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Registration of Crop Cultivars

REGISTRATION OF TOUCHDOWN KENTUCKY BLUEGRASS[1]

(Reg. No. 14)

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'TOUCHDOWN' Kentucky bluegrass (*Poa pratensis* L.) was developed by the National Golf Links of America in cooperation with the U.S. Golf Association Green Section, the New Jersey Agric. Exp. Stn., and Pickseed West, Inc. Its experimental designation was NJE P-143. The first certified seed was harvested in 1974.

Touchdown was selected from the ninth fairway of the National Golf Links of America, Southhampton, N. Y. An attractive, vigorous, moderately dark green patch of grass approximately 9 m in diam. was observed to give outstanding performance over a period of years under close-cut fairway maintenance. Examination of the site indicated that Touthdown most likely originated as a single plant which persisted and spread to its present size. Field-grown, spaced-plant seed progenies were very uniform with over 90% of the plants being indistinguishable from their maternal parent. This indicates a high level of apomictic reproduction.

Touchdown is a moderately low-growing, turf-type cultivar with a bright, moderately dark green color, good density and medium texture. Under New Jersey conditions, Touchdown has produced an attractive, aggressive, persistent turf of good density and vigor under medium levels of turf maintenance. The cultivar has demonstrated good resistance to leaf spot and crown rot disease caused by *Helminthosporium vagans* Drechsler, the stripe smut disease caused by *Ustilago striiformis* (Westend.) Niessl, and the leaf rust disease caused by *Puccinia poaenemoralis* Otth. It has shown moderate to good resistance to many races of powdery mildew caused by *Erysiphe graminis* Pers. It has been susceptible to stem rust caused by *Puccinia graminis* Pers.

Touchdown appears well suited for lawns, parks, and sports turf in most regions where Kentucky bluegrass is well adapted. It appears to be compatible and highly useful in blends with most other Kentucky bluegrass cultivars and in mixtures with fine fescues and improved, turf-type perennial ryegrasses.

Seed propagation is limited to two generations of increase from breeder seed, one each of foundation and certified. Breeder seed is produced in spaced-plant nurseries under the direction of the New Jersey Agric. Exp. Stn.

A U.S. certificate of plant variety protection number 7400066 has been issued for Touchdown. The cultivar has been assigned licence No. 1593 in Canada.

[1] Registered by the Crop Science Society of America. Paper of the journal series, New Jersey Agric. Exp. Stn., Cook College, Rutgers - The State Univ. of New Jersey, New Brunswick, NJ 08903. Accepted 20 Oct. 1977.

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REGISTRATION OF ACALA 1517C COTTON[1]

(Reg. No. 64)

D. D. Davis, N. R. Malm, Glen Staten, R. L. Wood, and G. N. Stroman[2]

'ACALA 1517C' is the cultivar designation given to three separate strains of cotton (*Gossypium hirsutum* L.) of similar parentage and plant type. It has been widely grown throughout the world and may be considered as the basic type for 'Acala 1517' cultivars. The original cross was made in 1935 at New Mexico State Univ. The pedigree record was lost by fire, but the parents are believed to be of the same general family[3] as the original Acala 1517 which was released in 1938. Pedigree line selection was practiced through 1947 when line 7133 was bulked, tested for 4 years and released as the original Acala 1517C in 1951. Selection was continued in this same material resulting in strain 8893, which replaced the original in 1954.

Further selections were made within the variety cultivar in 1954. After 3 years of testing, strain 1028 was released as the final refinement of the cultivar in 1958.

A moderate increase in resistance to *Verticillium* wilt was the main reason for the release of the newer strains. In parts of the world each of these strains may still subsist, depending on the original seed source and method of propagation.

When grown in its area of adaptation, Acala 1517C is medium to medium-late in maturity. It is one of the tallest commercial cultivars grown in the USA, generally ranging from 1 to 1.25 m in height. At spacings normally used in commercial production, the fruiting branches are of medium length, and there is no strong tendency for vegetative branches to develop. The bolls usually have five locks, are very broad, ovate, and pointed when green, and average 7.5 g of seed cotton when mature. Acala 1517C is considered mildly resistant to *Verticillium albo-atrum* Reinke and Berth, but is fully susceptible to races 1 and 2 of *Xanthomonas malvacearum* (E. F. Smith) Dows.

Seed of Acala 1517C are medium-large and the cultivar has excellent seedling vigor.

The fiber is generally in the 1-1/8 in. to 1-5/32 in. American staple length classes, with high strength for an upland cotton. Averages of hand-picked field samples show it to have a 2.5% span length of 31 mm, with a bundle strength of 211 N m/Tex and an average micronaire of 3.7. The tensile strength of Acala 1517 types is lowest, when grown in its original center of adaptation (New Mexico) and is often significantly higher when grown in hotter (Arizona and California) or cooler (Texas High Plains) locations.

Acala 1517C adapts primarily to the drier irrigated areas where the minimum night temperatures for the blooming period are 17 to 23 C. Optimal maximum temperature is around 35 C, although occasional days of 40 C are tolerated fairly well. Acala 1517C probably has the highest level of tolerance to high temperatures that is to be found in the Acala 1517 series of cultivars.

Small quantities of 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, professor emeritus, associate professor, and professor emeritus, Dep. of Agronomy, New Mexico State Univ., Las Cruces, NM 88003.

[3] 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 1517V UPLAND COTTON[1]

(Reg. No. 65)

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

'ACALA 1517V' cotton (*Gossypium hirsutum* L.) was developed by the cooperative work of New Mexico State Univ. and ARS-USDA. The cultivar was the outgrowth of a 15-year effort to produce a high-yielding, wilt-resistant cotton neither excessively leafy nor late in maturity. This cultivar resulted from a cross made in 1956 of 'Acala 2503' × 'Coquette'. Acala 2503 came from a cross of two experimental Acala strains, one of which

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.

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[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.

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[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

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[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.