of the crop in many papaya growing regions in the world.

All the cultivars of papaya (*Carica papaya*) are known to be susceptible to the papaya mosaic virus. However, the wild species *C. cauliflora* has been reported to be resistant to this virus[1]. Attempts to hybridise these two species have failed in the past[2] owing to the abortion of the hybrid embryo. Work on interspecific hybridisation is in progress at this Institute for the last seven years. Out of the innumerable pollinations that were made between *C. papaya* and *C. cauliflora* only one hybrid was obtained. Even this limited success was achieved only by pollinating on stigma smeared with 5% sucrose[3]. This F_1 was subsequently used to backcross with the parental species to generate sufficient population for screening against Mosaic Virus. At the National Chemical Laboratory interspecific hybrids could be obtained by embryo culture[4].

During interspecific hybridisation in the genus *Carica*, it was possible to obtain hybrids of *C. cauliflora* × *C. monoica* without any difficulty. Previous studies have also shown that these two species are easily crossable[5,6]. Further studies showed that this F_1 interspecific hybrid is crossable with *C. papaya* and fertile hybrids can be obtained involving the genomes of *C. papaya, C. cauliflora* and *C. monoica*. The hybrids have mainly the characteristics of *C. papaya* and the plants are vigorous and detailed studies on their variability pattern and reaction to the Mosaic virus are underway.

The distinguishing morphological features of the three species, interspecific hybrid (*C. monoica* × *C. cauliflora*) and the complex hybrid (*C. monoica* × *C. cauliflora* × *C. papaya*) are presented in table 1. It was observed that the complex hybrid showed an assortment of parental species characteristics indicating that they are true hybrids. The pollen fertility however, was very high in the parental species as well as the complex hybrid indicating the close affinity among the species, though there are crossability barriers at certain levels.

It is interesting to note that this is a typical example of interspecific hybridisation where two species which are individually incompatible to a third species do not pose any crossability barriers in their hybrid form. That is, *C. monoica* and *C. cauliflora* are incompatible with *C. papaya* but the present studies have shown that *C. cauliflora* × *C. monoica* hybrid is compatible with *C. papaya*. The new complex species hybrid is expected to be an interesting breeding material not only for the possibility of introducing resistance to Mosaic virus into the papaya cultivars but also to study the monoecious characteristics in the background of *C. papaya* which is dioecious. Further studies on the reaction of these interspecific hybrids to the PMV and the nature of inheritance to sex are in progress.

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A NOTE ON THE NUCLEOLAR STAINING IN *CHARA* SP.

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IN the study of cytology of Characeae, the size and number of nucleolus per cell is not of much importance, yet their dimension and variation in number are generally taken into consideration[1-3]. During the cytological investigations of Characeae of West Bengal, the authors have observed that the nucleolus very often could not be distinctly differentiated within the nucleus and to determine their number by the usual aceto-carmine staining following the iron-alum method[4] present difficulties. A suitable methodology to stain the nucleolus in *Chara* very prominently was keenly felt. The main objective was to see how far the $AgNO_3$ staining method for nucleolus[5] which works excellently in angiospermic material could be employed in case of *Chara* sp., with modifications if any, specially in the staining of the nucleolus of vegetative cells which have high chlorophyll content. The follow-

