

# RESEARCH

RESEARCH, USING A SPECIFIC METHOD OF PROCEDURE, ATTEMPTS TO SOLVE PROBLEMS OR EXPLAIN OBSERVATIONS ENCOUNTERED IN A PARTICULAR FIELD OF STUDY. PROBLEMS IN HORTICULTURE ARE MANY. DURING THE PAST YEAR, THE ARBORETUM MADE PROGRESS ALONG CERTAIN LINES OF ESTABLISHED PROJECTS AND INITIATED NEW AREAS OF INVESTIGATION.

## THE FIRE RESISTANT PLANT PROJECT

THE FOLLOWING IS AN ABSTRACT OF A PAPER PRESENTED AT THE ANNUAL MEETING OF THE AMERICAN INSTITUTE OF BIOLOGICAL SCIENCES, AUGUST 26-30, 1956, HELD AT THE UNIVERSITY OF CONNECTICUT, STORRS, CONN.

"A Germination Inhibitor in Cistus salvifolius, an introduced plant for erosion control in So. California". Gustaf Juhren, L. B. Martin and Marcella Juhren.

Periodic fires in the chaparral vegetation of southern California mountains present constant reforestation and erosion control problems. Growing conditions on these exposed mountain slopes are severe. Introduced plant species are often used to supplement native vegetation. Species of Cistus (Rock Rose), a Mediterranean native, is able to grow under these conditions and in addition shows a certain degree of resistance to burning. Cistus seed germinated sporadically over long periods when grown in the greenhouse and when directly seeded in the field. Charcoal mixed with seedbed soil appeared to hasten and produce greater germination. Seeds of Cistus salvifolius mixed with activated charcoal and germinated under controlled conditions (light, moisture, temperature) resulted in: earlier germination than in the control without charcoal, the greater number of seedlings produced in 10 days was significant at the 5% level compared with the control. A second set of seeds germinated under identical conditions but in which the seedlings were removed each day, produced similar results. These experiments suggest the presence of some type of germination inhibitor in seeds of Cistus salvifolius. The total germination for the two sets of treatments was not significantly different at the end of the eight weeks experimental period.



Inspection of Cistus seedling plots established on a recent burn in the San Bernardino Mts. This is a co-operative venture between the United States Forest Service and the Arboretum.

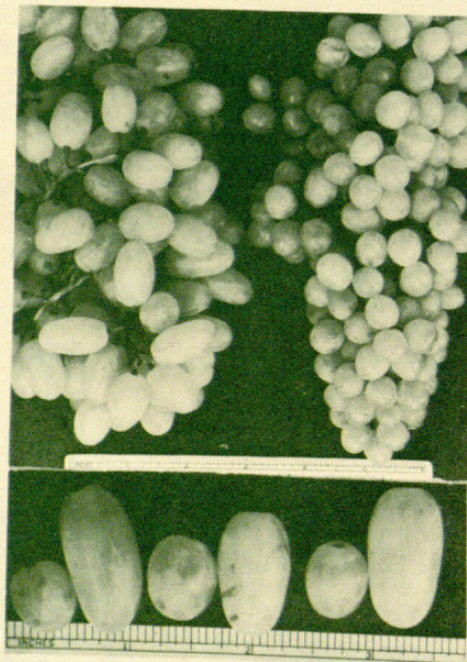


## THE PLANT HORMONE STUDIES

GIBBERELIC ACID, A RELATIVELY NEW CHEMICAL IN THE FIELD OF PLANT HORMONES, IS NOW READILY AVAILABLE FOR RESEARCH AND HORTICULTURAL USES. IN GENERAL, IT HAS THE EFFECT OF CAUSING ELONGATION OF PLANT CELLS. THIS RESPONSE MAY HAVE NUMEROUS HORTICULTURAL AND AGRICULTURAL APPLICATIONS WHEN IT IS DESIRED TO OBTAIN TALLER PLANTS, FASTER.

IN VIEW OF THE WIDE POPULAR INTEREST IN GIBBERELIC ACID, A SERIES OF EXPERIMENTS USING THIS COMPOUND WERE INITIATED AT THE ARBORETUM. A BRIEF PROGRESS REPORT OF THIS WORK FOLLOWS:

- A. TO THE STEMS OF SEEDLINGS OF ERANTHEMUM ATROPURPUREUM, LANOLIN PASTE CONTAINING 25 PPM (PARTS PER MILLION) OF GIBBERELIC ACID WAS APPLIED AS A RING AT THE UPPER MOST NODE. MEASUREMENTS SHOWED BOTH THE INTER-NODE ABOVE AND BELOW THE TREATED NODE GREW SIGNIFICANTLY LONGER THAN THOSE ON UNTREATED STEMS.
- B. TO SEEDLING STEMS OF CARICA PAPAYA VAR. SOLO, A LANOLIN RING WAS APPLIED CONTAINING GIBBERELIC ACID. NO ELONGATION OF STEM WAS OBSERVED, HOWEVER, A GROWTH IN STEM THICKNESS RESULTED AT THE SITE OF APPLICATION. FURTHER STUDIES SHOULD REVEAL WHETHER CELL SIZE OR CELL NUMBER WAS INCREASED BY THE TREATMENT.
- C. AT THE SUGGESTION OF MR. GWYNN WILSON OF COACHELLA VALLEY, TESTS WERE INITIATED TO DETERMINE THE EFFECT OF SPRAYING APPLICATIONS OF GIBBERELIC ACID ON YOUNG GRAPE CLUSTERS. THE OBJECT WAS TO DETERMINE IF FRUIT STEMS COULD BE INDUCED TO ELONGATE SUFFICIENTLY TO AVOID THE NECESSITY OF CLUSTER THINNING. HARVEST DATA SHOWED THAT A SINGLE APPLICATION OF A WATER SPRAY OF EITHER 10 PPM OR 100 PPM GIBBERELIC ACID RESULTED IN LARGER CLUSTERS OF FRUIT. IN ADDITION, TO INCREASING FRUIT SIZE, THE SPRAYS INDUCED ELONGATED FRUIT AND FRUIT WITH A HIGHER SUGAR AND LOWER ACID CONTENT THAN FROM NON-SPRAYED CLUSTERS.



Thompson Seedless grapes harvested June 21, 1957, from flower clusters sprayed with 100 ppm Gibberellic acid on April 9, 1957. Above, left, sprayed; right, non-sprayed. Below, close-up view of individual fruits, alternating non-sprayed and sprayed from left to right.





1957. "Research." *LASCA miscellanea* 5, 30–32.

**View This Item Online:** <https://www.biodiversitylibrary.org/item/129949>

**Permalink:** <https://www.biodiversitylibrary.org/partpdf/147022>

**Holding Institution**

The Arboretum Library at the Los Angeles County Arboretum and Botanic Garden

**Sponsored by**

Good Family Foundation

**Copyright & Reuse**

Copyright Status: In copyright. Digitized with the permission of the rights holder.

License: <http://creativecommons.org/licenses/by-nc-sa/3.0/>

Rights: <https://www.biodiversitylibrary.org/permissions>

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at <https://www.biodiversitylibrary.org>.