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'Hull Thornless' Blackberry[1]

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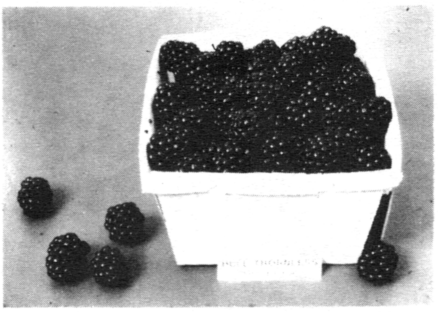

Fig. 2. A representative quart of 'Hull Thornless' blackberry taken from the 6th harvest of a young plant (hence slightly smaller than normal) — Beltsville, 1981.

'Hull Thornless' (*Rubus* sp., is a vigorous and productive thornless blackberry cultivar with firm, sweet, fruit. It is named for the late John W. (Jack) Hull, formerly of the University of Maryland, the University of Arkansas, and the U.S. Department of Agriculture, who spent most of his life breeding blackberries and raspberries. 'Hull Thornless' is the fifth in a series of tetraploid, genetically thornless blackberry hybrids developed by the USDA and cooperating agencies (4). It is adapted principally to USDA Plant Hardiness Zones 6–8.

Origin

'Hull Thornless', tested as SIUS 68-6-6, originated from a cross made in 1968 by Jack Hull of SIUS 47 x by 'Thornfree' (Fig. 1) and selected by him in 1972 at Carbondale, Illinois. This cross was a repeat of an earlier cross which yielded the promising selections SIUS 64-21-8 ('Dirksen Thornless') and SIUS 64-21-11 ('Black Satin'). Since being selected, 'Hull Thornless' has been tested principally in Maryland and Ohio.

Description and performance

'Hull Thornless' plants are multistemmed with biennial thornless, vigorous canes. They are essentially crown-forming, and semi-erect after the first year in the field. 'Hull Thornless' is winter-hardy south of a line from Urbana, Ill., to central Ohio, to western Maryland, southern Pennsylvania and northern New Jersey (Zone 6 on the USDA Plant Hardiness Zone Map.) In a greenhouse forcing trial at Beltsville, 'Hull Thornless' needed 750 consecutive hours under 7.2°C to satisfy its chilling requirement. Under conditions of high fertility and good moisture, plants should be set a 1.8 to 3 m apart and trained onto a 2- or 3-wire trellis. Mature cane bases can be 5 cm in diameter, are self-supporting, and can grow to 4–5 m in a year. Canes are usually topped at 2 meters and lateral shoots are forced for fruiting the following year. 'Hull Thornless' is similar to 'Black Satin' in yield and fruit size (Table 1).

The thornless blackberries yield very well at an early age (third year) and the yield rankings of the several cultivars at the same age do not vary appreciably with soil difference (compare trial 1 and trail 2 at age 3 years). 'Hull Thornless' and 'Black Satin' are usually the heaviest yielding and the largest fruited of the 5 thornless cultivars, ranging from 8 to 3 g/berry over the harvest season.

'Hull Thornless', on a heavy soil at Beltsville, bloomed 8–9 days later than 'Dirksen Thornless' and 'Black Satin', but it ripened between 'Dirksen Thornless' and 'Black Satin'. On a light soil, 'Hull Thornless' ripened ahead of 'Dirksen Thornless' and 'Black Satin'. Fully ripe fruit of 'Hull Thornless' is firmer, sweeter, colors better and is tougher than 'Black Satin'. 'Hull Thornless' fruit, like that of the other named cultivars, makes a superior jelly or baked product.

The superior yielding ability of 'Hull Thornless' appears to result from a combination of high number of berries/fruiting lateral and large fruit size, whereas that of 'Black Satin' is attributed to many fruiting laterals/cane and large fruit size. 'Hull Thornless' and 'Black Satin' do not differ in number or length of bearing canes per plant. The high vigor of 'Hull Thornless' and 'Black Satin' contributes to continued productivity with increasing plant age. 'Dirksen Thornless', which has lower plant vigor, shows declining yield with advancing plant age. 'Hull Thornless' plants can be well propagated by tip layering, by rooting of 1-node softwood stem cuttings (6), or by micropropagation techniques (2).

