REGISTRATION OF KS41, KS42, KS43, AND KS44 GREENBUG-RESISTANT GRAIN SORGHUM GERMPLASM1

(Reg. Nos. GP 2 to GP 5)

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Four grain sorghum [Sorghum bicolor (L.) Moench] germplasm lines, 'KS41' to 'KS44,' were released in 1972 by the Kansas Agricultural Experiment Station and the Plant Science Research Division, Agricultural Research Service, U. S. Department of Agriculture. KS41 to KS44 are phenotypically desirable grain types that are resistant to greenbugs, Schizaphis graminum (Ronlanni). They were selected in the F2 generation following the fourth backcross to grain sorghums (Table 1). The KS41 to KS44 lines were released before being evaluated agronomically to expedite developing greenbug-resistant commercial grain sorghums. They are combine height; seed size, head type, and maturity are similar to that of 'Combine Kafir-60' (CK-60) or 'Martin.' All four lines have sterile cytoplasts and may segregate to restore fertility. They should be most useful for developing R or fertility-restoring types, but also may be good greenbug-resistant sources for developing B lines. Sorghum ssp. (Hack.) Stapf. T-S.16360, the nonrecurrent parent of the KS41 to KS44 lines, was the greenbug-resistant source in 'KS30,' a grassy sorghum released in 1969. The resistance of the KS41 to KS44 lines appeared similar to that of KS30 in seedling survival trials. KS30’s resistance results mainly from tolerance, although other resistance mechanisms are also present.

Germplasm amounts of seed stocks can be obtained from the Ft. Hays Branch Experiment Station, Hays, Kans. 67601.

GP 2 KS41 (H69-8 × B CK-60) × R CK-60White
GP 3 KS42 (H69-43 × B CK-60) × Pioneer 846White
GP 4 KS43 (H69-71 × B CK-60) × Pioneer 845White
GP 5 KS44 (H69-79 × B CK-60) × Pioneer 845White

2 See the note on the next page.

REGISTRATION OF SEVEN ISOCYTOPLASMIC SORGHUM GERMPLASM LINES1

(Reg. Nos. GP 9 to GP 15)

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The Kansas and Nebraska Agricultural Experiment Stations and the Plant Science Research Division, Agricultural Research Service, U. S. Department of Agriculture, in 1971 released seven grain sorghum [Sorghum bicolor (L.) Moench] lines, 'KS34' to 'KS50,' with cytoplasts not now available in cultivated sorghums. They were developed in the cooperative Kansas-USDA sorghum breeding program at the Ft. Hays (Kansas) Branch Experiment Station. All lines are white seeded, combine height, and resemble 'Combine Kafir-60' (CK-60), from which they were derived by backcrossing. All nonrecurrent cytoplasm sources were obtained by the U. S. Department of Agriculture.

KS54 to KS59 are cytoplasmic male-stereile types (A lines) with the CK-60 genome (Table 1). Sterility was not made in maintainers during backcrossing, so the steriles may shed pollen occasionally, but this can be reduced or eliminated through pedigree selection. KS54 to KS59 can be substituted as female parents for CK-60 or 'KS4,' a CK-60 derivative, in hybrids; or the cytoplasts can be transferred to unrelated B lines. Although the six sterile cytoplasts resemble other cytoplasts in breeding behavior, their origin in noncultivated grass sorghums may make them differ, which could help avoid such cytoplasm-associated problems as fertility restoration relations of some major sorghum groups, p. 57-62.

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Three sources of sorghum [Sorghum bicolor (L.) Moench] germplasm resistant to races 1 and 3 of head smut [Sphaelotricha resiliens (Kuehn) Clini.] were released in 1970 by the Kansas Agricultural Experiment Station and Plant Science Research Division, Agricultural Research Service, U. S. Department of Agriculture. They were released for reselection or for use as parental material in breeding programs.

'KS31' (Reg. No. GP9) was developed from the cross 'KS31' × 'Spur Feterita,' and it was released in the F2 generation. Its resistance to races 1 and 3 of head smut was derived from Spur Feterita. It is combine height (60.5DwDwDwDw), and is late in maturity, blooming somewhat later than the cultivar, 'Redlan.' Its seed has a subcoat (testa), and seed color varies from white to brown, depending on conditions at ripening. Although KS31 has not been crossed into sterile cytoplasts, its parentage would indicate it to be fertility restoring (R-line).

'KS32' (Reg. No. GP7) and 'KS33' (Reg. No. GP8) were developed from the backcross ('KS24' × 'Tx09') F1 × KS24. They were released in the F3 generation. It is presumed their resistance to race 1 was obtained from Tx09. The source of their resistance to race 3 is uncertain, but it may have been Spur Feterita, which is in the pedigree of KS24. KS32 and KS33 are similar, but differ somewhat in height, maturity, head shape, and head exseration. They are combine height (60.5DwDwDwDw), have red seed, and bloom a few days later than the cultivar, 'Combine Kafir-60.' Because of their parentage, they could be either B lines or R lines depending on the backcross program.

Small amounts of seed (<200 seeds or less) of these germplasm releases are available from the Department of Agronomy, Kansas State University, Manhattan, Kans. 66502.

2 See the note on the next page.