Incubation of cultures for 24-36 hr showed a growth of numerous tiny colonies scattered around the parent colony. Subcultures also showed growth of similar tiny colonies on PDA, both on slants and in petri plates. These obviously appeared from the secondary sporidia (buds) forcibly shot out from the young colony. The secondary colonies were circular, pale buff with crenate margin, slightly raised at the centre and composed of young budding sporidia; they soon enlarged and developed similarly as the parent colonies (Fig. 1).

**Fig. 1. Tiny colonies by expelled sporidia of Melanoconium brachiarei, × 1.**

Mature smut sorin on the host parts go down to the soil with the withering leaves and gradually become released from the decomposing debris. The agglutinated teliospores in the sorin get separated with the onset of monsoon rains, germinate and build up dikaryotic mycelial/sporidal colonies on the soil, underneath the host plants. The dikaryotic secondary sporidia bring about fresh infections on the young leaves late in August every year. Young grey sorin become visible on the maturing leaves in early September.

Forcible discharge of infective or disseminative propagules is known to occur in several members of Basidiomycetes such as Sporobolomyctales, Dacrymyctales, Uredinales and Ustilaginales. Several species of Tilletia Tul. and Entyloma de Bary in the family, Tilletiaceae (Ustilaginales) have been observed to expel their sporidia, tenderly supported over the stigmatal apices. Forcible expulsion of sporidia was hitherto not reported in the genus Melanoconium de Bary as by M. brachiarei.

Faculty of Agriculture, G. Ramadevi,
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**IS GREEN ISLAND IN SORGHUM A LIGHT MEDIATED REACTION?**

The "green island" reported in *Sorghum* is found in old rust infected leaves. In the present studies, it is attempted to find out whether this reaction is due to differential penetration of sunlight through the canopy of *Sorghum* crop.

Four popular lines of *Sorghum*, viz., CSH-1, 370, 148 and CS 3541 were selected for the studies. Different densities of the plant population were maintained by varying the distance between rows, viz., 45 cm, 60 cm, 90 cm and 120 cm. The size of the plots was 7·2 m × 10 m. The experiment was replicated four times. Measurement of light (ft-c) was carried out at noon from 12 to 1·30, when there was maximum intensity of light over the canopy and minimum disturbance of the canopy due to wind. A Weston light meter (Weston Instruments, Inc., New York) model 756 with photoselenium cells and quartz filter was used for the light measurements. The measurements were taken when the crop was in the grain filling stage, when there was the maximum intensity of rust infection.

The light intensity was measured on top of the canopy, bottom of the canopy and middle of the canopy, at three different places in a plot. Per cent penetration was derived based on the reading on top of the canopy. The per cent penetration at the bottom and middle of the canopy was averaged to get the overall light penetration within the canopy. To find out the correlation between light penetration and green island reaction, the number of leaves showing green islands from the base of the plants was counted.
TABLE I
Relationship of light penetration through Sorghum canopy to green island formation

<table>
<thead>
<tr>
<th>Sorghum line</th>
<th>Distance between rows in cm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>A</td>
</tr>
<tr>
<td>CSH-1</td>
<td>3.9</td>
</tr>
<tr>
<td>370</td>
<td>2.8</td>
</tr>
<tr>
<td>148</td>
<td>3.1</td>
</tr>
<tr>
<td>CS 3541</td>
<td>5.5</td>
</tr>
</tbody>
</table>

A = Per cent penetration of light.
B = Number of leaves showing green islands.

The data presented in Table I show that line 370 allowed the least amount of light to pass through the canopy, yet it had only 3 leaves from the bottom showing green islands. The line CS 3541 allowing greater amount of light to pass through had more number of leaves showing green islands. Within the variety, the different spacing of rows which allowed differential penetration of light did not influence the number of leaves manifesting green islands. Thus it becomes obvious that green island formation in Sorghum is not a light mediated reaction. In green island formation the activity of the rust gets confined to the ring of chloroplast surrounding the pustule. The chlorosis of the rest of the leaves probably limits the further spread of the fungus. The hybrid CSH-1 and 370 are susceptible to rust and yet only 2 to 3 leaves from the base exhibited green island formation. The varieties 148 and CS 3541 are highly tolerant to rust infection and 4 to 5 leaves from the base manifested green island formation in them. Thus it becomes quite apparent that green island formation is inversely related to the reaction of Sorghum to rust. Green island reaction is used as an index to assess host parasite compatibility in wheat rust. This could very well be used in estimating the reaction of Sorghum lines to Puccinia purpurea.


EFFECT OF INDIUM ON CRYSTALLISATION OF SELENIUM

Selenium is a semiconductor and has several important applications. The growth of hexagonal selenium from melt is, however, hampered by a more easily growing amorphous phase. Single crystal growth takes place at extremely slow growth rates of $10^{-7}$ cm/sec or at pressures of five kbar. Both these conditions are inconvenient. A breakthrough in selenium growth was achieved by Keezer who found that addition of impurities makes it possible to grow single crystals of selenium under moderate vacuum and at reasonable growth rates. Keezer tried small concentrations of Na, K, Cl₂, Br₂, I₂, and Tl. Out of these, K, Cl₂, Br₂, and Tl induced single crystal growth. These impurities reduce the viscosity of the melt and impede the formation of the Se₄ rings which constitute the amorphous phase. The absence of any effect in the case of I₂ was attributed by Keezer to the near-zero electronegativity difference between the I and Se atoms.

Indium belongs to group III A and the electronegativity difference between In and Se is slightly greater than that between Tl and Se. As such, indium should help the crystallisation of selenium. We have examined the effects of addition of indium on the crystallinity of selenium and some of the results are reported here. Filings of pure indium were added to pure selenium powder. Samples with different indium concentrations were taken in sealed pyrex tubes. The samples were heated to a temperature above the melting point of selenium and the melt was shaken thoroughly for some time with the help of an electromagnetic vibrator. The melt was then cooled. The sample in the pyrex tube was then kept in a Bridgman growth apparatus similar to the one described earlier. Growth was carried out at the rate of 1.2 cm/hr.

The ingots were then fractured and the resulting surfaces were examined under a metallurgical microscope. The pure Se ingots showed irregular fracture. As the In content increased the ingots showed greater tendency towards cleavage. Also, while the fractured surface of pure Se ingot had a dull appearance, the surfaces of In-doped ingots showed increasing reflectivity. Detailed examination of the surface revealed that the entire ingot was not a single crystal but contained several small oriented single crystals. A typical crystalite with a stepped surface is shown in Fig. 1. The region in between these crystalites is non-reflecting and represents, presumably, amorphous Se. The crystallinity (crystallites-to-amorphous-phase ratio) increased with In concentration up to 15% In. At higher In