

Three hybrid sugarbeet varieties adapted to early plantings have been released for use by sugarbeet growers. One variety, designated US H6, is multigerm; and two varieties, designated US H7 and US H8, are monogerm. All three varieties were developed at the USDA Alisal Branch, Agricultural Research Service, Salinas, in cooperation with the Beet Sugar Development Foundation and the University of California. The new varieties have been thoroughly field tested by the U. S. Department of Agriculture and the California sugar companies in the major sugarbeet producing areas of the State. In these tests the hybrid varieties produced from 10 to 20% more sugar per acre than open-pollinated varieties such as US 75, a variety used extensively in California five to ten years ago. The root yield and sucrose percentage of the three hybrid varieties are similar. The growers' choice of a variety would be determined by his requirements for curly-top and bolting resistance, and by his need for a monogerm variety suited to mechanical thinning.

J. S. MC FARLANE • I. O. SKOYEN

The US H7 monogerm sugarbeet variety planted to a stand (6 inch spacing) near Salinas and hand hoed only one time.



Three New Hybrid Sugarbeet Varieties for Early Planting

US H6

US H6 has the parentage (MS of NB1 × NB5) × C663. The seed-bearing parent is an F₁ hybrid between the male-sterile equivalent of the NB1 inbred and the NB5 inbred. The NB1 inbred is an increase of an S₅ line resistant to bolting and curly top. The male-sterile equivalent of NB1 has been produced by crossing NB1 with a cytoplasmic male-sterile plant found in US 56, followed by repeated backcrosses to NB1. The NB5 inbred is

an S₅ line developed from a cross between a US 56 selection and a segregate from NB1. The F₁ hybrid MS of NB1 × NB5 has good vigor, and all plants are male sterile. It has performed well as a seed-bearing parent in the production of hybrid varieties. The pollen parent C663 was obtained from a cross between US 15 and US 22. Selections for curly-top resistance, bolting resistance, and high sucrose percentage were made in the F₂ and F₃ generations.

The bolting resistance of US H6 is adequate to meet the requirements for early plantings in most sugarbeet-growing districts of the State. The curly-top resistance of the variety is similar to that of US H2 and superior to that of US 75. In 74 statewide variety tests, US H6 produced an average of 17% more sugar per acre than US 75, and the sucrose content was one-half percentage point higher. The variety is recommended for both winter and spring plantings in

The US H7 monogerm sugarbeet variety planted to a stand (6 inch spacing near Salinas and hand hoed only one time.



US H8

US H8 has the parentage (MS of 562 × 569) × NB7. The seed-bearing parent is the same as for US H7. The pollen parent NB7 is the increase of an S₄ multigermline inbred from a cross between US 56 and NB1. NB7 combines very good curly-top resistance with good bolting resistance.

The bolting resistance of US H8 varies with the environment. In the Central Valley, US H8 has shown the best resistance of any of the US varieties. In the coastal valleys, where cool conditions often persist throughout the growing season, US H8 has shown less bolting resistance than US H6. The curly-top resistance of US H8 is equal to, or slightly superior to, that of US H2 and US H6, according to these tests.

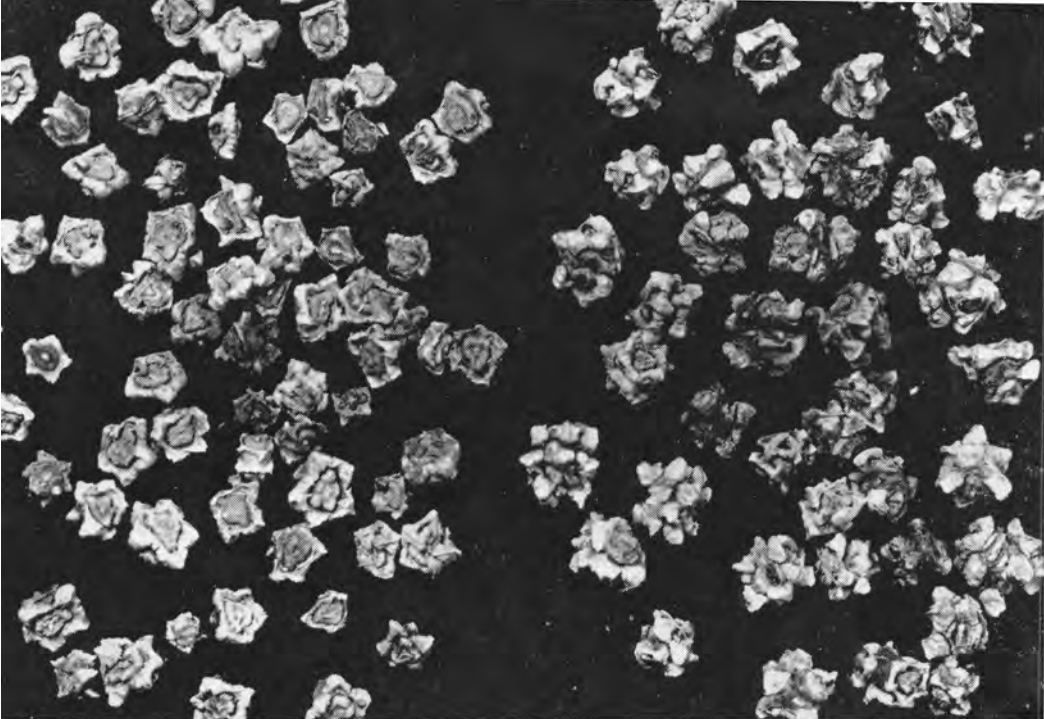
US H8 is recommended for winter and spring plantings in the Central Valley. The variety may also be used for all dates of planting in the Imperial Valley. US H7 is recommended in preference to US H8 as a monogerm variety for the coastal valleys.

