REGISTRATION OF 'LIBERTY' HOP

'LIBERTY', a new female American noble-aroma hop (Humulus lupulus L.) cultivar (Reg. no. CV-18, PI 558869), was released for commercial production in Oregon, Washington, and Idaho in June 1991, following 5 yr of large-scale agronomic and brewing evaluations. The major advantages of Liberty are medium-early maturity, aroma and quality profile similar to Hallertauer mittelfrüh, and good yield potential.

Liberty originated as seedling selection no. 8303-117 of cross no. 8303 made in 1983 at Corvallis, OR, between the colchicine-induced tetraploid female cultivar Hallertauer mittelfrüh (USDA accession no. 21397) and the downy mildew resistant male genotype 64035M (1). The permanent USDA accession no. 21457 was assigned to the selection in 1985, and Liberty has since been tested under this number.

Liberty is early in maturity (25-30 August in western Oregon). It is adapted to the major hop-growing areas of Oregon and Washington, but has performed below expectations in southern Idaho, due in part to soil problems at the experimental site. Because of its triploid (2n = 3x = 30) chromosome complement, Liberty produces few seeds even if grown in the presence of fertile diploid males. Quality and aroma characteristics are similar to those of the female parent, Hallertauer mittelfrüh. Liberty’s genetic composition is 4/6 Hallertauer mittelfrüh, 1/6 unidentified German aroma hop, and 1/6 unknown.

Liberty has been tested in nursery plots near Corvallis since 1984 and in 1.2-ha commercial plots in the major hop-growing areas of Oregon, Washington, and Idaho since 1986. In commercial tests, Liberty averaged 1980 kg ha⁻¹ in Oregon, 1132 kg ha⁻¹ in Washington, and 809 kg ha⁻¹ in Idaho. Except for Idaho, these yields compare favorably with those of 'Willamette', the most widely grown aroma hop in these areas. Alpha- and beta-acids content averaged 4.2 and 3.4%, respectively, in Oregon, 3.3 and 3.3%, respectively, in Washington, and 2.9 and 3.1%, respectively, in Idaho. Cohumulone content ranged from 24 to 28%, slightly higher than that of the female parent.

The essential oil content of freshly dried cone samples of Liberty by steam distillation (2) ranged from 0.6 to 1.2 mL 100 g⁻¹, similar to that of Hallertauer mittelfrüh. The major hydrocarbons of the essential oil (myrcene, 37.4%; humulene, 37.4%; and caryophyllene, 10.7%) accounted for >85% of the total oil. Farnesene was either absent or present in only trace amounts. The ratio of humulene to caryophyllene averaged 3.49 during the 3-yr test period, comparable to that of Hallertauer mittelfrüh.

Liberty has a columnar growth habit with a characteristic head formation and sidearms ~60 to 90 cm long. Most of the cones are found in the upper half of the plant; however, this has not caused any problems with machine harvest. Cone characteristics and aroma potential were judged to be comparable to imported European aroma hops.

Liberty is moderately resistant to hop downy mildew [(incited by Pseudoperonospora humuli (Miya be & Takah.) G.W. Wils.]). Little is known about Liberty’s reaction to verticillium wilt (incited by various Verticillum species). During 5 yr of testing in both nursery plots and commercial yield trials in Oregon, Washington, and Idaho no verticillium wilt symptoms were observed. Except for a slight infection by hop mosaic, Liberty plants in Oregon test plots have remained free of major hop viruses over the past 5 yr. Liberty’s major advantage is its high yield potential while otherwise similar to imported European aroma hops, which produce low yields under U.S. conditions. Except for its slightly higher cohumulone content, Liberty’s quality profile resembles that of Hallertauer mittelfrüh, a well-known German noble-aroma hop that has almost disappeared in recent years because of low yields and disease problems. Virus-free clones of Liberty will be maintained by the USDA-ARS, in the Hop Cultivar World Collection at Oregon State University and at the USDA National Clonal Germplasm Repository, Corvallis, OR.

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References and Notes

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REGISTRATION OF 'AU ROBIN' CRIMSON CLOVER

'AU ROBIN' CRIMSON CLOVER (Trifolium incarnatum L.) (Reg. no. CV-6, PI 558502) was developed for use in no-till, double-cropping systems and was released by the Alabama Agricultural Experiment Station, Auburn University. It was tested under the experimental designation AU 22-2 and released in August, 1991 as AU Robin.

AU Robin is an early-maturing selection from 'Dixie', from two cycles of modified mass selection. In 1983, 37 early flowering plants were selected from a reseeding field of Dixie established at Shorter, AL, in 1981. Open-pollinated seed of each plant was germinated in the greenhouse and transplanted into maternal line rows, 10 plants per row, at the Auburn University Plant Breeding Unit, Talladega, AL, in the autumn of 1983. In the spring of 1984, eight rows exhibiting early flowering were selected and open-pollinated seed was harvested from up to five of the earliest flowering plants in the selected rows. Seed from each selected plant constituted a line, and was planted in replicated rows for preliminary evaluation at the Auburn University Plant Breeding Unit in the autumn of 1984. In the spring of 1985, eight lines were selected for seed increase and further testing based on bloom date, dry matter yield, and N yield. After 2 yr of testing in Alabama and Florida, AU Robin was deemed the best of these lines and was tested against established cultivars from 1988 to 1990. Breeder seed is from a fourth-generation increase of the single-plant selections made in 1984.

AU Robin reaches full bloom 7 to 10 d earlier than 'Tibbee', the earliest-maturing crimson clover cultivar previously available (1). Total seasonal dry matter yield is equivalent to the total seasonal yield of Tibbee. In 17 forage yield trials conducted over a period of 5 yr in Alabama (13 trials), Florida (3 trials), and South Carolina (1 trial), the