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was derived from a sister of the original 'Acala 1517'. Coquette was an experimental strain developed at the Louisiana Agric. Exp. Stn. Acala strain 6612 was bulked in 1959, tested for 4 years, and released[3] as Acala 1517V in 1964.

The plants of Acala 1517V have a medium-narrow profile, and the locks of the boll are attached to some extent to the burr at the bottom of the lock. These characters make it well adapted to machine harvesting with the spindle picker. This cultivar has a relatively high level of resistance to *Verticillium albo-atrum* Reinke and Berth, and is moderately resistant to *Fusarium* wilt. It is susceptible to *Xanthomonas malvacearum* (E. F. Smith) Dows.

Acala 1517V is similar in height[4] to 'Acala 1517C'. Bolls are ovate and average 7.1 g of seed cotton as compared to 7.5 g for Acala 1517C. Seeds are quite fuzzy and medium large (13.7 g/100). Lint percentage averages 36.5, as compared to 36.0 for Acala 1517C. The 2.5% span length averages 31.0 mm as measured on the digital fibrograph. Tensile strength averages 227 m N/Tex as measured on the stelometer. At the time of release, Acala 1517V had shown an average yield of 107% of 'Acala 1517D', a high yielding but moderately wilt-susceptible cultivar[5].

The original Acala 1517V was replaced in 1969 by a sister line of Acala 6612. Acala 9450 strain was bulked in 1963, tested for 5 years and released in 1969, as the "new" Acala 1517V. The newer version is similar in plant type and general appearance, except for having darker green foliage, but it has a more extensive fruiting framework, larger bolls, higher lint percentage, and good attachment of seed cotton to the burr. On severely wilt-infested soils, Acala 9450 showed a greater expression of wilt symptoms than Acala 6612, yet the newer cultivar yielded about 6% more cotton.

Lint percentages compared to Acala 6612 are about 1.3% higher; 2.5% span, micronaire, and yarn strength (22's carded) are slightly improved.

Breeder seed of Acala 1517V will be maintained by the New Mexico Agric. Exp. Stn.

[1] Registered by the Crop Science Society of America. Accepted 23 Sept. 1977.

[2] Professor, associate professor, research specialist, associate professor, associate professor and professor emeritus, respectively, Dep. of Agronomy, New Mexico State Univ., Las Cruces, NM 88003.

[3] Cotton, J. R. 1965. Breeding cotton for tolerance to Vertillium wilt. USDA-ARS 34-80. 18 p.

[4] Davis, D. D., N. R. Malm, G. Staten, R. L. Wood, and G. N. Stroman. 1978. Registration of 'Acala 1517C' cotton. Crop Sci. 18:163.

[5] Staten, G. 1971. Breeding Acala 1517 cottons, 1926 to 1970. New Mexico State Univ. College of Agric. Home Econ. Mem. Ser. No. 4. 48 p.

REGISTRATION OF ACALA 1517-70 COTTON[1]

(Reg. No. 66)

D. D. Davis, N. R. Malm, C. R. Roberts, C. F. Chew, C. E. Barnes, G. Staten, and R. L. Wood[2]

'ACALA 1517-70' cotton (*Gossypium hirsutum* L.) is the result of many years of crossing and selecting with the objectives of combining high yield and fiber quality with practical levels of resistance to the two major diseases of cotton in New Mexico.

The cross from which Acala 1517-70 was developed was made in 1961. The final plant and row selections were made in 1964-65. The bulked progeny was tested for 4 years under the experimental designation, B4364, and released in 1970. Included in the ancestry of Acala 1517-70 are the cultivars 'Hopicala' and 'Acala 49' and experimental strain 9136 which was derived through the introgression of *G. barbadense* 'Tanguis' into Acala 1517 types. Also included in the pedigree is 'Hartsville', an American southeastern type of obscure origin[3]. All four parents may have contributed to the high level of field resistance to *Verticillium albo-atrum* Reinke and Berth, that is characteristic of Acala 1517-70. The resistance to races 1 and 2 of *Xanthomonas malvacearum* (E. F. Smith) Dows. was derived from the Acala 9136 parent. Acala 1517-70 was the first wilt and blight-resistant cultivar to outyield, under disease-free conditions, the susceptible cultivars that it replaced.

