3. *D. eresimus* Cr. (Maeki and Remington*, n = 30); 4. *D. hamata septentrionis* Butler (Saitoh and Abe*, n = 31–36); 5. *D. Limniace* Cr. (= Tirumala limnicie of Saitoh and Abe†, n = 33); *D. limnicie limnicie* (Maeki and Abe*, n = 37) and *D. limnicie petiveriana* (Bernardi and de Lessé*, n = 41–46).

Variation in the chromosome number in different nuclei of the same specimen of *D. hamata septentrionis* was reported by Saitoh and Abe, whereas very wide variation in chromosome number in different subspecies of *D. limnicie* from different geographical regions was reported by different workers, suggesting attempts at evolution of subspecies into species at chromosomal level. The chromosome number of *D. plexippus*, not only agrees with the number in two other species of *Danaus* but with that of most of the common hoplak number of Lepidoptera (Suomalainen*).

We thank Prof. S. Dutt, Head of the Department of Zoology, A.U.P.G. Centre, Guntur, for providing facilities and Prof. R. Natarajan, Director, Centre of Advanced Study in Marine Biology, Porto Novo, for his many helpful suggestions. One of us (N.R.) thanks the authorities of CSIR, for financial support.


Guntur 522 005, June 16, 1975.

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IMPROVING SEED GERMINATION WITH MIST

Many crop plants pose problem in seed germination, the causes being physical and physiological. The freshly harvested seeds of many temperate crops, like strawberry, grapes and many pome fruits are in a state of dormancy and unless they receive adequate chilling, the dormancy is not broken and seeds do not germinate. In strawberry, Iyer, Chacko and Subramanyam*, have shown that treatments of fresh seeds with Ethrel (2-chloro-ethane-phosphonic acid) at 5,000 ppm for 24 hours induced nearly 90% germination within four weeks and these findings have further been corroborated by the studies of Wilson, Goodall and Reeves*. Further studies by Iyer and Subramanyam* have suggested that the promotion of germination with Ethrel might be due to the inhibition of the growth inhibitors that are present in the strawberry seeds. Since in a mist chamber, the seeds are continuously being exposed to mist and there is continuous washing of the seeds, it was logical to conclude that better germination could be obtained if seeds are sown in pots kept in mist chambers. The studies by Wilson et al.*, have given very promising results. The present study deals with the excellent results that have been obtained with a number of strawberry varieties.

Materials and Methods

Seeds extracted from freshly harvested fruits of five varieties of strawberry, namely, Bangalore Local, Gorella, Robinson, Senga Sengana and Tioga were sown in seed pans on a medium containing equal quantities of fine sand and soil. Five such seed pans were kept in the mist chamber in the month of May, 1974 after the initial watering of the medium. In the mist chamber, the pots were exposed to intermittent sprays of mist for 20 seconds at an interval of every 30 minutes. Equal number of pots with seeds sown were kept in one part of the chamber where they were not exposed to mist sprays but which were watered twice a day which acted as the control. Observations were made every day on the rate of germination.

Results and Discussion

The extent of seeds that germinated within a period of one month is presented in Table I. The seeds that were kept in the mist chamber germinated much faster than the control and in different varieties, the success obtained ranged from 79·6 to 93·3% within the course of a month from sowing.

**Table I**

Seed germination recorded within 30 days of sowing

<table>
<thead>
<tr>
<th>Variety</th>
<th>Per cent germination</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mist Chamber</td>
</tr>
<tr>
<td>Bangalore Local</td>
<td>93·3</td>
</tr>
<tr>
<td>Gorella</td>
<td>87·8</td>
</tr>
<tr>
<td>Robinson</td>
<td>86·4</td>
</tr>
<tr>
<td>Senga Sengana</td>
<td>79·6</td>
</tr>
<tr>
<td>Tioga</td>
<td>90·0</td>
</tr>
</tbody>
</table>

In contrast to this, the control, the germination was only ranging from 1·1 to 3·1%. The growth of the seedlings was also found to be much faster in the mist chamber. The data taken on the vegetative growth of the seedlings after 3½ months...
Letters to the Editor

Method on the seeds of Carica, Pineapple and Guava and have obtained highly positive results. This method is now being extended to other crops also.

The authors are grateful to Dr. G. S. Randhawa, Director, Indian Institute of Horticultural Research, Bangalore, for his keen interest in this study and for constant encouragement.

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THE GENETICS OF FIELD IMMUNITY TO BROWN RUST AND ITS INCORPORATION INTO COMMERCIAL VARIETIES OF WHEAT

KALYAN SONA, a widely adapted high yielding wheat (Triticum aestivum L.) cultivar, has become susceptible to the most prevalent races of brown rust (Puccinia recondita Rob. ex Desm.) (12, 77, 162, 162A, 104, 77) in India. A vigorous search for germplasm to provide sources of resistance is being carried out at different breeding centres. At the Punjab Agricultural University, Ludhiana, an exotic strain EC 93131 (Atlas-66) of wheat (T. aestivum L.) was detected to exhibit field immunity to all the above races of brown rust consistently for a number of years. This was true also at other locations in India (Strokey et al., 1973). Therefore, it was planned to study the genetic nature of immunity of this line and explore the possibility of transferring this characteristic to Kalyan Sona.

The parents, F₁ (Kalyan Sona × EC 93131) and F₂ were space-planted in 1972-73 at the PAU experimental plots. The above lines along with the F₈ were also space-planted in a randomized complete block design with two replications in 1973-74. The infector rows, a mixture of Agra local and Lal Bahadur (T. aestivum L.) were planted all around and were inoculated with a mixture of the above-mentioned prevalent races in both the years. The individual plants were scored as immune (completely free of disease) or diseased (traces to 100% infection).