

Evaluation of Redgram types for cooking quality

by

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Synopsis: The results of evaluation for cooking quality of ten exotic redgram types grown at the Millet Breeding Station, Coimbatore are presented in this paper.

Introduction: Redgram, *Cajanus cajan* (Linn.) Millsp., is a major pulse and this is used in the form of dhal which is cooked in boiled water. The cooking quality varies considerably with different types of dhal, some requiring long continued boiling to reach the desired stage whilst others cook quickly. It has been found that there is significant negative correlation between the time taken for cooking and the protein content of the red gram types. The Vizianagaram cultures which had the highest percentage of protein got fully cooked much earlier than those from Salem and Coimbatore which were poorer in protein content (Anon. 1954). Viswanath *et al.* (1915) have determined the effect of the composition of water upon the rate of cooking of redgram dhal. They have also assessed the influence of (i) fat content of the dhal, (ii) different dhal varieties and (iii) method of preparing the dhal on the rate of cooking.

Materials and Methods: Ten exotic red gram types that are being maintained in the germ plasm bank at the Millet Breeding Station were taken for this study and they were compared against the standard strain, SA. 1. Produce from the main season crop of 1961-62 was taken. The dhal was prepared by soaking the grain in rain water for 16 hours, drying it in the sun and milling. Stones, broken pieces of dhal and the husk were removed. Ten grams of dhal in each of the types were taken by random sampling. Size and thickness, and the number in ten gram of all the types were recorded. The volume was determined by putting the dhal into a known volume of water (15 cc.) in a 25 cc. measuring cylinder (rain water was used for measuring the volume).

Meanwhile, an electrically operated water bath was prepared using rain water. The bath was allowed to boil for ten minutes before starting the cooking test. The dhal along with the 15 cc. of water in the measuring cylinder was transferred to the ignition test tube. Another 35 cc. of rain water was added to make a total quantity of 50 cc. It was found out by test cooking that the volume of 10 grams of dhal varies from seven to eight cc. and about five times of this volume of water (50 cc.) was required for complete cooking. The test tube was kept in the boiling water bath after noting the time of starting the cooking. Cooking was regarded as complete just when the hardness inside the dhal disappeared. This was tested by pressing the cooked dhal between the thumb and the forefinger. At the same time the edges of the dhal get split up giving

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the characteristic smell of cooked dhal. When the cooking was complete the time taken was recorded and the test tube was removed from the bath. The excess water in the test tube was drained off completely by slanting the test tube. The weight of cooked dhal was determined in a chemical balance. It was then transferred to a measuring cylinder (50 cc.) containing a known volume of water and the volume of cooked dhal was measured.

The cooking test was repeated twice under uniform conditions with all the types and the average of the results obtained was recorded. The data are presented in the table.

Results and Discussion: There is significant difference in the rate of cooking of dhalls of red gram of different origin. The maximum time of 88 minutes was recorded by the type Ms 9311 (from British Honduras) and the minimum of 40 minutes by the strain SA. 1 in respect of cooking quality. So the introduction of these exotic types as such for cultivation is handicapped by their cooking quality even though they may have other economic attributes. They can however be utilized in the breeding programme for the transference of other economic characters.

Other general inferences obtained from this experiment are:—

The medium sized and thick dhalls are easily cooked than the thin dhalls. Big sized dhalls have taken the maximum time for cooking. Big sized dhalls absorb more water thereby resulting in maximum increase in weight of cooked dhal as compared to the small and medium sized dhalls. The percentage of increase in weight ranges from 100 to 210. Medium and small sized dhalls have maximum expansion in volume of cooked dhal than the big sized dhalls, the increase in volume ranging from 169.2 to 200 percent.

Summary: The exotic types of red gram (*Cajanus cajan*) were tested for their cooking quality. The cooking was done in an electrically heated water bath with rain water. All the exotic types were poorer in cooking quality than the strain SA. 1. Medium and small sized dhalls cooked easily as compared to the big sized ones. The expansion in the volume of cooked dhal is more in the case of medium and small sized dhal than in the big sized ones. But the reverse is the case in respect of weight.

REFERENCES

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| Anonymous | 1954 <i>Mem. Dept. Agric. Madras</i> , Govt. Press, Madras, 197. |
| Viswanath, B., Lakshmana Rao and Raghunathaswami Iyengar | 1915 Some factors affecting the cooking of dhal (<i>Cajanus indicus</i>) <i>Mem. Dept. Agri. India, Chem. Ser.</i> , 4: 149-63. |

TABLE

S. No.	Type No.	Origin	Size of Dhall Diameter in Cms.	Thickness of Dhall in Cms.	No. of Dhall in 10 gms.	Time taken for cooking in Mts.	Vol. of 10 gms. of dhall	Wt. of cooked dhall	Vol. of cooked dhall	% of increase in Wt. by cooking	% of increase in Vol. by cooking
1	2	3	4	5	6	7	8	9	10	11	12
1.	MS. 8906	Trinidad	0.50	0.17	266	55.0	8.0 cc	26 gr.	23 cc	160	187.5
2.	MS. 8907	do.	0.74	0.14	158	85.5	7.8 "	30 "	21 "	200	169.2
3.	MS. 8908	do.	0.75	0.14	206	70.0	8.0 "	29 "	22 "	190	175.0
4.	MS. 8909	Netherlands	0.40	0.13	372	58.5	8.0 "	27 "	23 "	170	187.5
5.	MS. 9016	U. S. A.	0.55	0.16	260	52.5	8.0 "	27 "	23 "	170	187.5
6.	MS. 9307	British Honduras	0.61	0.12	268	58.0	8.0 "	26 "	23 "	160	187.5
7.	MS. 9308	do.	0.60	0.13	280	60.0	8.0 "	27 "	23 "	170	187.5
8.	MS. 9309	do.	0.60	0.14	296	61.5	8.0 "	27 "	23 "	170	187.5
9.	MS. 9310	do.	0.62	0.14	255	60.0	8.0 "	26 "	23 "	160	187.5
10.	MS. 9311	do.	0.77	0.12	240	88.0	8.0 "	31 "	22 "	210	175.0
11.	SA. 1	Salem (Madras State)	0.51	0.17	278	40.0	8.0 "	26 "	24 "	160	200.0

Date of harvest of produce 20—1—1962.

Date of conducting the cooking test 23—4—'62 to 27—4—'62.

Size of dhall: Upto 0.40 cms small, 0.50 to 0.70 cms medium, more than 0.70 cms big.

Thickness of dhall: 0.12 to 0.13 cms - Thin

0.14 to 0.15 cms - Medium

0.16 to 0.17 cms - Thick.