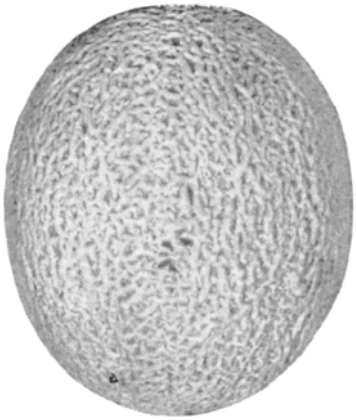
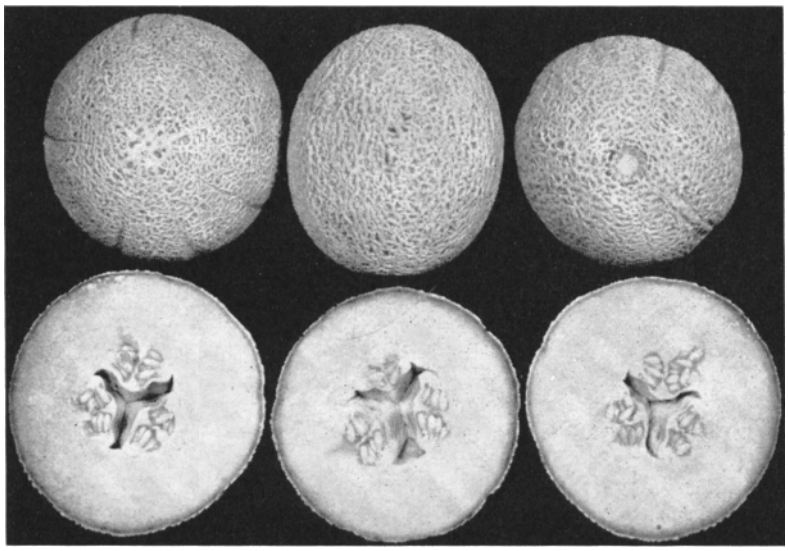


CAMPO and

New Cantaloupe Vari

G. W. BOHN • G. N. DAVIS • R



Two new cantaloupe varieties for the Southwest, Campo and Jacumba, have been released jointly by the Crops Research Division, Agricultural Research Service, United States Department of Agriculture, California Agricultural Experiment Station and Arizona Agricultural Experiment Station. The new varieties have fruit qualities equal or superior to the older varieties PMR 45 and PMR 450, as well as being considered earlier, more uniform and more prolific. Campo and Jacumba were also bred for resistance to powdery mildew, have a slight resistance to downy mildew and some crown blight tolerance.

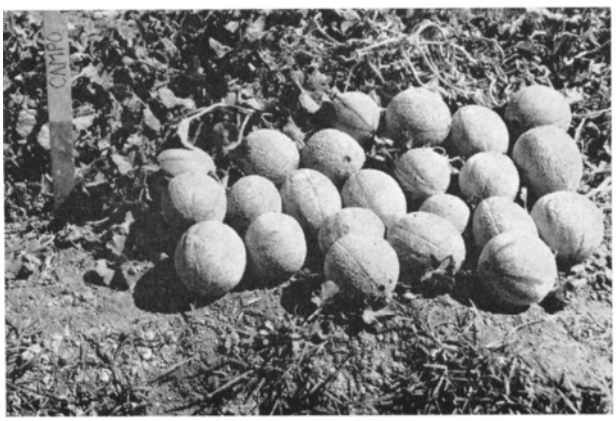
Campo fruits, above, are round-oval in shape, well covered with round net, nearly free of sutures, salmon-orange in flesh color, and with yellow seeds.

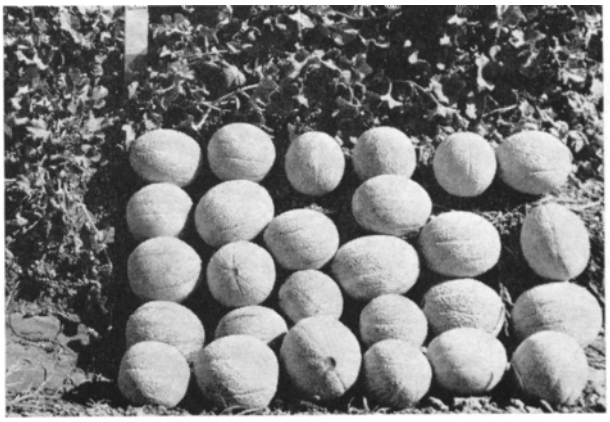
Center photo below, total harvest during one day from 100 hills (200 plants) of Jacumba. Arena Imperial Co., Brawley, June, 1964.

