

Some Factors Which Influence Rice Breeding in Tanjore.

K. RAMIAH, L. AG.

PRESIDENT, LADIES AND GENTLEMEN,

Within the short time at my disposal neither is it possible, nor is it proposed, to deal with the details of work connected with plant breeding in general or with Rice Breeding in the district. The very recent origin of the station at Aduturai does not authorise one to form generalised opinions and we have to wait for some years before definite results can be announced to the public. All that is attempted in this paper is the consideration of one or two factors bearing on Rice breeding especially in its relation to trade.

1. As a result of the selection work started by the Govt. Economic Botanist at Manganallur, which is now being continued at Aduturai, a strain in Redsirumani (Aduturai No. 1) has been evolved, which has consistently been giving a 16% heavier yield than the bulk from which it was isolated. This strain is being distributed to the cultivators during the last four seasons and the total acreage under this is estimated to be somewhere about 8,000 acres. Better yielding strains have been evolved in White Sirumani, Nellore Samba and Kuruvai which have been given out on a small scale for the first time this year.

2. Although there are several economic factors peculiar to this district which affect the rapid spreading of improved strains, I propose to deal in this paper only with two points viz., (1) the suitability of the different portions of the delta for particular varieties and (2) the suitability of particular varieties for trade.

3. At present the most important samba varieties are Nellore Samba, Kattai sembalai and Sembalai, red and white Sirumani arranged in the order of importance. In the Gazetteer of the district published in 1908 the important varieties of the district are given as Sembalai, and red and white Sirumani, which means that red and white Sirumanis must have been grown on a much larger scale then, than now. Nellore Samba was a variety unknown in the tract some twelve

years ago. It had been introduced from the north by some enterprising mirasdar and appears to have spread throughout the delta very rapidly on account of its high yields. Till three or four years ago it was very widely grown and people are now definitely giving it up as they have found that it rapidly exhausts the soil. In the eastern portions of the delta in the taluks of Negapatam, Mannargudy and Nannilam, more than 75% of the area is grown with *Kattai Sembalai*. This is evidently an introduced variety and being very much like Sembalai, a local variety, but with slightly smaller grain, it has been named Kattai Sembalai. The Sirumanis though not very heavy yielders are said not to exhaust the land so much as the coarser ones do, and hence we find a larger area devoted to these in the taluks of Mayavaram and Shiyali where the soil is not so fertile as in the upper portions of the delta where Nellore Samba is largely grown. It is on account of this special feature of the Sirumanis, coupled with the better price they fetch, that the change from them to a coarser variety like Nellore Samba has been slow. Moreover they give a better outturn of rice to paddy both by volume and by weight. They also, being of a slightly shorter duration than the other samba varieties, are more suitable to the lower portions of the delta where freshes are received late. Even of the two Sirumanis, the red is more largely grown though the white is certainly superior in quality from the consumers' point of view. There is no reason why Kattai Sembalai should not share the fate of Nellore Samba in course of time.

4. Successful attempts have been made by the department to supply superior strains of Red and White Sirumanis. Good strains of Nellore samba are expected to be ready for distribution from next year but the variety has unfortunately already lost its popularity. Work is to be started on Kattai Sembalai this year. Thus the breeder has always got to be on the alert to handle varieties as they are coming into prominence. When once the selection work is started on a variety, the minimum time taken to put out a strain for distribution is six to seven years and it will take at least another three years more for people to come to know of it sufficiently and take

to its cultivation. Sometimes these ten years is a sufficient period for the people to have grown a variety and given it up in favour of a better yielding new one.

5. Let us now find out how far the rice milling and rice trade affect the progress of the seed distribution. The district contains on an average 11 lakhs of acres under paddy and the estimated outturn is 790 thousand tons. The population of the district being a little over two millions and taking on an average twelve kalamas or 720 lbs. of paddy as the annual consumption per head, there is still a balance of nearly 50,000 tons of paddy available for export whose value comes to nearly 50 lakhs of rupees. The chief markets for the Tanjore rice have been from a very long time Ceylon through Colombo and the West coast through Quilon. The export from Tanjore consists of both paddy and rice, but mostly of the latter. It is in connection with the rice trade of the district the rice mills play a large part. In the year 1903 there were only four rice mills in the district worked by power. Rice milling was then a most remunerative business and people rushed into it in great numbers with the result that the business was soon overdone and more plants were put up than could be kept profitably employed. The number of mills in the district multiplied to 212 in 1918 and at present the number is estimated to be nearly 250. The starting of such a large number of mills in the district may be said to be a blessing in disguise to the Tanjore landlords. As the number of mills multiplied they and their agents began to compete with one another in purchasing the paddies with the result that the price of paddy went high.

