

recent tour in the Amalapur taluk of the Godavari district where the ryots of some villages complained about the seed of *Rasangi* 26 germinating while on the crop when it lodged, thereby suggesting that under these conditions *Rasangi* 21, the seed of which does not so germinate, would be preferable (vide items 6 and 7 of the table). Yet another application of a knowledge of this aspect of paddy varieties is that the seed of varieties, which germinate immediately after harvest, produced in the first crop season (*sariva*) can be used for sowing in the second crop season (*dalwa*).

The late varieties, in general, appear to require a considerable period of rest for the seed to germinate, but there are exceptions, e.g., Co 3.

When conducting germination tests of seed, this character should be taken into consideration because a premature test giving negative results may lead to the rejection of vital seed.

<https://doi.org/10.29321/MAJ.10.A01464>

## THE DRYING OF PADDY SEED

By G. JOGI RAJU

On the Agricultural Research Station, Samalkot, paddy seed intended for sale to ryots is generally stored in gunnies and before bagging, the seed is dried on a Cuddapah slab floor over a period of four to seven days. It has been found, however, that grain treated in this way produces a high percentage of broken rice when pounded or milled and that in consequence when sold for consumption and not propagation, its value is reduced. In the year 1929 an experiment was made with Punasa Konamani No. 2 to ascertain the exact amount of drying necessary to maintain the vitality of seed in storage. The crop was harvested on January 20th and the grain was threshed out the same day and put into five bags each of which weighed 166 pounds gross. The bags were numbered I to V.

Bag No. I was not dried, whereas the contents of numbers II, III, IV and V were spread to a depth of  $1\frac{1}{2}$ " and dried on a tarpaulin for one, two, three and four days respectively, after which they were weighed and bagged again. The weather, throughout this period, remained bright. Periodic weighments of the bags were made at intervals till August 1929 and a test of the germinating capacity of samples from each bag was also made in the first week of May. The weights obtained from time to time and the results of the germination test are noted below,

Serial No. of bag	Weight on day of harvest	Weight after drying		Percentage of reduction in weight	Weight on						Germination*	
					24-1-29	26-2-29	29-3-29	1-5-29	1-6-29	2-7-29		10-8-29
1	2	Days	lb	4	5	6	7	8	9	10	11	12
I	166	...	166.00	nil	158.00	154.75	153.50	151.25	151.00	151.25	151.50	94
II	166	1	154.00	6.9	153.50	152.50	152.50	152.50	151.00	151.50	150.75	96
III	166	2	149.25	10.1	150.00	150.50	150.00	149.75	149.25	149.75	150.00	97
IV	166	3	147.25	11.3	149.25	149.50	149.50	149.25	149.00	149.25	149.75	98
V	166	4	147.00	11.5	148.88	149.00	149.50	149.00	149.00	149.25	149.75	99

\* Average of five determinations.

The figures show that the percentage of dryage on the original weight on the first, second, third and fourth day was 6.9, 3.2, 1.2 and 0.2 per cent respectively. In the case of No. 1 bag, the contents of which were not dried and No. II which was dried for one day there was a gradual reduction in weight up to the end of the hot season, after which there was a slight rise again due to reabsorption of moisture. In the case of the bags dried for 2 and 3 days (Nos. III and IV), the grain continued to reabsorb moisture until the end of February after which, there was again a fall in weight. At the beginning of the rainy season there was again a slight reabsorption of moisture and consequently a gain in weight. In the case of grain dried for four days, the reabsorption of moisture continued until the end of March, after which the weight followed the same course as that in the case of bag Nos. III and IV. An almost stable equilibrium was reached after two days' drying when the grain weighed about 150 lbs. and any moisture lost by further drying was reabsorbed from the atmosphere.

Though the percentages of germination of the samples from the five bags show a general increase in favour of the well-dried ones, the difference is slight and under normal conditions, therefore, two days drying in fair weather in November may be taken as sufficient for storage in a ventilated store room. In the Northern Circars, the weather is usually dry from the time paddy seed is stored until it is sown, so that no further drying of the seed appears necessary when once the optimum point is reached. The grain of *Punasa Konamani* No. 2 is one of the coarsest and hence the above remarks apply to many of the common varieties under cultivation, if the crop is allowed to ripen well in the field. Rough trials in the previous year, as well as general experience during the past ten years shows that there is no necessity for unduly severe drying. In places where the weather conditions continue to be humid after the storage of the seed, and when the seed has to be stored for a longer period, as is often the case in the southern districts, it may be necessary to dry the seed again, occasionally. The statement made above to the effect that two days' drying is sufficient,

therefore, applies only to conditions obtaining in the Northern Circars and it will hold good only when the other conditions referred to above are satisfied. This note is only intended to indicate that unduly severe drying is not necessary.

## THE INDIAN ELM (*HOLOPTELIA INTEGRIFOLIA*)

### A LESSON IN NATURE STUDY

By P. S. JIVANNA RAO

This common tree of Coimbatore which is known as the Indian Elm, based on the resemblance of its fruit to that of the European Elm, shows very peculiar behaviour which is well worth study by the student of nature.

This is a deciduous tree which sheds its leaves to such a large extent that at the end of the vegetative period the plant is rendered completely bare and presents a most distressing appearance. This happens usually in January—February and the very interesting phenomenon is soon noticed, viz., the appearance of flowers when the tree is leafless. These are dirty brown in colour appearing in clusters and, if carefully examined with a hand lens, disclose numerous flowers some of which—the males—are small with 4–8 perianth leaves and the same number of stamens, while others are bisexual carrying a prominent ovary raised on a stalk. With regard to the phenomenon of shedding it may be observed that, barring young trees which may show idiosyncracies of behaviour, the tree is one of those in which flowers appear after the leaves are shed, fresh leaves appearing only later. There are other trees in which flowers appear after the leaves or simultaneously with them as in *Pongamia* and *Margosa* respectively for instance.

The most striking peculiarity, however, is at the fruiting time, when the tree presents a very unique aspect with the flat, green, developing fruits which may be mistaken for leaves. In fact no leaves appear till after the fruits dry and fall off which generally happens in April and for another eight months the tree retains its foliage and a long period of vegetative activity ensues.

Of all the parts of the plant it is the fruit that compels attention. It is a thin flat rounded membranous body with the seed-containing portion in the middle surrounded by the wing which is really an expansion of the ovary wall. On account of the winged nature the fruit is known as a 'Samara' and the wing itself is usually considered to be an efficient adaptation for dispersal by wind in order to prevent overcrowding of seeds. While this explanation may be partly true, it is possible the expanded covering of the fruit may serve another useful purpose from the plant's point of view. An examination of the skin of the fruit under the microscope shows the presence of functioning stomata and the fruit also contains chlorophyll which may be extracted by means of hot alcohol. As the iodine test further shows the presence of starch there is no doubt that the winged green fruits assimilate starch and do the work of green leaves either for self nourishment or for the benefit of the plant as a whole which in the case of this particular tree is a special advantage because of its leafless nature for a period of three to four months.

The above observation made in the case of this tree raises an interesting question 'do fruits assimilate; if so to what extent?'