Bottom left, total harvest during one day from 100 hills (200 plants) of Campo. Arena Imperial Co., Brawley, June, 1964.

CAMPO AND JACUMBA are inbreds from the trihybrid cantaloupe cross (L.J. (La Jolla) 36486 (also designated P_3) X PMR 45)–F_1 X PMR 450. A fourth generation inbred selection was twice backcrossed to PMR 450. Resistant sibs were crossed with two different commercial stocks of PMR 450 at the final cross. Inbreeding and selection were continued for eight generations in each of the two breeding lines.

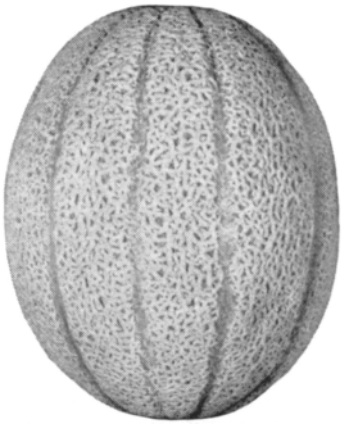
Following the last backcross, a single, naturally pollinated, F_2 field selection served as the foundation stock for Campo. Seeds from several F_2 selections from a different F_2 progeny were combined to serve as the foundation stock for Jacumba. Powdery mildew resistant selections were used for all crosses; and resistant selections were self-pollinated or sib-crossed in some generations at La Jolla, San Diego County. Seeds from naturally pollinated field selections in family-group blocks or isolated "mass-blocks" were used in several generations planted at Brawley and Meloland, California. Seeds from self-pollinated and sib-crossed sibs were bulked for field plantings. Similarly, seeds from naturally pollinated sibs were massed for



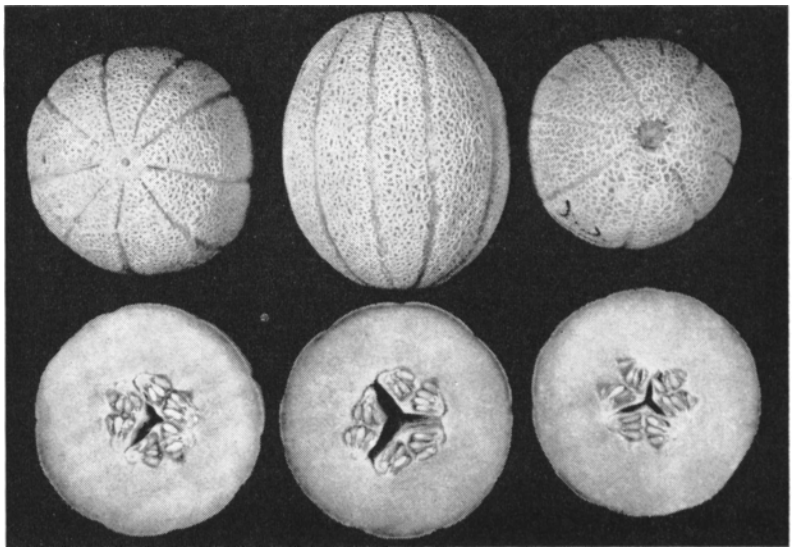


JACUMBA

eties for the Southwest



E. FOSTER • T. W. WHITAKER



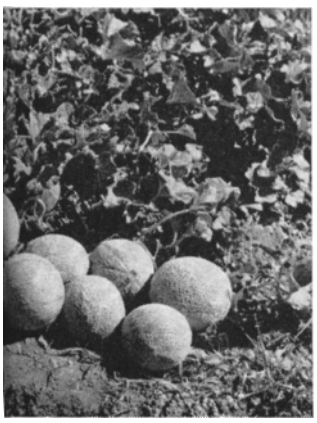
Jacumba fruits, above, are oval shaped, well covered with round net on ribs, shallow and often bare sutures, salmon-orange flesh and cream-colored seeds.

