

**NOTICE OF RELEASE OF N220-1-91, N222-1-91,
N320-2-91, and N419-1-91 GERmplasm LINES OF
COTTON**
C.G. Cook
USDA, ARS
Weslaco, TX
L.N. Namken
Texas Agric. Exp. Stn.
Weslaco, TX
A.F. Robinson
USDA, ARS,
College Station, TX

The Agricultural Research Service, United States Department of Agriculture and Texas Agricultural Experiment Station announces the release of N220-1-91, N222-1-91, N320-2-91, and N419-1-91 germplasm lines of cotton. N222-1-91, N320-2-91, and N419-1-91 possess a high level of tolerance and some resistance to reniform nematodes and N220-1-91, N222-1-91, and N320-2-91 show strong resistance to race 3 of the southern root-knot nematode.

N220-1-91, N222-1-91, N320-2-91, and N419-91 were derived from crosses between root-knot and reniform nematode resistant germplasm released by Jones *et al.* (1988) and various experimental breeding lines developed by the USDA-ARS, Weslaco, Texas, followed by individual plant selections in the F₂ generation.

Agronomic traits of the four lines were compared to La. RN 1032, a reniform and root-knot nematode resistant germplasm line, and Stoneville 453 from 1992 through 1994 in reniform nematode-infested and fumigated experimental field plots. Compared with Stoneville 453 and La. RN 1032, respectively, in the reniform nematode-infested plots, N220-1-91 averaged ca. 110 and 85 percent greater yield, N222-1-91 averaged ca. 70 and 50 percent greater yield, N320-2-91 averaged ca. 85 and 60 percent greater yield, and N419-1-91 averaged ca. 100 and 75 percent greater yield. Yield reductions caused by reniform nematodes for the four germplasm lines were less than 50 percent of that observed for Stoneville 453 (Table 1). Compared with Stoneville 453 across both treatments, 2.5 percent fiber span length, fiber strength (HVI), and micronaire are generally similar. Fiber length of N419-1-91, fiber strength of N220-1-91, and micronaire of N222-1-91 were greater than Stoneville 453, while micronaire value of N320-2-91 was lower.

In laboratory evaluations, reniform and root-knot nematode multiplication factors and root-knot nematode gall ratings at six and ten weeks after inoculation were obtained and compared to La. RN 1032 and Stoneville 453. The reniform nematode multiplication factors for N222-1-91, N320-2-91,

and N419-1-91 at six but not ten weeks were lower than Stoneville 453 (Table 2). Gall ratings of N220-1-91, N222-1-91, and N320-2-91 were significantly lower than that of Stoneville 453 and multiplication factors were less than 1.0.

These four germplasm lines should be useful to other cotton breeders due to their combination of reniform and/or root-knot nematode resistance and high yield potential. Genetic material of this release is deposited in the National Plant Germplasm System where it will be available for research purposes, including variety/cultivar development and commercialization. Small quantities of seed may be obtained upon written request from C. G. Cook, USDA-ARS, Subtropical Agricultural Research Laboratory, 2413 East Highway 83, Weslaco, TX 78596.

References

Jones, J.E., J.P. Beasley, J.I. Dickson, and W.D. Caldwell. 1988. Registration of four cotton germplasm lines with resistance to reniform and root-knot nematodes. *Crop Sci.* 28:199-200.

Table 1. Yield and fiber properties of four germplasm lines in reniform nematode-infested (RN) and fumigated (TL) soils, averaged across 1992-1994.

Genotype	Lint yield		Strength	Length	Mic.
	RN	TL			
	lb/acre		g/tex inches	units	
N220-1-91	735	865	30.2	1.13	3.9
N222-1-91	614	739	27.2	1.09	4.5
N320-2-91	633	661	28.4	1.11	3.4
N419-1-91	709	806	27.5	1.17	4.2
La. RN 1032	396	514	29.2	1.13	3.5
Stoneville 453	352	623	28.1	1.11	4.1
LSD (0.05)	72	97	0.9	0.02	0.2

Table 2. Reniform (RN) and root-knot (RKN) nematode multiplication factors (m.f.) and RKN gall ratings of four germplasm lines at six weeks.

Genotypes	RN m.f.	RKN m.f.	Gall rating
N220-1-91	9.9	0.6**	1.00**
N222-1-91	6.5**	1.0**	2.00*
N320-2-91	8.9*	0.9**	1.50**
N419-1-91	8.3*	19.6	2.00*
La. RN 1032	7.9*	0.7**	1.33**
Stoneville 453	16.7	9.1	3.17

*, ** denote values are significantly lower than Stoneville 453 by one LSD at P<0.05 and 0.01. m.f.=total number of vermiform nematodes and eggs per pot ÷ 4,000 for RN nematodes and total number of juveniles and eggs per pot ÷ 1,000 for RKN nematodes. RKN gall rating: 0 = no visible galls progressively to 5 = 95% of root system galled.