

SALT TOLERANCE OF CERTAIN VARIETIES OF PADDY

There are over 66,000 acres of saline soils in Kerala, known locally as 'Kaipad' and 'Pokkali' lands. These lands are under saline water for about four months of the year. Though generally paddy is cultivated in these regions during the south west monsoon period when the salt concentration is reduced due to the rains, in certain years when the rains are late or scanty the soils remain high in salt content at the time of sowing making it necessary for the sown seeds to resist and survive the adverse effects of salinity. Ayers *et al* (1952) and Subramaniam and Sankaranarayanan (1964) have indicated the necessity of using salt tolerant strains of seeds in saline soils. The present note reports the relative tolerance of the rice varieties PTB 10, *Taichung Native 1*, *Taichung 65*, *Kochuvithu*, *Njavara* and *Tainan 3*, to the toxic action of different strengths of salinity.

The soil used was that collected from the paddy field of the Agricultural College Farm Vellayani. This was air dried, powdered and sieved through a 2 mm sieve. Conductivity of the soil was determined by using the conductivity bridge and this was 0.56 millimhos/cm. By adding saturated solution of sodium chloride conductivity of two lots of the same soil was raised to 3.0 and 6.5 millimhos/cm. The soils having the different salinity levels were taken in petridishes and the seeds of each variety sown at the rate of 20 seeds in a dish and replicated 5 times for each treatment. Seeds sown in dishes containing moist filter paper sowed as control. The moisture level and conductivity were maintained constant throughout the experiment. The germination of seeds were observed and recorded from the 3rd to 7th day after sowing. On the 7th day the length of plumules was measured. (See Fig. 1).

TABLE 1

Percentage seed germination and average plumule length of six varieties of paddy in soils of different conductivity on the 7th day after sowing

Conductivity in millimhos/cm.	0		0.56		3.0		6.5	
	Germination	Germinated	Plumule length (cm.)	Germinated	Plumule length (cm.)	Germinated	Plumule length (cm.)	
P.T. B. 10	95	95	10.96	72	7.42	66	4.4	
<i>Taichung Native 1</i>	100	95	7.4	95	5.18	85	4.2	
<i>Taichung 65</i>	95	92	4.92	82	3.88	72	2.28	
<i>Kochuvithu</i>	95	90	10.7	85	7.68	80	6.4	
<i>Njavara</i>	92	90	9.25	78	6.38	50	5.7	
<i>Tainan 3</i>	90	88	3.4	70	1.22	48	0.57	

Results are given in Table 1. It will be seen that all the varieties tested give 90-95 percent germination in control. There is a reduction in the percentage of germination as the salinity (conductivity) increases. *Taichung Native 1* and *Kochuvithu* are the least affected varieties while *Tainan 3* is the most affected. The other varieties showing intermediate effects. Suppression of growth as indicated by plumule length is also evident as a result of increased salinity. The maximum suppression is seen in *Tainan 3* and *Taichung Native 1* and the least suppression in *Kochuvithu*, *Njavara*

and *PTB10*. Thus *Kochuvithu* appears to be the most tolerant to salinity, taking both germination and growth into consideration followed immediately by *Taichung Native 1*.

References

- Ayers, A. D., Brown, J. W. and Wadleigh, 1952, *C. H. Agron. J.* 44 : 307-310.
- Subramony, N. and Sankaranarayanan, S. 1964. *International Rice Commission Newsletter*, 13 : 22-27.

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(Accepted : 14-8-1968)

On Salt tolerance of Paddy seeds

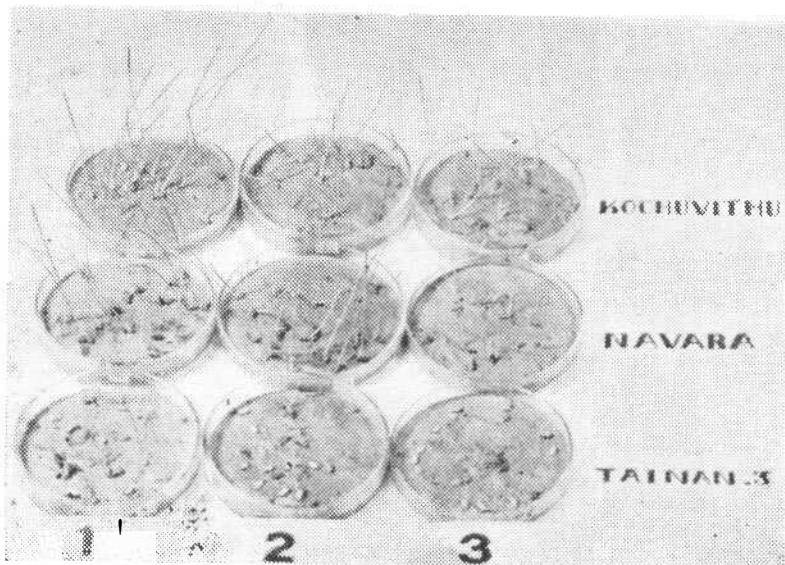
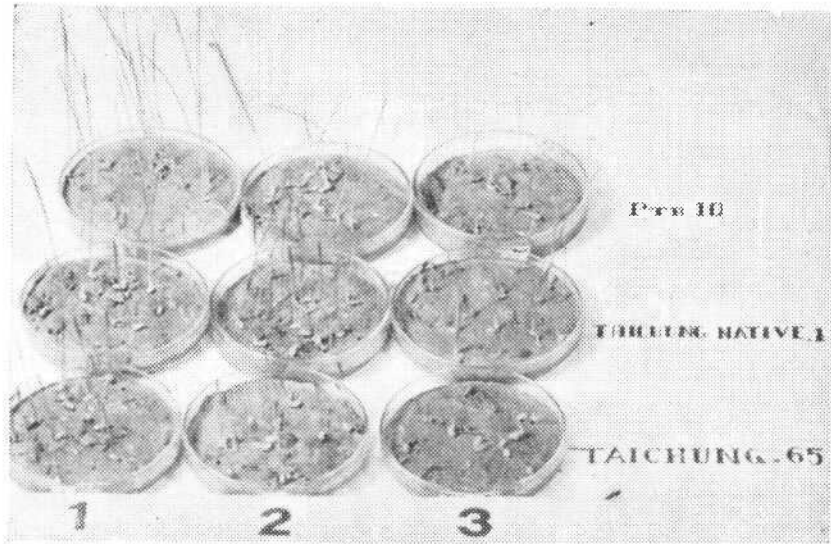


Fig. 1. Germination of different varieties of paddy seeds in soils of different conductivity