Carob Varieties for the Semi-arid Southwest

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In 1949 Dr. Walter Rittenhouse invested a fund, the income from which to be used to test the feasibility of commercial carob culture in southern California, Arizona and northern Baja California. The time limit was twenty years. The ten acre demonstration orchard is located on Buena Road, five miles from Vista, in northern San Diego county. The distance from the sea is about ten miles and the elevation is 800 feet. The soil type has been classified as Escondido silt loam. The average recorded rainfall for sixteen years is 12.23 inches. No damage from low temperatures has occurred except in two years, and that, at the lower end of the area. No irrigation was used until 1960, after which one row of trees was watered occasionally during a period of drouth.

Four hundred carob seedlings purchased from a local nursery were planted on contour rows 15 by 30 feet apart. This is much too close for commercial spacing but adequate for variety testing and other experiments. Bud-wood of selected varieties was introduced from Cyprus, Israel, Tunis, Greece, Yugoslavia, Crete, Portugal, Sicily, mainland Italy, and Spain. In addition, the fruits of thousands of seedling carob trees grown for shade on the streets of cities in southern California and Arizona, which were already shown to be suited to the local environment, were examined in a search for seedlings worthy of propagation and testing. A total of more than eighty clones have been fruited and evaluated. Bud-wood of several of and evaluated. But-wood of several of those most promising have been distributed to local nurserymen and growers as well as experiment stations and interested farmers in Tunis, Israel, South Africa, Chili, Brazil, Mexico, western Australia and Hawaii.

In 1958, through the cooperation of Mr. Howard Benedict of Rancho Mirage, near Indio in the desert Coachella Valley, a number of varieties have been brought into fruition with irrigation. There, the relative value of varieties differs widely from that at Vista, near the coast.

From its inception, this carob project has been under the personal management of the author. Some European varieties are hundreds of years old and, and, with few exceptions, the nomenclature is in great confusion. Pomological descriptions of seven worthy varieties are here presented.

Budded trees of these seven varieties and one male have been established in two locations: the Citrus Research Center of the University of

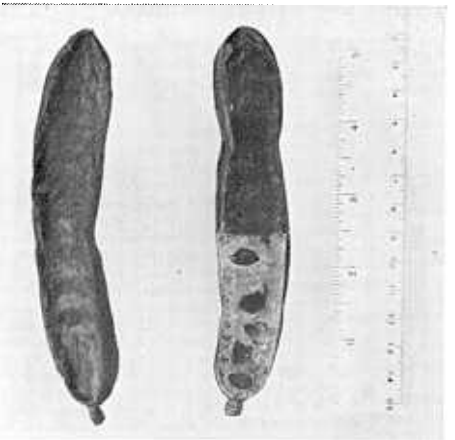

Fig. 1. The Amele carob.

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California at Riverside, and at the Quail Botanic Garden at Encinitas, California. These are to serve as an educational exhibit and a future source of authentic bud-wood after the present demonstration orchard is abandoned.

Amele

Origin: Bari, Italy. SPI No. 194137. Female.

Tree: habit upright; twigs reddish; leaflets 10; not precocious.

Flowers: racemes 5-8 c.m. long with 20-25 flowers; pistils 10-15 m.m. long; mostly red or purplish; flowers distributed throughout the tree.

Pods: straight or slightly curved; color light brown; length 14-16 c.m.; Width 20-25 m.m.; thickness of valley 5 m.m.; ribs 8-10 m.m.; creases pronounced on both sides; surface plain with light colored striations on the ribs; cracks lacking; seeds distinctly gibbose; stem short and thick; sugar content 53.8% with irrigation on the desert near Indio; flavor good; maturity early October at Vista, September at Indio; slightly wormy at Vista, worms absent at Indio; yield medium, alternating; abscission good.

Fig. 2. The Clifford carob.

Remarks: The Amele is an excellent, very old, variety long grown commercially on the Adriatic Coast of Italy. The best variety so far tested on the desert with irrigation.

Casuda

Origin: Valencia, Spain. SPI No. 20955. Female.

Tree: Habit upright; twigs slender, reddish; leaflets 10; precocious.

Flowers: Racemes 4-8 c.m. long with 20-25 flowers; pistils mostly 7-8 m.m. long, yellowish green; flowers well distributed along branches.

Pods: Mostly straight; color brown; length 12 c.m.; width 15 m.m.; Valley 5 m.m.; ribs 7 m.m.; creases distinct; surface smooth; few cracks near stem; seeds gibbose; stem 5 m.m. long, 3 m.m. thick; sugar content 51.7% at Vista, 56.7% on irrigated desert at Indio; flavor fair; maturity at Vista, October, September at Indio; medium wormy; yield fairly good; abscission good.

Remarks: A very old variety long grown in Spain. Higher sugar content and worm free when grown on the desert at Indio.

Clifford

Origin: Seedling tree on sidewalk in front of 723 Victoria Street in Corona, Riverside County, California. Hermaphrodite.

Tree: Upright and compact; leaflets 7-10; very precocious.

