits from the basin's natural yield are distributed among water users in proportion to the current rate of water consumption or usage.

Financing replenishment

An adjudication of rights does not preclude the use of an assessment on extractions to finance a replenishment program. There are a variety of possible programs involving both adjudication and assessment of extractions. For example, rights to a basin's natural yield could be adjudicated and exempt from assessment. Additional pumping could be allowed subject to an assessment to finance the replacement of the water from an imported supply.

A public district (overlying an entire basin) is needed for purchasing imported water for replenishment, coordinating management with that of related basins, and coordinating the management of the basin with expansions in import facilities. In the Raymond Basin, considerable progress in coordinating the management of ground- and surface water has been made without forming a basin-wide district. However, in most cases, an overlying district probably will be necessary for fully integrated management even where rights have been adjudicated. Successful integration of management without an adjudication of rights is entirely dependent on the formation of an appropriate overlying district. Such a district should be authorized to buy and sell water and water rights, to spread water for replenishment purposes and to levy assessments on both groundwater extractions and real property values. Broad powers are essential for a coordinating agency; however, care should be taken to avoid unnecessary duplication of existing facilities and services.

Areas beginning to import water in the future will probably encounter management problems similar to those which have plagued Southern California for almost 20 years. Much can be learned from this experience.

Considering the time required to make institutional changes, those planning to import water under the State Water Plan should begin immediately to make the institutional modifications needed to integrate the management of local groundwater basins with the imported supply. Arousing public interest previous to the actual existence of the problem will not be easy. The need for integrated management was recognized in Southern California before the first deliveries of Colorado River water. It is imperative that community leaders inform the public of the advantages of jointly utilizing local groundwater basins and imported sup-

plies. The length of time required for making institutional changes and the potential loss if the changes are not made by the time the imported water becomes available should be stressed. Examples from past experience in Los Angeles and Orange counties will be helpful.

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FACTORS AFFECTING FLOWERING OF BOUGAINVILLEA

DIFFICULTY IS USUALLY encountered in promoting flowering of bougainvillea in the nursery. Several reports suggest that some species are short-day plants, yet flowering in the coastal southern California landscape commonly occurs during the spring and summer months when days are long. Some environmental factors other than daylength apparently affect flowering in bougainvillea.

Results of University of California research with the San Diego Red variety have shown that temperature, light intensity, and age of the plant, as well as daylength, interact in determining both the speed and intensity of bloom. Optimal conditions for rapid and heavy flowering include a short day (eight to nine hours), moderate day and night temperatures (70° to 75°F), and relatively high light intensity (greater than 2,500 foot candle).

Branches developing from newly rooted cuttings require 70 to 80 days (flower inflorescence between 30 to 40 nodes, about 60 to 70 cm stem length under favorable temperatures) to bear full-blooming inflorescences; whereas branches developing from older crowns (¾-inch and greater stump diameter) reach anthesis after 50 days (inflorescences from the first to fifteenth nodes, stem length 30 cm) under the same conditions.

Some of the important factors for nurserymen to consider in growing procedures to obtain increased flowering include: (1) increased light intensity through improved plant spacing; training and tying of individual branches are also recommended to prevent mutual shading; (2) propagation of bougainvillea as far in advance of scheduled sale as possible; (3) ventilation and heating of plastic greenhouses to maintain temperatures about 60°F at night and 80°F during the day; and (4) use of black cloth for daylength control for scheduling flowering of relatively mature plants.

Research workers in Florida have reported that high levels of nitrogen nutrition (equivalent to 300 pounds per acre per year) also promote heavy flowering. Nurserymen using plastic structures to achieve frost protection only, and not contemplating use of black cloth for daylength control, should move bougainvillea plants out of plastic houses as soon as all danger of frost has passed. Plants in plastic houses receive higher temperatures and lower light intensities than are favorable for optimal flowering.—*W. P. Hackett, Department of Agricultural Sciences, University of California, Los Angeles; and R. M. Sachs, Department of Landscape Horticulture, U. C., Davis.*