and to University College of Wales, Aberystwyth, for granting him an SRC Fellowship.

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3. La Cour, L. F., Heredity, 1951, 5, 37.

KARYOTYPE IN THREE CULTIVATED VARIETIES OF GLYCINE MAX (L.) MERR.

Glycine max (L.) Merr. commonly known as soya-
bean, is cytologically not adequately explored.
A thorough analysis of karyotype was made only
recently in the cultivated variety UPI in G. max2.
In this investigation a comparative study has been
made on the detailed cytology of UPI, Improved
Pelican and Mammoth. Somatic chromosomes
were studied from young root-tips after pre-treatment in
saturated parachlorobenzene solution at 15°C for
2-5 hours and fixation in acetic-alcohol (1:2) for 30
minutes followed by hyrolysis in 2% aceto-orcein
NHCl (9:1) solution and finally squashing in 1% aceto-
orcein solution. Somatic complement in this species has
been found to consist of forty chromosomes
(Figs. 1, 2, 3, 7). Secondary constrictions were
observed in three to four pairs of chromosomes. The
longest pair was provided with superannuous constrictions.
In all the varieties the karyotype was graded and the following morphological types have been
observed (Figs. 4, 5, 6).

Type A—Represented by comparatively long chromo-
somes, each with three constrictions, one primary
and the other two secondary. Of these, one was nearly
median in position and the other two located in sub-
median positions at the two ends.

Type B—Represented by medium-sized chromosomes
each with two constrictions, primary and secondary.
One of the constrictions was submedian in position
and the other was nearly median to submedian to the
longer arm.

Type C—Nearly long chromosomes each with
median to nearly median primary constrictions.

Type D—Medium sized chromosomes of slightly
ranging length each with submedian primary constrictions.

Figs. 1-3. Somatic metaphase in varieties UPI, IP
and Mammoth respectively (2n = 40), × 2,106.
Figs. 4-6. Idiogram in UPI, IP and Mammoth
respectively.

Fig. 7. Photomicrograph (2n = 40) in UPI.

Type E—Medium sized chromosomes each with a
primary and a secondary constriction. One of them
was submedian in position and the other was nearly
median to the longer arm.

Type F—Medium sized to short chromosomes of
varying sizes, each with nearly median to submedian
primary constrictions.

In the variety UPI, the chromosomes were short
to medium-sized ranging from 1.5-3.2 μ, four pairs
of them had secondary constrictions and the longest
pair having supernumerary constrictions (Fig. 4).
All the six morphological types were present in this
variety. Two pairs of chromosomes represented
type B, one pair of them was comparatively long.
Type D was represented by five pairs of chromosomes,
two pairs had nearly submedian and three pairs had
nearly median primary constrictions. The chromo-
somes in the variety Improved Pelican were mostly
similar to those in the variety UPI having the size
range between 1.4-2.4 μ. One pair of chromosome
resembled type A but one of the constrictions was
located at the distal end. The somatic chromosome
complement in the variety Mammoth was quite diffe-
rent from that in the other two varieties; chromosome
size in this variety varied from 1.3-2.3 μ. Types A,
C and E are absent but B was represented by three
pairs of chromosomes, of which one pair was provided
with a very short secondary constriction at the distal
end of the longer arm. Total amount of chromatin
content per haploid complement was 41.3 μ in the
variety UPI, 37.4 μ in Improved Pelican and 36.1 μ
in Mammoth.
Karyotype of *G. max* was not thoroughly analyzed. Detailed karyotype was analyzed in *G. max* variety UPI following the technique described in ref. 1. In soyabean, however, a better karyotype was obtained following pre-treatment in saturated paraldehyde-benzene at 15°C for 1.5-2 hours and fixing in 3:1 for 48 hours at 37°C before hydrolysis and subsequent staining in leuco-basic fuchsin. Besides, the root tips were incubated in pectinase for 1.5 hours at 30°C.

Cyto-geo.ics Laboratory, Department of Botany, Kalyani University, Kalyani 741 235, W. Bengal, February 23, 1976.


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**PHOTO-INDUCED CONIDION IN *ALTERNARIA MACROSPORA* ZIMM. AND *COLLETOTRICHIUM GOMPHRENEA* RAO AND SALAM**

Both quantum and quality of light influence sporogenesis in phytopathogenic fungi. But the precise quality of light on sporogenesis has remained elusive till recently. Notable is the near ultraviolet (NUV) light which appears to be effective in inducing sporulation of a few fungi.

In this note we report on the quality of light influencing sporulation of two fungi, *Alternaria macrospora* Zimm. isolated from *Gossypium hirsutum* and *Colletotrichum gomphrena* Rao and Salam from *Gomphrena decumbens* sporulated profusely when exposed to 'Black light' fluorescent lamp (320-420 nm) and 'cool white' day light fluorescent lamp (300-700 nm) respectively. *Alternaria macrospora* produced maximum number of spores when exposed to near ultraviolet light, but cultures incubated in daylight fluorescent lamp produced less number of spores (Table I). Several species of *Alternaria* sporulate profusely under near ultraviolet light followed by a period of darkness.

Of the various media tried, viz., potato dextrose agar, water agar, oatmeal agar, cotton leaf extract agar, Czapek's agar with and without yeast extract (0-1%) and Richards' agar, we found that photo-induced sporulation in *A. macrospora* was more pronounced when grown on modified Richards' agar medium. Cultures incubated in total darkness did not sporulate at all. Furthermore, lowering the sucrose concentration from 5.0-0.5% in Richards' agar induced the maximum number of spores.

**TABLE I**

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Spore No./ml in thousands**</th>
</tr>
</thead>
<tbody>
<tr>
<td>'Black light' lamp</td>
<td>6200</td>
</tr>
<tr>
<td>'Cool white' day light lamp</td>
<td>20</td>
</tr>
<tr>
<td>Total darkness</td>
<td>nil</td>
</tr>
</tbody>
</table>

*12 h light/12 h dark cycle was given and grown on Richards' agar.

Spore counts taken on 10th day after inoculation.

**Each result is an average from three replicates.

*Colletotrichum gomphrena* grown on potato dextrose agar sporulated profusely when exposed to visible white light. But near ultraviolet light from 'Black Light' was not as effective as light from visible white light. Leach concluded that most fungi do not respond to near ultraviolet light in sporulation. Recent report on the effect of visible white light on enhanced spore production by *Trichosetephaeria turicens* also agrees with Leach's statement. The response elicited by *C. gomphrena* also clearly confirms to Leach's co-ordination.

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CAS in Botany, Madras 5, K. S. Bhamna.

November 12, 1976.

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