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**A HIGH FREQUENCY OF NULLISOMICS IN THE WILD POPULATION OF COIX GIGANTEA (POACEAE)**

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**Occurrence** of nullisomics in a natural population is comparatively rare. This is mainly because any chromosomal deviation from the typical is often likely to be eliminated, the variants being usually incompetent. Individuals, in which a complete bivalent is lost from their chromosomal constitution (2n-2), are reported to be comparatively weak with low rate of survival. Nullisomics have, however, been produced under controlled conditions, through appropriate breeding of aneu hyploids or selling monosomics, and they survive and thrive well when raised with care. Generally, nullisomics appear more among higher polyploids, as in wheat and oat, since in them, the loss of a bivalent can easily be withstood, and also more than compensated by the excess genomes in balance.

**Coix gigantea** Koen. ex Roxb., one of the oriental genera of the tribe Maydeae of Poaceae, grows wild in the western ghats of India. A population, collected from Purandar (Maharashtra State) and later maintained at the Botanical Garden of this University, was individually screened for chromosome number. Male racemes were fixed in acetic-alcohol (1:3) and the young anthers were squashed in acetocarmine (1%). Slides with desired stages in meiosis were made per-manent using liquid carbon dioxide, and they were deposited with the Cytogenetics Unit of the Botany Department.

In nature, *Coix gigantea* is known to occur in two cytological forms, 2n=20 and 2n=40. Single plant cytology in a total of 105 plants, selected at random from wild population of *C. gigantea*, showed the various chromosomal variants as presented in the Table 1.

Nullisomics appearing in such a high frequency (about 65%) among natural population seems to be a highly significant feature when compared to the earlier reports on their origin and occurrence in several other taxa. While the diploids revealed 10 regular bivalents (figure-1), the nullisomics showed clear nine bivalents (figure 2) that went through meiosis normally producing deficient but functional male gametes (n-1, i.e. n=9). Loss of a bivalent did not seem to have seriously affected the chromosomal behaviour in nullisomics. The sub-haploid gametes managed to survive and participate in the reproductive process producing more nullisomics in the population. The nullisomic plants were quite normal and healthy and some were even stouter and taller than diploids. Morphologically, there was hardly any obvious difference between nullisomics and the disomics. In the various aneuploid obtained, detailed observations on morphological marker(s) and the behaviour of the chromosomes are in progress and will be published subsequently.

In the tribe Maydeae, it appears from the literature that there are two basic chromosome numbers, x=5 and x=9. All the genera of Maydeae have chromosome numbers in multiples of five. *Trip sacum* is the only exception to this and has nine as its basic chromosome number. Within the genus *Coix*, there is a species—*C. aquatic*a—having 2n=10 chromosomes, i.e. x=n=5. Considering, therefore, five as the basic chromosome number for the genus *Coix*, the present species, *C. gigantea* with 2n=20 happens to be numerically at a tetraploid level. Appearance and survival of nullisomics in such a high frequency easily tolerating the loss of a bivalent and

**Table 1**

**Frequency of various chromosomal variants in C. gigantea in the wild population**

<table>
<thead>
<tr>
<th>Total</th>
<th>Nullisomic 2n = 18</th>
<th>Monosomic 2n = 19</th>
<th>Dismocic 2n = 20</th>
<th>Trisomic 2n = 21</th>
<th>Tetrasomic 2n = 22</th>
<th>Pentasomic 2n = 23</th>
<th>Hexasomic 2n = 24</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of plants 2n = 2</td>
<td>2n = 2</td>
<td>2n = 1</td>
<td>2n</td>
<td>2n + 1</td>
<td>2n + 2</td>
<td>2n + 3</td>
<td>2n + 4</td>
</tr>
<tr>
<td>105</td>
<td>68</td>
<td>13</td>
<td>9</td>
<td>12</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

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A NEW LEAF SPOT DISEASE OF MULBERRY (*MORUS ALBA L.*)

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DURING November-December 1981, a new leaf spot disease of Mulberry (*Morus alba*) was observed in the orchard of Haryana Agricultural University, Hissar. The disease is characterised by foliar sooty tuft like circular to irregular black spots. On advancement of infection it covers a large area on the lower surface of the leaves and the upper surface shows brownish appearance (figure 1).

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**Figure 1 & 2.** 1. Diakinesis in diploid showing ten bivalents. 2. Diakinesis in nullisomic showing nine bivalents X3,000.

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efficiently competing with the diploids in the natural population, is yet another proof that *C. gigantea* is at a polyploid level. In this context, it seems that even nine as a basic chromosome number solely for the genus *Tripsacum* in the tribe Maydeae might have been secondarily evolved and established.

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**Figure 1.** A typical symptom of mouldy leaf spot disease of mulberry caused by *Isariopsis indica* var. *mori.*