Acala 1517-70 deviates in several particulars from the original Acala 1517 type as described[4] for 'Acala 1517C'. When grown in New Mexico, the plants are about 8% shorter than Acala 1517C and wider in profile. The leaves are generally slightly smaller and more numerous. Vegetative (monopodial) branches are more numerous but individually smaller than those produced by Acala 1517C. Bolls of Acala 1517-70 are more narrowly ovate and average only 7 g of seed cotton as compared to 7.5 g for Acala 1517C.

Seeds are quite fuzzy and medium-large, and the lint percentage averages 37 for hand-picked samples as compared to 36 for Acala 1517C.

Acala 1517-70 is slow in coming into bloom, but fruits very rapidly in mid-season and is medium in maturity for an Acala type. Acala 1517-70 does not yield as well as Acala 1517C when planted in the hot valleys of Arizona and California but is more tolerant of marginally cool conditions and in some seasons has performed very well on the Southern High Plains of Texas. Probably owing to tolerance of low temperatures, Acala 1517-70 matures bolls well into the autumn months and averages about 0.2 to 0.3 higher in micronaire than Acala 1517C.

Acala 1517-70 produces premium quality fiber averaging 30.5 mm in 2.5 span length, generally classing as 1-1/8 in. staple. Fiber elongation is lower than for other Acala types, but the tensile strength is excellent, averaging about 220 m N/Tex as measured on the stelometer when grown in New Mexico.

Breeder seed will be maintained by the New Mexico Agric. Exp. Stn.

[1] Registered by the Crop Science Society of America. Accepted 23 Sept. 1977.

[2] Associate professor, professor, research specialist, USDA-ARS plant pathologist (retired), associate professor, professor emeritus, and associate professor, respectively, Dep. of Agronomy, New Mexico State Univ., Las Cruces, NM 88003.

[3] Staten, G. 1971. Breeding Acala 1517 cottons, 1926-1970. New Mexico State Univ. College of Agric. and Home Econ. Mem. Ser. No. 4. 48 p.

[4] Davis, D. D., N. R. Malm, G. Staten, R. L. Wood, and G. N. Stroman. 1978. Registration of 'Acala 1517C' cotton. Crop Sci. 18:163.

REGISTRATION OF ACALA 1517-75 UPLAND COTTON[1]

(Reg. No. 67)

N. R. Malm, D. D. Davis, C. R. Roberts, C. E. Barnes, R. L. Wood, and Glen Staten[2]

'ACALA 1517-75' cotton (*Gossypium hirsutum* L.) was developed from a cross of two experimental strains, 'Acala 688' and 'Acala 9608', made in 1966 at New Mexico State Univ. Acala 688 was a strain from the 'Acala 1517V' family. Acala 9608 was derived by many years of selecting in open pollinated populations from a cross of 'Deltapine 14' × K3131. K3131 was an African introduction. The cultivar was tested as Acala 4111 after having been grown plant to row and selected for five generations. It was bulked in 1970, tested for 4 years and released as Acala 1517-75 by New Mexico State Univ. in 1975.

Acala 1517-75 averages about 15 cm shorter in height than Acala 1517V[3]. This cultivar is earlier fruiting, generally earlier in maturity, and less subject to rank growth than Acala 1517V.

Acala 1517-75 is resistant to *Verticillium albo-atrum* Reinke and Berth, but is susceptible to *Xanthomonas malvacearum* (E. F. Smith) Dows. It is moderately resistant to *Fusarium* wilt. The cultivar has produced high yields on both wilt-free and wilt-infested soils. In 17 tests over 3 years from 1972 to 1974, Acala

[1] Registered by the Crop Science Society of America. Accepted 23 Sept. 1977.

[2] Professor, associate professor, research specialist, associate professor, associate professor, and professor emeritus, respectively. Dep. of Agronomy, New Mexico State Univ., Las Cruces, NM 88003.