Outstanding characteristics and potential use

Plants of 'Hull Thornless' are vigorous and consistently productive; the berries (Fig. 2)

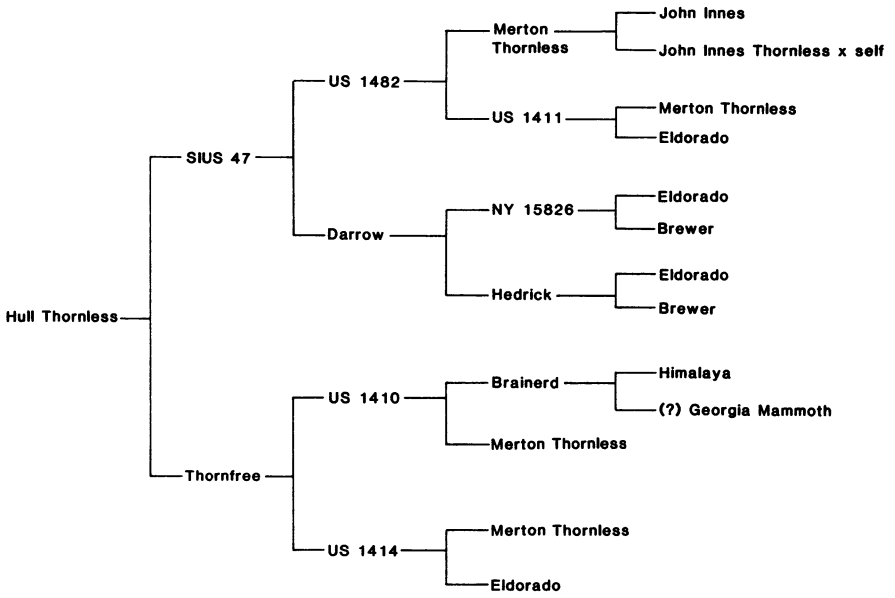

Fig. 1. Pedigree of 'Hull Thornless' Blackberry. 'Hull Thornless' is a tetraploid species hybrid tracing back in its ancestry to at least 3 wild European and 3 wild American species: John Innes = *Rubus ulmifolius inermis* (or *R. rusticanus inermis* Willd.) x *R. thrysinger* Banning and Focke (1); 'Eldorado' = chance seedling (Ohio), *R. allegheniensis* Porter (5) or *R. allegheniensis* x *R. argutus* Link. (3); 'Brewer' = chance seedling (New Jersey) *R. pergratus* Blanch. x *R. frondosus* Bigel. (5), 'Himalaya' (= 'Theodor Reimers') *R. procerus* P. J. Meull. (3, 5), 'Georgia Mammoth' = chance seedling (Georgia), Eastern U.S. erect blackberry (3, 5). European scientists think that *R. rusticanus* is the more proper name for the species which M. B. Crane hybridized with *R. thrysinger* to secure the seedling named 'John Innes'. Thus the recessive gene for thornlessness, "*s*", (spineless) from *R. rusticanus* var *inermis* is the ultimate source of the thornless character in 'Hull Thornless', 'Black Satin', 'Dirksen Thornless', 'Thornfree' and 'Smoothstem'.

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Table 1. Mean yields and fruit sizes of 'Hull Thornless' and other thornless blackberry cultivars at Beltsville for 4 years.

Cultivar	Year	Plant age (years)	Yield (MT/ha)	Fruit size (g/berry)
Trial 1 (heavy, fertile soil)				
Hull Thornless	1976	3	22.0 ab[z]	5.7 a[z]
Black Satin	"		25.7 a	5.3 b
Dirksen Thornless	"		19.3 bc	4.6 c
Thornfree	"		16.3 cd	3.9 d
Smoothstem	"		20.1 bc	3.3 e
Hull Thornless	1977	4	13.9 a	4.4 b
Black Satin	"		13.9 a	5.1 a
Hull Thornless	1980	7	14.6 abc	6.5 a
Black Satin	"		20.1 a	6.3 a
Dirksen Thornless	"		10.3 c	4.9 bc
Thornfree	"		19.1 ab	4.6 bc
Smoothstem	"		17.4 ab	4.3 c
Hull Thornless	1981	8	20.1 a	5.8 a
Black Satin	"		18.9 a	5.0 ab
Dirksen Thornless	"		12.2 b	4.1 b
Thornfree	"		17.0 ab	4.2 b
Smoothstem	"		13.2 b	4.1 b
Trial 2 (light, infertile soil, stress year)				
Hull Thornless	1981	3	5.8 ab	3.6 b
Black Satin	"		6.8 a	4.0 a
Dirksen Thornless	"		4.3 bc	3.7 b
Thornfree	"		3.5 c	2.9 c
Smoothstem	"		4.6 bc	2.9 c

