Agric. Res. J. Kerala 27 (1989) : 9 - 13

TWO NEW SESAME VARIETIES FOR KERALA

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Abstract: ACV-1 and ACV-2 are the two new sesame varieties released in Kerala recently. These varieties were evolved by pureline selection from germplasm types P38 (a Punjab variety) and No.42 (a West Bengal variety) respectively. ACV-1 (selection No. 38-1) was released as 'Soma' for summer rice fallows. This has multiloculed capsules having white bold seeds with substantial increase in seed yield over the standard variety, Kayamkulam 2. ACV-2 (Selection No.42-1) was released as 'Surya' for the rabi uplands. This variety also has multiloculed capsules having grey bold seeds with significant increase in seed yield over Kayamkulam 2.

INTRODUCTION

Sesame is mainly grown in the rice fallows of the coastal sandy tracts in the southern districts (Onattukara) of Kerala during January to April. As an upland crop, it is grown during early rabi season in the central districts. Kayamkulam 1 and 2 are the existing improved varieties of sesame in the State. The chief factor limiting the productivity of this crop is the lack of high yielding varieties suited to the diverse seasons, soil types and cropping situations.

MATERIALS AND METHODS

Breeding of sesame was started at the College of Agriculture, Vellayani during 1978. A germplasm was assembled and maintained. Emphasis was given for the multicapsuled and multiloculed characters, because of the high production potential of such types. Single plant selection from the germplasm types for these two characters was taken up during 1978. The selections were tested for genetic stability by raising progeny rows and were found to be pure breeding (John and Nair, 1980).

Evaluation trials with 12 selections including the standards, Kayamkulam 1 and 2 was done simultaneously in rabi uplands at the College of Agriculture, Vellayani (1980 and 1982) and in summer rice fallows at the Rice Research Station, Kayamkulam (1981, 82 and 83) (Khader and Nair, 1982; Geetha and Nair, 1983).

Two promising stable selections viz., No.38-1 and No.42-1 were compared with two recommended varities Kayamkulam 1 and 2 in farm trials conducted during rabi 1983 in the upland at five locations in Trivandurum district. A 4 x 5 RBD was employed at each of the five locations adopting the package of practices recommendations of the Kerala Agricultural University. Observations on duration up to maturity, seed yield per plot and incidence of pests and diseases were taken. The farm trial was repeated during the summer 1984 in the rice fallows at four locations of the Onattukara tract.

RESULTS AND DISCUSSION

The data on seed yield and oil content in the five evaluation trials (CYT) conducted are presented in Table 1. In all the trials with the 12 selections, No.38-1 and No.42-1 were better than the other entries. They recorded seed yields of 473 g and 447 g per plot of 5 m^2 respectively. It was found that No.38-1 was top ranking in rice fallows, whereas, No.42-1 was the best in uplands. The maximum oil content was

Table 1. Seed yield and oil content of 12 selections/varieties under CYT

Sl. No.	Variety	Seed yield (grams per plot of 5 m^2)								Seed oil content (%)				
		Summer rice fallows				Rabi uplands			General mean	Summer rice follows			Rabi uplands 1982	General mean
		1981	1982	1983	Mean	1980	1981	Mean		1981	1982	Mean		
1	Si.914-1	228	150	233	204	202	384	293	239	47.5	42.0	44.8	43.4	44.3
2	No.28-1	275	321	278	291	233	560	397	333	50.0	47.3	48.7	50.6	49.3
3	Gp.111-2-1	301	218	379	299	259	495	377	330	46.8	42.4	44.6	47.6	45.6
4	No. 38-1	372	547	469	463	511	466	489	473	50.6	49.5	50.1	53.6	51.2
5	No.42-1	481	285	317	361	535	618	577	447	54.2	48.7	51.5	51.4	51.4
6	K.7-1	272	167	319	286	223	582	403	313	48.7	43.2	46.5	49.8	47.4
7	Mutant K-1	238	190	329	252	221	516	369	299	47.0	43.1	45.1	49.1	46.5
8	Pt.58-35	344	180	371	298	234	675	455	361	48.7	42.8	45.8	49.6	47.0
9	KRR.1	274	201	299	258	264	456	360	299	50.2	44.4	47.3	48.1	47.6
10	TVM.2	309	209	267	262	280	413	347	296	50.3	43.0	46.7	51.6	48.3
11	Kayamkulam-1	285	261	289	278	230	330	280	279	50.1	41.5	45.8	48.8	46.8
12	Kayamkulam-2	293	224	278	265	242	415	329	290	50.7	44.4	47.6	49.6	48.2
	CD (0.05)	31.8	12.8	67.8	-	57.8	NS	-	-	1.76	1.05	-	1.40	-