[3] Malm, N. R., D. D. Davis, C. R. Roberts, C. E. Barnes, R. L. Wood, and G. Staten. 1978. Registration of Acala 1517V upland cotton. Crop Sci. 18:163-164.

1517-75 averaged 1054 kg lint/ha, which was 105 and 111% of Acala 1517V and 'Acala 1517-70', respectively.

Boll size (6.6 g seed cotton) is smaller than that of Acala 1517V (7.1 g). Seed index has averaged 13.1 g/100, compared to 13.5 g/100 for Acala 1517V. Lint percentage, 2.5% span, micronaire, tensile strength, and 22's yarn strength have averaged essentially the same as for Acala 1517V.

Acala 1517-75 has compact, ovate, well-shaped open bolls with the seed cotton firmly held in the burr which, combined with the plant type, makes it ideally suited for harvesting with the spindle picker.

Breeder seed will be maintained by the New Mexico Agric. Exp. Stn.

REGISTRATION OF ACALA 1517E-1 COTTON[1]

(Reg. No. 68)

D. D. Davis, N. R. Malm, C. R. Roberts, C. E. Barnes, and R. L. Wood[2]

'ACALA 1517E-1' was developed from a cross of 'Acala 3080' × 'Pee Dee 2165' made at New Mexico State Univ.[3]

The Acala 3080 parent originated from a cross of 'Acala 9136' × Acala 49 × Hartsville. Acala 49 and Hartsville were breeding lines with moderate resistance to *Verticillium* wilt. Acala 9136 came from a complex cross involving *G. barbadense* 'Tanguis' introgression into *G. hirsutum*, and carries genes for resistance to races 1 and 2 of *Xanthomonas malvacearum* (E. F. Smith) Dows[4]. Plant-to-row selection procedures resulted in strain B8040 which was bulked as an F_5 in 1971. After 4 years testing this strain was released as Acala 1517E-1 in 1976.

Plants of Acala 1517E-1 are pyramidical in shape, and the shortest statured of all Acala 1517 cultivars, growing about 80% as tall as 'Acala 1517C' under the same conditions.

Acala 1517E-1 is fully 1 week earlier in maturity than all other Acala 1517 types, with the single exception of Acala 1517-75 which matures about 3-4 days later than Acala 1517E-1. In short, cool seasons Acala 1517E-1 has outyielded the old standard types, but often falls below the standard types in long hot seasons, especially on poor soils. Owing to early bloom and short stature, Acala 1517E-1 is not as likely to become rank or vegetative when grown on highly fertile soils.

Acala 1517E-1 is moderately resistant to damage from *Verticillium albo-atrum* Reinke and Berth, and resistant to races 1 and 2 of bacterial blight *Xanthomonas malvacearum* (E. F. Smith) Dows. The cultivar is only mildly tolerant to *Fusarium* wilt.

Bolls of Acala 1517E-1 are ovate, usually 4-locked, averaging about 6.6 g of seed cotton. Seed index ranges near 13 g/100, and lint percentage of hand-picked bolls is from 36 to 39%.

Acala 1517E-1 has slightly shorter fiber than other Acala 1517 types, with an average 2.5% span of 30 mm as measured on the digital fibrograph. Fiber strength and elongation are very similar to other Acala 1517 cultivars but fiber uniformity and particularly micronaire are higher. Micronaire generally runs about 0.4 units higher than other Acala 1517 types grown under similar cultural conditions. The genetic potential for uniform, high micronaire fiber is an advantage under cultural conditions that tend to delay maturity of the fiber, such as excess soil fertility or water and/or short cool seasons.

Breeder seed will be maintained by the New Mexico Agric. Exp. Stn.

[1] Registered by the Crop Science Society of America. Accepted 23 Sept. 1977.

[2] Associate professor, professor, research specialist, associate professor, and associate Professor, respectively, Dep. of Agronomy, New Mexico State Univ., Las Cruces, NM 88003.

[3] Culp, T. W., and D. C. Harrell. 1974. Breeding quality cotton at the Pee Dee Experiment Station, Florence, South Carolina. ARS-5-30. 12 p.