The male-sterile parents MS of NB1 × NB5 and MS of 562 × 569 have also been made available to the sugar company breeders for use as seed-bearing parents in conjunction with company-developed pollinators. Commercial seed of the three US hybrids, and of company-developed varieties utilizing these male-sterile parents, has been produced and may be obtained from the sugar companies.

J. S. McFarlane is Research Geneticist in the Crops Research Division, Agricultural Research Service, U. S. Department of Agriculture, Salinas, California; and Associate in Agronomy, University of California, Davis. I. O. Skoyen is Research Agronomist in the Crops Research Division, Agricultural Research Service, U. S. Department of Agriculture, Salinas, California.

USDA HYBRID SUGARBEET VARIETIES

Variety	Seed characteristic	Parentage	Curly-top resistance	Areas of special adaptation and planting dates
US H2	Multigermline	(MS NB1 × NB3) × C663	Good	Imperial: After Sept. 15 Central Valley: After Jan. 1
US H5	Multigermline	(MS NB1 × NB4) × C663	Fair	Coast: After Dec. 15
US H6	Multigermline	(MS NB1 × NB5) × C663	Good	Imperial: All dates Central Valley: After Jan. 1 Coast: After Dec. 15
US H7	Monogerm	(MS 562 × 569) × C663	Moderate	Imperial: All dates Coast: After Dec. 15
US H8	Monogerm	(MS 562 × 569) × NB7	Good	Imperial: All dates Central Valley: After Dec. 1



Seed of US H7 monogerm sugarbeet variety on left and US H6 multigermline variety on right. Monogerm seed gives rise to only one plant per seed ball whereas multigermline seed produces two or more plants per seed ball. The use of monogerm seed facilitates mechanical thinning.

the coastal valleys and may be used on all dates of planting in the Imperial Valley. In the Central Valley, US H6 may be planted after January 1.

US H7

US H7 has the parentage (MS of 562 × 569) × C663. The seed-bearing parent is an F₁ hybrid between the male-sterile equivalent of the monogerm 562 inbred and the 569 inbred. The 562 inbred is an increase of an S₂ monogerm line selected from a cross between the NB1 multigermline inbred and a bolting-resistant monogerm line. This inbred combines resistance to bolting and curly top. The male-sterile equivalent of 562 has been produced by crossing 562 to the male-

sterile equivalent of NB1 and then backcrossing to 562. The 569 inbred is the increase of an S₃ monogerm line and possesses moderate resistance to bolting and curly top. The F₁ hybrid MS of 562 × 569 has good vigor, curly-top resistance, bolting resistance, and male sterility. It has performed well as a seed-bearing parent in the production of hybrid varieties. The pollen parent is the same as for US H6.

The bolting resistance of US H7 is similar to that of the multigermline US H6 variety. The curly-top resistance of US H7 is a little inferior to that of US H6 and losses will occur when the variety is exposed to the more virulent strains of the virus. US H7 is recommended for both winter and spring plantings in the coastal valleys and may be used in all dates of planting in the Imperial Valley. The variety may also be used in those portions of the Central Valley not subject to severe curly top.

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William W. Paul *Manager*
Agricultural Publications
Jerry Lester *Editor*
California Agriculture

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