Flowers: Racemes 6-10 c.m. long with 35-45 flowers, reddish unopened, yellow opened; pistils 8-10 m.m. long, dull green to purple; some racemes with staminate flowers only, others mixed with pistillate flowers near raceme terminals.

Pods: Slightly curved: light brown; length 13 c.m.; width 20 m.m.; thickness, valley 10 m.m., ribs 12 m.m.; crease pronounced; surface slightly wrinkled; cracks absent; seeds gibbose; stem stout, 5 m.m. long; ab-

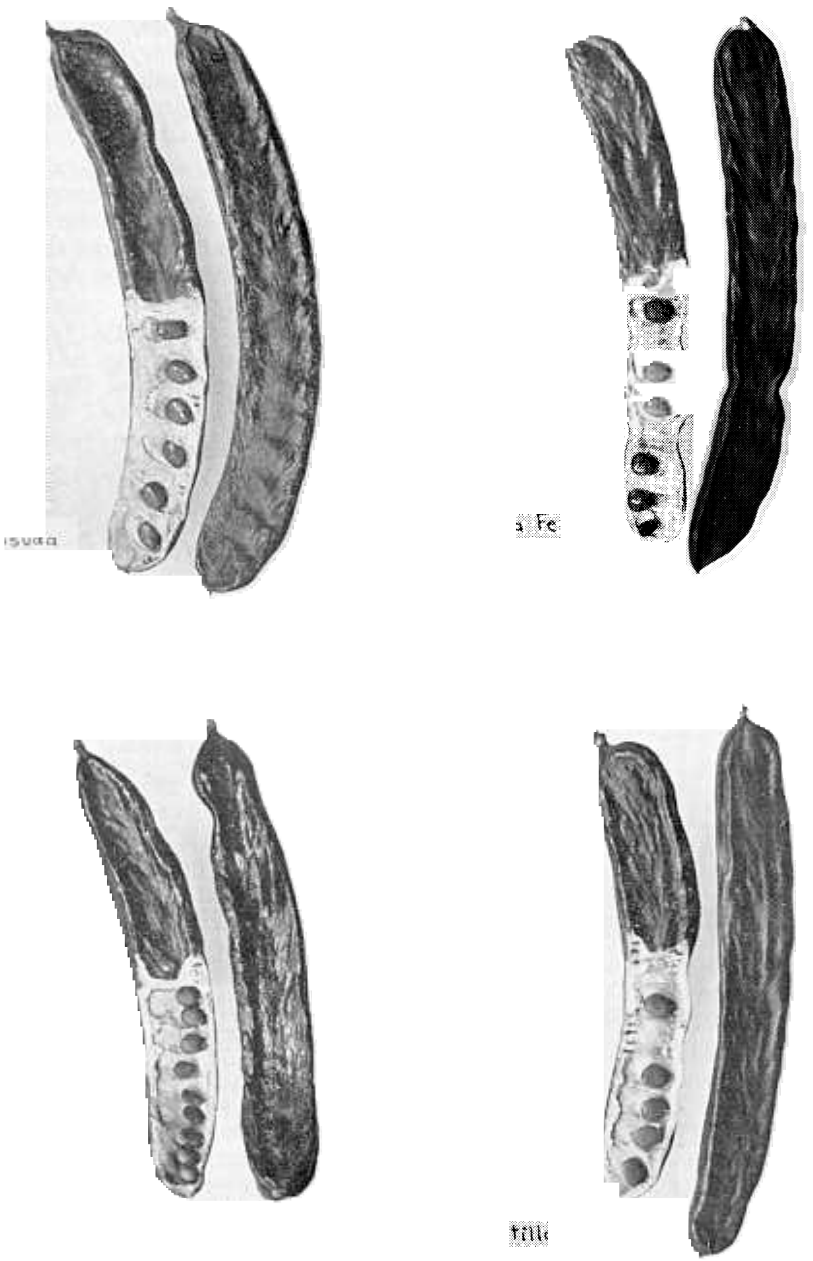

Fig. 3. The carob varieties Casuda (upper left), Santa Fe (upper right), Sfax (lower left), and Tantillo (lower right).

scission medium; sugar 52.9%; flavor fair and neutral; maturity early October; worm free; a heavy and fairly regular bearer.

Remarks: A very promising variety at Vista; not so far tested on the desert near Indio.

Sfax

Origin: Menzel bou Zelfa, Tunisia. SPI No. 187063. Female.

Tree: Habit exceptionally spreading; twigs very thick and stout, reddish; leaflets 10; fairly precocious.

Flowers: Racemes 5-14 c.m. long with 30-35 flowers; pistils 12-15 m.m. long; color yellowish green; occasional flowers have a few abnormal or aborted stamens; flowers well distributed along branches.

Pods: Straight or slightly curved; color reddish brown; length 15 c.m.; width 2 c.m.; valley 6 m.m.; ribs very thick, 10-15 m.m.; anterior crease shallow, often obscure, posterior crease very variable; surface rough, often wrinkled; cracks absent; seeds very faintly gibbose; stem variable, 5-10 m.m. long; sugar content at Vista 56.6%, at Indio 45.6%; flavor excellent; maturity very early, Sept. at Vista, Aug. at Indio; wormy at Vista, worm free at Indio; yield medium heavy, regular; abscission good.

