REGISTRATION OF ‘NC 729’ TOBACCO

‘NC 729’ flue-cured tobacco (Nicotiana tabacum L.) (Reg. no. CV-102, PI 558512) was developed cooperatively by the USDA-ARS, Oxford, NC, and the North Carolina Agricultural Research Service and was released jointly in 1991. NC 729 was developed for its high resistance to bacterial wilt, caused by Pseudomonas solanacearum E.F. Smith, combined with good yield and quality characteristics.

NC 729 was developed from the cross ‘K326’/‘K399’ (1) using the pedigree breeding method with initial selection in the F2 generation. Selections were made in different years on separate black shank [caused by Phytophthora nicotianae Breda de Haan var. parasitica (Dastur) G.M. Waterhouse] and bacterial wilt field nurseries. Seeds were bulked beginning with the F5 generation. It was tested as breeding line NC 7029 USDA in the North Carolina Official Variety Test in 1988 (2), in the Flue-cured Tobacco Regional Small Plot Test in 1989 and 1990 (3), and in the Regional Farm Test in 1990 (3). It will be in the F10 generation when it becomes available to growers.

NC 729 exhibits some of the highest resistance to bacterial wilt among cultivars currently available. It has moderate resistance to black shank and is resistant to the common strain of Southern root-knot nematode, races 1 and 3, Meloidogyne incognita (Kofoid & White) Chitwood. Brown spot caused by Alternaria alternata (Fr.:Fr.) Keissl. and weather fleck caused by air pollutants have not been observed in this cultivar.

Days to flower for NC 729 is similar to ‘NC 95’, averaging 65 d after transplanting. NC 729 is normally topped at a height of 90 cm, and produces an average of 19 leaves. Leaves are of medium length and width. The yield of NC 729 averaged 3348 kg ha-1, vs. 2728 kg ha-1 for ‘NC 2326’ and 2888 kg ha-1 for NC 95 in the 1990 Regional Farm Test (3). The Regional Farm Test encompasses 13 farms across a five-state area. Price per pound and quality index were equal to or better than currently grown cultivars. NC 729 produces very few ground suckers and premature flowering was not observed.

Cured leaf of NC 729 is predominantly orange in color, medium to thin bodied, and smooth textured. NC 729 met all standards for chemical content, smoke flavor, filling value, and usability established under the Minimum Standards Program for Flue-cured Tobacco.

NC 729 should be widely adapted to the flue-cured tobacco growing region and will be of particular value in areas where bacterial wilt disease is a persistent problem. Breeder seed of NC 729 will be maintained at the USDA-ARS, Crops Research Laboratory, Oxford NC. Foundation seed will be distributed by the North Carolina Foundation Seed Producers, Raleigh, NC 27650.

REGISTRATION OF ‘C8’ AND ‘C9’, FLUE-CURED TOBACCO

‘C8’ (Reg. no. CV-103, PI 556976), and ‘C9’ (Reg. no. CV-104, PI 556977), two Connecticut broadleaf tobacco (Nicotiana tabacum L.) cultivars resistant to Fusarium oxysporum Schlechtend. (Fusarium oxysporum Schlechtend. : Fr.) (J. Johnson) W.C. Snyder & H.N. Hanson, were developed at the Connecticut Agricultural Experiment Station’s Valley Laboratory and released in 1991. These cultivars were developed for their resistance to Fusarium wilt allowing broadleaf tobacco production in fields heavily infested with F oxysporum. Yields and some agronomic characters were comparable to high-quality wilt-susceptible broadleaf. C8 resulted from a cross between ‘Sperry’ (a wilt-resistant broadleaf cultivar) and ‘Winn’ (a wilt-susceptible broadleaf line). C9 was developed from ‘Kupchunos’ broadleaf (3). C2 contains the same hypersensitive gene for tobacco mosaic virus (TMV) from N. glutinosa L. and incorporated into Kentucky NN.

L. and incorporated into Kentucky NN. ‘C8’ is resistant to fusarium wilt, but neither C2 nor Kupchunos are agronomically acceptable types. C2 contains the same hypersensitive gene for tobacco mosaic virus (TMV) from N. glutinosa L. and incorporated into Kentucky NN.

‘C8’ and ‘C9’ originated as single plants selected for wilt resistance as well as for agronomic characters. Wilt resistance was expressed in reduced wilt incidence in greenhouse-grown seedlings artificially infested with the fusarium wilt fungus. Percent wilt incidence in greenhouse-grown seedlings artificially infested with F oxysporum in the presence of wounded roots was 29.6% for C8, 27.8% for C9, and 66.7% for a wilt-susceptible genotype. Plants grown in the field had mean wilt incidences of 11.2% for ‘C8’, 15.6% for ‘C9’, and 50.2% for the wilt-susceptible genotype. Green leaf yields of plants in this field test was 117.1 kg ha-1 for wilt-susceptible tobacco. In the absence of wilt, yields of C8, C9, and wilt-susceptible cultivars were 628.5, 678.0, and 574.5 g cured leaf per plant, respectively.

Wilt-resistant plants were not immune: some wilt developed some symptoms, but the symptom expression was typically mild (2). Fusarium oxysporum, the cause of fusarium wilt, was found in the wilted plants.