6. Almost all the rice exports were going out through the chief ports of the district on the east coast—Negapatam, Tirumalavasa, Toputurai etc., and hence probably the location of most of the larger mills in the lower portion of the delta near the coast. The existence of a larger area under Sirumani varieties in this portion of the delta might also have been a reason for the concentration of mills here. Only boiled rice is produced in any quantity in the district and the demand is only for boiled rice. Distinctions are drawn by the people of the different districts between different kinds of rice. The variety

taken by one set of people is unpalatable to another. The varieties specially in demand in Ceylon are the Sirumanis and almost all the Tanjore mills have been constructed suitable to the small grains. These mills cannot produce raw rice as in Burma, as the varieties of Tanjore are too small to be satisfactorily milled in the hullers of this district. From the Tanjore millers' point of view Sirumani is to be preferred to any other variety as it gives a greater outturn of rice to paddy. But if the mills do the milling on their constituents' account, they would rather prefer a coarser variety as then the output of the mill will be greater. There is always a difference of Rs. 1 to 1/8 per bag of rice between Sirumani and any other variety. The export to Quilon is all being done as paddy. Quilon never cares for the quality of paddy received; in fact the coarser and the red-riced ones are preferred. Prior to the war besides the Tanjore rice, Ceylon was importing some paddy from Burma direct. During the war on account of the absence of freights the usual supplies from Burma could not be sent, so that there was a greater demand created for the Tanjore rice in Ceylon. This increase in demand indirectly swelled the price of the Tanjore paddy. To add to this, there was a shortage in production on account of the failure of the monsoon in 1918. Considerable trouble was at the same time experienced to move the surplus produce of paddy to places where it was needed, on account of the shortage of railway waggons. All these together brought about a crisis and the price of Tanjore paddy very nearly trebled itself. The Government realising the situation brought in the system of control and entirely prohibited the export of rice from the presidency. In addition to this, rice in large quantities was imported into the province from Burma, by restricting the export of Burma rice to western countries. Just at this time more than the usual quantity of the Burma rice was sent to Ceylon and the west coast through Quilon, so that the Tanjore rice was practically cut off from these places. To add to this, Ceylon of late has begun to grow some rice for her own requirements, so that the demand for outside rice is not so great as before. During the two years of control the Burma merchants have effectively captured the

Ceylon rice markets to the disadvantage of Tanjore. The Burma mills were producing only raw rice before; but now they produce boiled rice as well and that too of a good quality suitable for the Ceylon market.

7. This state of things should have resulted in bringing down the price of paddy and such a tendency was perceptible. But early during the year on account of heavy damage to crops by floods in Ceylon the price of rice went up. The Burma rice had not then come into the Ceylon market. The Tanjore merchants who are always in touch with the Ceylon rice market began to purchase paddy rapidly which kept the price from falling for a short time. But before the whole consignment could be sent to Ceylon, Burma rice had come in and it being considerably cheaper than Tanjore rice, the latter would not sell in Ceylon. As further purchase of paddy was stopped in the district, the price which was at Rs. 3 and Rs. 3—2—0 a kalam began to fall continuously and it is now selling at Rs. 2—8—0. Although it is only Sirumani rice that is exported to Ceylon, the price of the other paddies is always fixed relative to this as so much less per kalam. The rice trade in Tanjore is now in a stagnant condition. We find very large stocks of paddies and milled rice stored in the mills waiting for the prices to go up. In one mill at Tiruvalur I saw over 20,000 bags of rice kept ready. At Shiyali, where there is a concentration of mills, over 50,000 bags of rice can be purchased at the present moment. The branch of the Imperial Bank of India at Shiyali has advanced to those rice merchants about 4½ lakhs of rupees within the last three or four months. At the rate the merchants purchased the paddy in February—March a bag of rice cost nearly Rs. 15 and it must sell at Rs. 20 in Ceylon to allow of a small profit after allowing for the railway freight; but a bag of Rangoon rice sells in Ceylon for Rs. 15 at the present moment.

8. On account of the absence of the export of rice to Ceylon for the last three years, there is a definite tendency for the area under Sirumanis to go down, although it is not possible to find out the exact area without a detailed survey. Kattai Sembalai rice though

not so good as Sirumani is in demand in the black cotton soil tracts of Tinnevely and Coimbatore and the trade of Tanjore rice for the last two years has consisted mostly in railing this to places like Virudupatti, Satur, Tiruppur, Erode, Coimbatore and the Nilgiris and the area under this variety is steadily increasing every year in the mill areas.

9. Tanjore has thus got to compete with Burma in its rice trade. Burma has got several natural advantages over Tanjore—its large exportable surplus of rice, its immunity from crop disaster and famine, its highly organised and expert-developed milling industry and its facilities for water transport. Coastal trade did no doubt exist in Tanjore before. Most of the minor ports on the East coast which carried on a big trade in rice have all been closed now as they could not stand the unfair competition started by the Railway company. It is thus unlikely that Tanjore will ever be able to compete with Burma successfully, unless agricultural improvements result in a considerably increased yield per acre.