[z]Means in columns within years separated by Duncan's multiple range test, 5%.

are large, firm, and have good flavor and keeping quality. 'Hull Thornless' is recommended for pick-your-own, local market, and home garden plantings. With a modified training system it should be suitable for mechanical harvesting. The fully ripe berries are very good for fresh consumption, jams, jellies, baked goods, and juice. 'Hull Thornless' is recommended as an alternative to 'Black Satin' in hardiness zones 6–8. Culture has been partially successful in zones 5 and 9.

Availability

Plants of 'Hull Thornless' will be available to nurserymen for propagation in the spring of 1982 and should be available to growers in 1983. No plants are available from the Illinois Agricultural Experiment Station, the Ohio Agricultural Research & Development Center, or the USDA.

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'Explorer' Plum[1]

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Additional index words. Prunus salicina, Prunus americana, Prunus simonii, fruit breeding, bacterial leafspot, *Xanthomonas pruni*

'Explorer' plum (complex hybrid with reciprocal representations of *Prunus salicina* Lindl., *P. americana* Marsh., and *P. simonii* Carr.) was released by the Agricultural Research Service, U.S. Department of Agriculture to provide a large, July-maturing, amber-fleshed purple plum adapted to Japanese-type plum-growing areas of the southeastern United States.

Origin

'Explorer' resulted from the orchard cross, 'Queen Ann' x 'Santa Rosa', near Fresno, California in 1963. The seedling was grown at the Southeastern Fruit and Tree Nut Research Laboratory at Byron, Georgia. It was selected in 1967. It has been evaluated at Byron and 5 other southeastern locations.

Description

Trees of 'Explorer' bear in the 3rd year and are productive in subsequent years. Tree vigor is moderate. Young trees are semi-upright and vase-shaped; older trees have a more spreading shape.

Although flowers of 'Explorer' produce moderate quantities of pollen that is functional and viable on flowers of other diploid plums, they are self-unfruitful and must be provided with pollenizers in the orchard.

Fruits of 'Explorer' from selectively thinned trees are nearly round, with diameters up to 53 mm. The external color is a deep and lively purplish black overlain by a heavy waxy bloom. The flesh color is deep amber. All aspects of fruit quality are rated excellent except that seeds are semi-clingstone.

Both leaves and fruits of 'Explorer' have shown good resistance to bacterial leafspot, *Xanthomonas pruni* (E. F. Sm.) Dows., especially the branch canker phase. Our trees are currently indexed free of necrotic ringspot and prune dwarf viruses.

Availability

Budwood has been distributed to interested nurserymen and is also available in limited amounts upon application to the Southeastern Fruit and Tree Nut Research Laboratory, Byron, GA 31008.

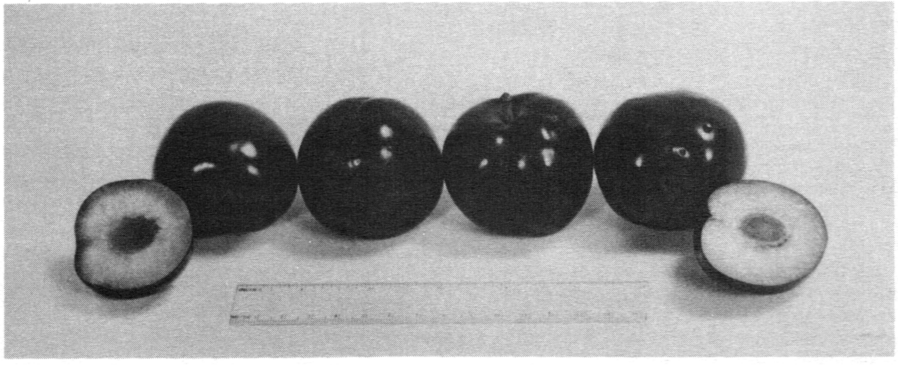

Fig. 1. 'Explorer' plum

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