

ALR 3 – A NEW INSECT AND DISEASE RESISTANT GROUNDNUT VARIETY

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ABSTRACT

ALR 3 – a disease resistant groundnut variety was release for cultivation in Tamil Nadu. This is a double cross derivative of R33 – 1 x ICG (FDRS) 68 x Nc Ac 17090 x ALR 1. This new variety is resistant to rust, leaf hopper, thrips and moderately resistant to late leaf spot disease, maturing in 110 to 115 days and has recorded 52 per cent increased yield over the check ALR 2.

KEY WORDS: ALR 3, High yield, Disease resistance

Groundnut is one of the most important oilseed crops in Tamil Nadu. Diseases like late leaf spot (LLS) and rust are severe, causing extensive damage (about 21 % yield loss) to the crop. The Summer showers and South West Monsoon hamper in taking control measures for diseases thereby causing a heavy loss in yield. Already released resistant varieties, ALR 1 and ALR 2 are longer in duration. Hence attempts were made to develop a groundnut variety with early maturity, resistant to rust and late leaf spot and with improved pod characters.

MATERIALS AND METHODS

Hybridization work was initiated at Agricultural Research Station, Aliyarnagar during 1988. The different F₁ generations were crossed to get double cross hybrids in 1989. In F₄ population, a promising line ALG 63 was isolated from the double cross hybrid derivatives viz., (R33-2 x ICG (FDRS) 68 (Cross I) and Nc Ac 17090 x ALR 1 (cross II).

In addition to yield, the culture ALG 63 was also tested for its reaction to rust and late leaf spot under controlled condition as suggested by Castellini (1959). Incidence of rust and late leaf spot diseases were scored based on 1-9 scale (Subrahmanyam et al., 1980).

The culture was tested in multilocation trials (MLT), Adaptive Research Trials (ART). All India Co-ordinated Trials on Oilseeds (AICORPO) and in On-Farm Trials (OFT) from 1992 to 1998. Based on the overall superior performance, the culture ALG 63 has been approved for release as a variety by State Variety Release Committee during 1999.

RESULTS AND DISCUSSION

The groundnut culture ALG 63 was tested under yield trials in Kharif and Rabi/Summer seasons at Agricultural Research Station, Aliyarnagar. In both the seasons, it out yielded the checks by 52 per cent in Kharif and 50 per cent in Rabi/Summer. This culture was tested all over the State in MLT along with Check Co.2. It recorded an increase yield of 52 per cent in Kharif and 28 per cent over Co.2 in Rabi/Summer.

In Adaptive Research Trials, this culture recorded a mean yield of 2095 kg/ha with 49 per cent increase over the check ALR 2 during Kharif 1996. In the Rabi/Summer season it registered an increase of 9 per cent over ALR 2 in ART. In the 15 On-Farm Trials in Pollachi tract, ALG 63 recorded a mean yield of 1667 kg/ha with an increased yield of 19 per cent over the check ALR 2. In the AICORPO trials, this culture excelled the national check, JL 24 to the tune of 39 per cent in Kharif in zone I (Tables 1a and 1b).

Table 1a. Overall performance of ALG 63 in different trials - Kharif

Trial	Pod yield (kg/ha)		Mean percentage increase by ALG 63
	ALG 63	ALR 2	
Station Trials	1212	796 (Co 2)	52
MLT (9)	1741	1147 (Co 2)	52
ART (21)	2095	1401 (ALR 2)	49
AICORPO Zone I (4)	1656	1197 (JL 24)	39

Table 1b. Overall performance of ALG 63 in different trials - Rabi/Summer

Trial	Pod yield (kg/ha)		Mean percentage increase by ALG 63
	ALG 63	ALR 2	
Station Trials	1426	893 (Co 2)	59
MLT (7)	2720	2120 (Co 2)	28
ART (16)	1733	1597 (ALR 2)	9
OFT (15)	1667	1405 (ALR 2)	19
AICORPO Zone I (1)	867	367 (JL 24)	136

ALG 63 recorded 3.7 to 4.0 grade for rust and 3.9 to 5.0 grade for LLS thereby showing the resistance to rust and moderately resistance to LLS. In the research station trials and in AICORPO trials, ALG 63 was found to be resistant to leaf hopper and thrips (Table 2).

The culture recorded the highest hulms yield of 11,500 kg/ha and kernel yield of 1499kg/ha. The oil content was higher than other cultivard varieties. This had a shelling percentage of 71.5 and matured in 110 - 115 days (Table 3).

Table 2. Reaction of ALG 63 to pest and diseases

Pest/Disease	Entries/Varieties	Aliyar nagar	MLT (Mean of 4 locations)	AICORPO trials (Mean of 4 locations)
Leaf hopper	ALG 63	13.38%	-	10.00%
	ALR 2	11.00%	-	-
	Co 2	75.9%	-	38.00% (JL 24)
Thrips	ALG 63	13.9%	-	10.00%
	ALR 2	11.78%	-	-
	Co 2	70.22%	-	55.00% (JL 24)
Rust	ALR 3	Grade 4.0	3.7	3.8
	ALR 2	5.1	-	-
	Co 2	6.8	5.3	7.1 (JL 24)
LLS	ALR 3	5.0	3.9	4.6
	ALR 2	5.7	-	-
	Co 2	7.1	5.5	5.0 (JL 24)

Table 3. Economic attributes of ALR 3

Character	ALR 3	VRI 2	Co 2
1. Duration (Days)	110-115	110	110
2. Haulm yield (Kg/ha)	11,500	9,800	9,300
3. Shelling percentage	71.5	73.7	73.5
4. Kernel yield (kg/ha)	1499	1394	1313
5. Oil content (%)	50.5	48.0	48.7
6. Oil yield (kg/ha)	757	669	639

An overall analysis revealed that ALG 63 had pest and disease resistance nature coupled with increased yield over the check varieties. In view of the above desirable attributes, the culture ALG 63 was released during January 1999 as ALR 3 for cultivation.

IMPORTANT MORPHOLOGICAL TRAITS:

Group	: Spanish bunch
Plant height	: 56 cm
No of primary Branches	: 5
Leaves	: Green, elliptic, Medium size
Pod	: Usually two seeded- distinct pod beak, moderate pod constriction, moderate pod reticulation.
Seed	: Cylindrical, free end is pointed, tan coloured
Oil Content	: 50.5%
Shelling	: 71.5%
100 seed wight	: 36.0g
Possessed 15 days fresh seed dormancy.	

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