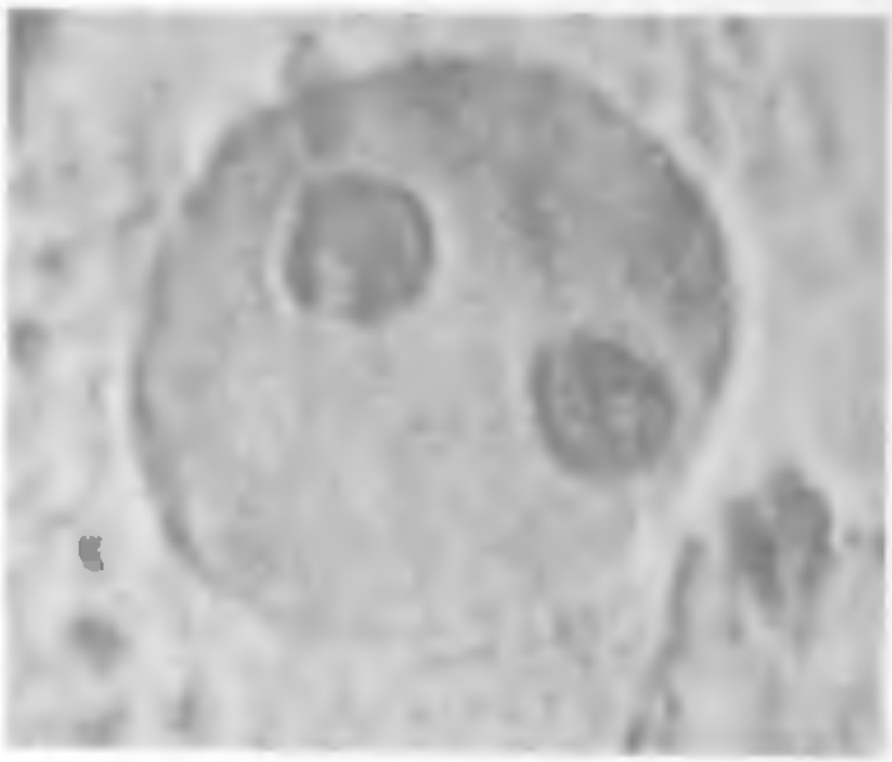

Figure 1. A vegetative cell of *Chara zeylanica* showing two very prominently stained nucleoli.

ing staining schedule gave excellent staining of the nucleolus. Young growing vegetative apices of *Chara* sp. were fixed in 1 : 1 mixture of 10% formol and 1% hydroquinone solution for 2 hr at room temperature, then washed with distilled water and immersed in 2% aq. solution of $AgNO_3$ for 18–20 hr at 70°C. The material was again washed in distilled water and reduced in the same fixative as described above for 2 hr. Final squashing was done in 50% acetic acid, sealed and observed.

Following this technique in four sp. of *Chara viz. C. zeylanica, C. globularis, C. braunii,* and *C. fibrosa,* excellent staining of the nucleolus was achieved (figure 1). In this staining procedure the nucleoli were stained dark brown, the nucleus bright yellow while the cytoplasm took pale yellow colouration. It is thus evident that $AgNO_3$ method could successfully be employed to stain nucleolus in vegetative cells of *Chara*, but the usual incubation time in $AgNO_3$ (10–15 hr) must be enhanced to atleast 18–20 hr, otherwise the staining would be unsatisfactory.

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PATTERN OF SPORULATION AS POSSIBLE INDEX OF CULTIVAR REACTION TO *HELMINTHOSPORIUM TURCICUM* INCITANT OF LEAF BLIGHT OF MAIZE

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WHILE projecting the capacity of maize leaf extract to support significant spore production in *Helminthosporium turcicum* incitant of leaf blight the authors[1] suggested that this character could be used to index cultivar reaction to this pathogen. Accordingly an experiment was designed and the results obtained are presented here.

Five maize cultivars included two blignt resistant lines (Ade C and PTR) and three susceptible lines (CM 600, Warangal local and CM 202). The five isolates of the fungus included three isolated from Hyderabad (Hyd. 1 and Hyd. 2 obtained from maize and an isolate purified from blighted sorghum leaves) one isolate from Mandya in Karnataka and one isolate from Sikkim.

The isolates of the fungus were grown on the media containing 20% extracts of 5th and 6th leaves cut from 40 days old maize cultivars. The media were solidified by using 2% agar agar. The isolates were inoculated on the media in petridishes from six days old cultures on potato dextrose agar. The inoculated petridishes were incubated at two temperatures (12°C to 28°C) for fourteen days. Each treatment was replicated 3 times. Sporulation was estimated with a haemocytometer. The data are analysed following a split plot design and are presented in table 1.

The results clearly show that the extracts from resistant cultivars significantly suppressed and extracts from susceptible cultivars supported significantly higher sporulation. The influence of resistant cultivars among themselves was not significantly different. Among the susceptible cultivars Warangal Local supported the maximum sporulation followed by CM 202 and CM 600.