Table 2. Pooled analysis of seed yield (kg/ha) in farm trials during rabi 1983 in uplands and summer 1984 in rice fallows

Sl. No.	Location	Kayamkulam-1	Kayamkulam-2	No.42-1	No.38-1	CD (0.05)
	Uplands					
1	Nedumangadu	203	251	373	294	96.6
2	Krishnapuram	32	40	62	74	32.8
3	Balaramapuram	231	262	538	457	100.8
4	Varkala	315	330	436	602	105.3
5	Vellayani	145	205	369	306	60.0
	Pooled	185	218	356	347	90.3
	Rice fallows					
1	Olakettiyambalam	543	547	624	941	93.8
2	Muthukulam	272	279	325	537	52.7
3	Changankulangara	503	637	729	958	140.7
4	Kayamkulam	242	285	354	412	36.2
	Pooled	390	437	508	712	93.2

Table 3. Mean disease score in farm trials

Variety/culture	Leaf spot (0-5 scale)	Powdery mildew (0-5 scale)	Phyllody (% occurrence)
Kayamkulam-1	3.8	1.0	0.3
Kayamkulam-2	3.6	0.8	0.3
No. 42-1	3.1	0.6	1.2
No. 38-1	1.4	0.3	0.0

also expressed by No. 42-1 (51.4%) followed by No. 38-1 (51.2%). When both the locations and all the five trials were taken together, No. 38-1 was the best followed by No. 42-1. Hence, both these selections were advanced to farm trials in cultivator's fields.

The seed yield data on farm trials at the two situations (uplands and rice follows) are presented in Table 2. No. 42-1 recorded the highest seed yield in uplands at three locations, whereas, No.38-1 recorded the highest yield in rice fallows at two locations. The pooled analysis of yield data during rabi 1983 indicated that No. 42-1 and No. 38-1 were on par and were significantly superior to the standard varieties. No.42-1 recorded a mean seed yield of 356 kg/ha and No. 38-1, 347 kg/ha whereas, the standards Kayamkulam 1 and 2 produced only 185 and 218 kg/ha respectively. Similarly, the seed yield data during summer 1984 in rice fallows were analysed individually and collec-

Table 4. Description of sesame varieties

Sl. No.	Characters	No.38-1 (ACV-1)	No.42-1 (ACV.2)
1	Habit	erect	erect
2	Branching	medium	medium
3	Stem colour	yellow green	light green
4	Leaf colour	yellow green	green
5	No. of **flowers/axil**	1	1.3
6	**Hairyness**	hairy	hairy
7	Flowering pattern	determinate	indeterminate
8	No. of **capsules/axil**	1	1
9	Capsule colour	yellow green	green
10	No. of **locules/capsule**	6-8	6-8
11	No. of **seeds/capsule**	94	101
12	Seed colour	White	grey
13	1000 seed wt. (g)	3.5	3.2
14	Seed oil content **(%)**	51.2	51.4
15	Seed dormancy	3 months	1 month
16	Seed viability	1 year	1 year
17	Days to maturity	85	87
18	Yield **(kg/ha)**		
	i) in uplands	347	356
	ii) in rice fallows	712	508
19	Reaction to disease (leaf spot and powdery mildew)	Tolerant	Susceptible

tiveJy. At all the four locations No. 38-1 was significantly superior to No.42-1 and the two standard varieties. No. **38-1** recorded the maximum seed yield (712 **kg/ha),** whereas No.42-1 yielded only 508 **kg/ha** which was on par with the standard varieties.

The high yielding potentiality of **No.38-1** and No.42-1 is mainly due to the **multiloculed** capsule character containing large number of bold seeds. The mean number of seeds per capsule in a four **loculed** normal one is estimated to be 68, whereas, for a multiloculed capsule, it is 112 (John and Nair,1980). Hence, the large production potential of multiloculed capsule type over the four loculed type is very evident. Both No.38-1 and No.42-1 had comparatively high seed weight also. The seed oil contents of both No.38-1 and No.42-1 were also higher when compared to the standard varieties.

Apart from the high yielding potentiality, No. 38-1 showed field tolerance to leaf spot, disease and powdery mildew (1.4 and 0.3 disease scores respectively) and no incidence of phyllody (Table 3).

This type has a determinate flowering habit which brings about uniform maturity of capsules. Seeds of this culture are bold and white in colour and that of No.42-1 are bold and grey in colour. The varietal description of these two cultures are presented in Table 4.

The CYT for five seasons and farm trials for two seasons at 9 locations established the superiority of these two selections over the standard varieties. Hence No. 38-1 was recommended for summer rice fallows of Onattukara as ACV-1 (Soma) and No.42-1 was recommended for rabi uplands of southern districts as ACV-2 (Survya) by the State Variety Release Committee. These two varieties are expected to contribute substantially to increase in sesame production in the State.

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