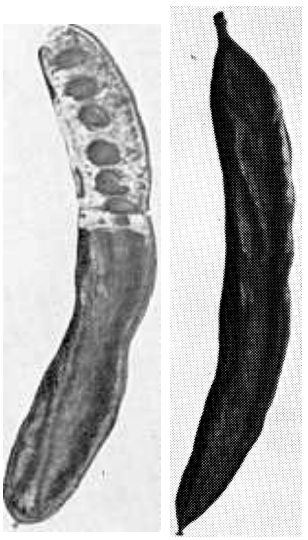

Fig. 4. The Tylliria carob.

Remarks: An excellent variety. Some fermentation in foggy weather near the coast. Matures before reaching full sugar content in the desert. Best suited to foothills some distance from the coast.

Santa Fe

Origin: A seedling at Santa Fe Springs, Los Angeles County, California. Hermaphrodite.

Tree: Habit spreading; twigs slender, reddish; leaflets 8-10; precocious.

Flowers: Racemes short 3-6 c.m. long with 25-30 flowers which are reddish before and orange after opening; pistils 7-10 m.m. long, yellowish green, slender; stamens 5-12 m.m. long; several flowers per raceme have aborted pistils, some with no pistils; flowers self-fertile, well distributed on the branches.

Pods: Length 18-20 c.m., slightly curved, often twisted; color light brown; width 20 m.m.; thickness, valley 5 m.m. ribs 6 m.m.; crease shallow, distinct on both edges; surface plain; cracks absent; seeds slightly gibbose; stem variable, 5-10 m.m. long, slender. Sugar content at Vista 47.5%; flavor excellent; maturity October; very slight worm infestation; yield good, regular; abscission fair.

Remarks: An excellent self-fertile variety on coastal foothills; apparently of no value with irrigation at Indio.

Tantillo

Origin: Sicily. SPI No. 233580; Hermaphrodite.

Tree: Habit various; leaflets 10; twigs green; very precocious.

Flowers: Racemes mostly 5 c.m. long with 25-30 flowers, all having pistils; pistils 12 m.m. long, dull green

or slightly purplish; unopened flowers red; stamens 5-6.

Pods: Mostly straight; color dark brown; length 13-15 c.m.; width 20 m.m.; valley 5 m.m. thick; ribs 6-7 m.m.; crease negative anterior tending to positive posterior; surface rather rough; cracks absent; seeds not gibbose; stem short, 4 m.m.; flavor fair; maturity early, Sept. 15-Oct. 15 at Vista; worm free; yield very heavy and regular.

Remarks: A very promising, heavy yielding hermaphrodite free from worm infestation.

Tylliria

Origin: Cyprus; SPI No. 189008. Female.

Tree: Habit upright and vigorous; twigs reddish; not precocious.

Flowers: Racemes 5-10 c.m. long with 25-30 flowers; light purplish color; a few with aborted stamens.

Pods: Slightly curved; color dark mahogany brown; length 15 c.m.; Width 20-25 m.m.; thickness 10-12 m.m.; valley usually transversed diagonally by ridges characteristic of this variety; crease distinct on inner side of curve, lacking on outer side; surface smooth with occasional cracks near stem; seeds not gibbose; stem stout, 10 m.m. long. Sugar content 47.4% at Vista, 50.9 at Indio. Pods imported from Cyprus 48.8%; flavor good; maturity at Vista, October, at Indio Aug. 15-Sept. 15; wormy at Vista but not at Indio; yield medium, strongly alternating; abscission poor.

Remarks: An excellent commercial variety, best adapted to foothills near the coast. Tylliria is the chief variety grown for export on the island of Cyprus.

Lloyd Lonborg (1900-1966)

C. D. SCHWARTZE*

On adjoining pages will be found a description of the Chehalis apple, discovered and introduced by Mr. Lloyd Lonborg of Oakville, Washington.

Lloyd Lonborg was a logger. Most of his life was spent in the Douglas fir and cedar forests of western Washington. But at heart he was a pomologist, for he had an almost passionate interest in fruits. His great desire was to find or develop an apple variety with superior flavor, one that hobbyists could grow without having to apply chemical sprays to protect the fruit and trees from plant diseases such as scab and mildew.

Mr. Lonborg was an idealist, as the following excerpt from one of his letters shows: "I am quite sure that future generations in this area will be eating better apples as a result of our combined efforts. By this I mean everybody who is working towards something better instead of promoting something unsuited to our climate just because it has a big name." He was a realist also. He wrote about the assessment of quality in fruits: "No person can judge flavor for another person." On his small farm near Oakville, he had collected, in recent years, over 100 varieties of apples, both old and new, and a smaller assortment of other tree fruits. He had started an apple breeding project and had several hundred seedlings ready to transplant from the original seed bed.

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