10. Although Tanjore is so near Madras it is Kistna and Godavari rices that have the hold of the Madras market. To compete with Kistna successfully the Tanjore rice must go down in price still further. As things stand at present unless the season becomes adverse, the price of paddy cannot be expected to go up. Hereafter the Tanjore landlords must be prepared to sell their paddies at a cheaper price than what they were getting for the last five and six years. Their net income must necessarily go down and their only salvation seems to be to increase the outturn per acre. This can be done by the growing of heavy yielding improved strains and a systematic manuring of the fields. The latter has got to follow the former, as otherwise the lands will get exhausted soon. The introduction of heavy yielding varieties is nowhere else so dependent on the manuring facilities as in the delta.

11. Unlike Burma the rice breeding work in Tanjore is more complicated. In Burma the limiting factor is the mills and any variety or strain evolved that is considered good from the millers' point of view is sure to spread. Here milling quality is only of

secondary importance. Taking it that Tanjore has lost the Ceylon market she has got to study and meet the various local provincial requirements which are many and varied. People will continue to grow Sirumanis and if the acre yield in these could be much increased there is no reason why it should not compete favourably with rices from other parts. A coarser variety than Sirumani, but at the same time not very coarse, is what is required for export to the black cotton soil tracts of Tinnevely and Coimbatore. There is a possibility of even a coarse variety like some of the Burma ones spreading in the district if it should yield well. This would be required by the poorer classes of the district and any surplus will also find a ready sale in the Quilon market. If heavy yielding strains could be made suitable for milling purposes as well, it will be a double advantage. I recently came to know that, when a strain (Aduturai No. 1) which was grown in a place near Koradacheri was taken to the mill, the mill owner found it give a better outturn of rice than the general red Sirumani brought to the mill and he offered a better price for this variety. But when he found that all red Sirumanis were being brought as Aduturai No. 1, he had to stop giving the premium.

12. The breeder has not only to attempt the evolving of heavy yielding strains of varieties that are grown on a large scale in the district, but also to satisfy himself, when introducing or evolving such new varieties, as to whether they would be acceptable to the mills and as to whether the rices would find a ready sale outside since the district will always have a decent surplus every year.

Discussion.

Mr. G. Rajagopal Naidu stated that about 20 years ago he had occasion to make enquiries into the Agricultural condition of Tanjore and the impressions he formed then were that Tanjore was very backward as regards its methods of cultivation. It had been backward for centuries; there was no system either of deep tillage or of manuring. Tanjore could not therefore compete with Kistna or Godavari. In Tanjore again, it was boiled rice that was in demand whereas raw rice was the rule in Kistna.

Rao Bahadur J. Chelvaranga Raju : said, that in evolving strains of paddy, one had to make a thorough study of the requirements of the particular locality, so as to adapt the strains to the needs of the locality. For instance, at Gudiyatam (North Arcot), the main industry was the manufacture of puffed rice and obviously G. E. B. 24 was unsuitable for that place. Again where the demand was for a coarse rice—which is preferred by the working classes,—the introduction of a fine variety was clearly undesirable.

Mr. Subramania Kandar remarked that in his place short duration varieties were at present in great demand.

Mr. K. Raghavachari also said that in Tanjore Kar varieties were being given up, since they were all long duration paddies, and were rapidly being replaced by "Kuruvai" or short duration paddies.

Mr. K. Ramiah : said that the object of his paper was simply to elicit discussion and that his experience which covered the space of but one year was too short to enable him to speak with any authority.

Statements showing the Exports and Imports of Rices in the Province.

Year.	Imports in Mds.	Exports in mds.
1911—12	227,000	...
1912—13	2,434,000	...
1913—14	...	12,000
1914—15	...	1,622,000
1915—16	...	1,415,000
1916—17	...	1,741,000
1917—18	..	3,345,000
1918—19	3,717,000	...
1919—20	11,842,000	...
1920—21	8,252,000	...
1921—22	...	...

Areas and yields of paddy tracts of the province.

Districts.	Total area under rice.	Ratio of area under rice to area cropped.	Estimated average yield of the crop per acre in lbs.	Total estimated yield in tons.	Serial Rank
Presidency ...	11,361,500				
Ganjam wet...	778,600		1,300		
dry...	423,250		800		
	1,201,850	82.1%		603,100	4
Kistna wet...	1,004,500		1,900		
dry...	177,150		1,000		
	1,181,650	67.8%		931,100	1
Vizag wet...	787,800		1,400		
dry...	378,550		800		
	1,166,350	...		627,600	3
Tanjore wet...	989,000		1,750		
dry...	114,900		1,100		
	1,103,900	81.3%		829,100	2
Malabar wet...					
dry...	875,000	63.3%	1,400	546,900	6
	875,000				
Chingle- wet...	544,650		1,550		
put. dry...	94,000		1,100		
	638,650	85.0%		423,100	8
Godavari wet...	565,500		2,000		
dry...	64,000		900		
	629,500	83.0%		563,600	5
S. Canara wet...					
dry...	596,700		1,500	399,600	9
	596,700	...			
N. Arcot wet...	480,450		1,900		
dry...	43,950		1,100		
	524,400	46.8%		429,100	7
S. Arcot wet...	428,150		1,850		
dry...	86,650		1,100		
	514,800	37.4%		396,200	10