[4] Staten, G. 1971. Breeding Acala 1517 Cottons, 1926 to 1970. New Mexico State Univ. College of Agric. and Home Econ. Mem. Ser. No. 4. 48 p.

REGISTRATION OF THEIS SWEET SORGHUM[1]

(Reg. No. 117)

Dempsey M. Broadhead, K. C. Freeman, O. H. Coleman, and Natale Zummo[2]

'THEIS' is a sirup-type sweet sorghum, *Sorghum bicolor* (L.) Moench, developed at the U. S. Sugar Crops Field Station, Meridian, Miss., in the cooperative research program of the ARS-USDA and the agricultural experiment stations of Alabama, Florida, Georgia, and Mississippi.

Theis was selected from the progeny of a cross between 'Wiley' × 'C.P. Special' and PI 152965 (MN 1054) × Mer. 51-2 ('White African') × PI 139466 (Mn 660). The cultivar was selected from the F_2 progeny in 1962 at Meridian, Miss., and was evaluated under the breeding number Mer. 67-10. Theis has an erect and semi-compact panicle. Pubescence on the black glumes is semi-deciduous except on the callus, where the hairs are somewhat longer and more persistent. The glumes have a sharp apex and cover about one-third of the caryopses. The glumes do not clasp the seed at maturity and are nonpersistent in the threshed seed. The large, brown, near-orbicular seeds are flatter on the dorsal side than on the ventral side. Theis has a soft, chalky seed coat and mostly corneous endosperm. The seed is free of a brown subcoat, and the lemma is awnless.

Theis matures in 120 to 140 days. It is similar to Wiley in height, but it is far superior to Wiley in lodging resistance. The stalks are practically free of the external waxy bloom common to most sweet sorghum varieties. Theis is highly resistant to leaf anthracnose and stalk red rot, both caused by *Colletotrichum graminicolum* (Ces.) G. W. Wils. It is tolerant to maize dwarf mosaic virus and moderately resistant to downy mildew, *Sclerospora sorghi*, Weston and Uppal. Theis is tolerant to most cotton insecticides; consequently. it is far superior to 'Brandes' in this respect.

Theis was released for sirup production in the southeastern USA in 1974. It produces sirup with a mild sorghum flavor, good color, and excellent quality. Information on sirup production of Theis has been published.[3]

Breeder seed will be maintained by the Foundation Seed Stocks Program, Mississippi State Univ., Mississippi State, MS 39762 and the U. S. Sugar Crops Field Station, Meridian, MS 39301.

[1] Registered by the Crop Science Society of America. Cooperative investigations of the ARS-USDA and the Agric. Exp. Stns. of Alabama, Florida, Georgia, and Mississippi. Accepted 23 Sept. 1977.

[2] Research agronomists, collaborator, and plant pathologist, U. S. Sugar Crops Field Station, ARS-USDA, Meridian, MS 39301.

[3] Broadhead, D. M., K. C. Freeman, O. H. Coleman and Natale Zummo, 1974. Theis, a new variety of sweet sorghum for sirup production. Mississippi Agric. Forestry Exp. Stn. Res. Highlights 37 (5):4.

REGISTRATION OF CABREE RUSSIAN WILDRYE[1]

(Reg. No. 45)

S. Smoliak[2]

'CABREE' Russian wildrye (*Elymus junceus* Fisch.) was developed at the Agriculture Canada Research Station, Lethbridge, Alberta. The cultivar was tested in the Prairie Provinces under the designation LRS 6757 before being released as Cabree. License number 1638 was granted by the Production and Marketing Branch, Agriculture Canada, in March 1976.

Cabree is a six-clone synthetic with resistance to seed shattering. The original selection of plants with excellent seed retention was made in 1955 at the Agriculture Canada Research Substation, Manyberries, Alberta, in a field seeded in 1952 with commercial seed of unknown origin. Subsequent selection of selfed plants was on the basis of good seed retention, forage yield, seed yield, and seedling vigor in replicated clonal and polycross progeny tests. The synthetic was evaluated in 32 tests at 7 locations for forage production and in 26 tests at 6 locations