field plantings. Thus Campo and Jacumba were derived by a mixed program of controlled inbreeding of resistant selections to obtain resistance to powdery mildew and "mass selection" inbreeding to secure adaptation to cultural conditions including tolerance to viruses and crown blight, in Imperial Valley. Facilities at the U. S. Horticultural Field Station, La Jolla, at the Southwestern Irrigation Field Station, Brawley, at the University of California Field Station, Meloland, and in growers fields near Brawley permitted the breeding and selection work to progress at the rate of two generations a year during most years since 1957.

Campo and Jacumba combine powdery mildew resistance derived from California Accession 525 and from U. S. Plant Introductions 79376 and 124111 with high quality derived from the muskmelon varieties Hale's Best, Persian, PMR 45, and PMR 450. Campo and Jacumba also have slight resistance to downy mildew from P. I. 124111; and by repeated selection in Imperial Valley, some tolerance to crown blight.

In well-grown, early spring plantings in Imperial Valley, the fruits of Campo and Jacumba resemble those of PMR 45 and PMR 450, but they are larger than are those of PMR 45 and they have better

Below, total harvest during one day from 100 hills (200 plants) of PMR 450. Arena Imperial Co., Brawley, June, 1964.



AVERAGE SCORES FOR MUSKMELON FRUIT SAMPLES OF THE VARIETIES CAMPO AND JACUMBA, AS COMPARED WITH PMR 45, AND PMR 450. GROWN AT FOUR LOCATIONS DURING SPRING, 1964.

Location	Characteristics of fruit*												
	External						Internal						
Variety	Size	Shape index	Appearance	Rind color	Net cover	Storage rot	Appearance	Thickness	Color	firmness	texture	flavor	Soluble solids
	crate	†L/D	scale	scale	scale	scale	scale	scale	scale	scale	scale	scale	per cent
Imperial Valley													
Campo	36	1.03	3.5	3.2	4.3	3.8	3.7	3.8	3.5	4.0	4.0	4.1	11.4
Jacumba	27	1.13	3.7	3.5	3.6	4.1	3.9	3.9	3.5	4.3	3.7	4.0	11.1
PMR 450	36	1.06	3.4	3.5	2.7	3.7	3.5	3.7	3.1	3.6	4.2	3.4	10.1
Yuma													
Campo	27	1.07	3.3	3.7	3.6	2.7	3.7	3.6	2.7	3.6	4.0	3.7	10.1
Jacumba	27	1.10	3.6	4.0	4.0	3.5	4.4	4.5	3.8	4.0	4.0	3.9	10.9
PMR 45	36	1.04	4.0	4.0	4.2	2.0	3.8	3.6	3.1	3.6	4.0	3.6	11.1
Blythe													
Campo	36	1.08	3.7	3.5	3.8	3.5	3.9	4.1	2.9	4.0	3.2	3.0	9.5
Jacumba	36	1.09	4.0	3.9	4.5	4.3	4.1	3.8	3.5	3.9	3.8	3.8	10.6
PMR 45	36	1.06	4.0	3.4	3.8	4.6	4.0	3.7	3.2	3.7	3.6	3.2	9.8
Mesa													
Campo	27	1.16	3.5	3.5	3.5	4.0				3.3			9.9
Jacumba	27	1.15	3.5	4.0	3.0	4.0				3.3			9.6
PMR 45	27	1.13	4.0	4.0	3.1	4.0				3.1			8.8
PMR 450	23	1.14	3.0	3.0	2.9	4.0				3.3			9.0

* Characteristics that were not readily measured with instruments were judged on an arbitrary scale: 1, worthless; 2, poor; 3, average; 4, excellent; 5, perfect.
† Length/diameter ratio.

shape and uniformity in several fruit characters than do those of PMR 450. Both varieties are earlier maturing and more prolific than PMR 450 in Imperial Valley. Campo produces a large percentage of size 36, round-oval melons well-covered with round net and nearly free from sutures. Jacumba produces a large percentage of size 27 oval-shaped melons well-covered with round net on the ribs. The shallow, often bare sutures give the fruit a striped appearance, as shown in photo. The rind color of both varieties is yellow-green at full slip turning yellow at table maturity. The salmon-orange flesh is thick and sweet with a mild, aromatic, muskmelon flavor. Their rind hardness, flesh firmness, and cavity dryness should make Campo and Jacumba suitable for long-distance shipping. The seeds of Campo are typically yellow; those of Jacumba are typically cream-colored but occasionally a few yellow-seeded fruits are present. The fruits of Campo should be held at room temperature for three to 10 days and quick-chilled for eating; Jacumba fruits should be held at room temperature for five to 15 days and quick-chilled for eating.

Campo and Jacumba have performed well in experimental early spring plantings in Imperial and Palo Verde valleys of California and at Yuma, Arizona. They have not performed as well in the Lower Rio Grande Valley of Texas. Accordingly, Campo and Jacumba are recommended for trial in the early spring districts of California and Arizona, but not in the Lower Rio Grande Valley.

Observations on the new varieties in field plantings and recorded data on fruit samples secured at four locations in the early spring districts indicated that Campo and Jacumba were equal or superior to the varieties PMR 45 and PMR 450 in most characters used to estimate fruit quality (see table and photo comparisons). One hundred hill plots of Campo and Jacumba were earlier, more uniform, and more prolific than PMR 450 in a trial grown by the Arena Imperial Company near Brawley, Imperial County, during spring, 1964 (see photos).

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Watergrass Control In Rice Fields with PROPANIL *and* ORDRAM

DEEP-WATER CULTIVATION has been the only means of controlling watergrass in California rice fields where continuous flooding is the prevailing cultural practice. Hand weeding is uneconomical, and mechanical cultivation under "upland" conditions (irrigated but not flooded) does not produce enough rice to meet California standards.

Even deep-water control (minimum, 6 inches) is not always successful, however. Occasionally, grass grows where water is inadequately supplied, or when water temperature and soil fertility are such that minimum water depth is ineffective. Spring winds sometimes cause breaks in the levees, draining large portions of the field and allowing grass to survive. At other times, cool spring temperatures reduce rice seedling survival, and water must be lowered for satisfactory stands.

Preliminary testing at the Rice Experiment Station with 3, 4-dichloropropion anilide (propanil, trade names: Stam F-34 and Rogue) applied as a postemergence spray indicated that 2 or 3 lbs of active material per acre controlled watergrass at the two- or three-leaf stage with no damage to the rice. To insure contact of the spray with watergrass plants in this early stage, water had to be removed from the rice field before spraying, and then returned about 48 hours after spraying. This was possible in very small test plots or fields, where water could be removed or added quickly, but it is not feasible for large commercial fields where slow addition of water may result in germination of new grass seed or loss of soil nitrogen. Therefore, propanil was tested in 1962 and succeeding years using continuous shallow water. In the same year, *S*-Ethyl hexahydro-1 *H*-azepine-1-carbothioate (trade name Ordram), a granular material applied at the preflood stage was tested at the Rice Experiment Station, also using continuous shallow water.

TABLE 1. ESTIMATED WATERGRASS CONTROL AFTER PREFLOOD AND POSTEMERGENT TREATMENTS WITH PROPANIL AND ORDRAM IN 1963

Chemical	Application time* (days)	Rate (lb/A)	Estimated watergrass† (per cent)			
			Days after flooding			
			42	57	72	121
Control			76	79	82	76
Propanil	+ 22	4	31‡	62	44	57
	+ 35	6	20	0	1	0
Ordram	− 1	1	58	67	63	63
	− 1	3	21	17	23	24
	− 1	5	13	9	15	10

* Flooded on May 28; + means days after flooding; − means days before flooding.
†Estimated by several observers as a percentage of total stand.
‡ Average of five replications.

In 1963 and 1964, control of watergrass in plots treated with propanil and Ordram under shallow-water conditions was evaluated by several observers. Results shown in tables 1 and 2 indicate that although evaluations vary with changes in number of days after flooding, the chemicals effectively decreased watergrass during the growing period. Although observers noted the greatest reduction of watergrass when propanil was applied at a late date, this treatment may not be the most economical. Table 2 shows that in 1964 all propanil treatments except at 29 days greatly reduced watergrass. Treatment