with thick, large, coarse and dark green leaves. The female flowers were crossed with pollen grains of control and fruits (figure 1c) and seeds (figure 1d) were harvested. Seed setting (63.33%) and seed germination (72.67%) were recorded. Nine-month old branch was multiplied vegetatively by cutting for detailed studies. Plants raised from these cuttings bore only female inflorescences and showed stem fasciation and stem bifurcation. For mitotic studies root tips were pretreated with 0.002 m solution of 8 hydroxyquinoline for 1 h at 15°C and washed with distilled water. The root tips fixed in 1:3 acetic alcohol for 24 h were hydrolysed in 1 NHCl at 60°C for 15 min and stained at 2% aceto-orcein for 24 h. Squashes prepared in 45% acetic acid revealed 56 chromosomes in somatic cells (figure 1e) confirming the induction of autotetraploidy in it. The autotetraploid exhibited an increase in the leaf size, fresh leaf weight (39.57%), water content of leaf (10.17%) and reduction in internodal distance (7.69%), the number of stomata per field (18.45%), plant height and rooting behaviour (17.07%) over the control. However, the number of branches was equal.

The present study emphasizes the possible mutagenic effect of colchicine on the male variety of mulberry. The female autotetraploid plant was obtained as a result of somatic mutation after colchicine treatment. However, no information on the mechanism(s) which gave rise to this variant is available. This female autotetraploid variant is quite similar to somaclonal variants generated by passage of plants through tissue culture[10].

The genetic mechanism(s) underlying the production of somaclonal variants is also unknown. The use of colchicine-induced sex variant also appears to have considerable potential in the hybridization programme. Hence, this colchicine-induced female autotetraploid mutant is utilized for evolution of triploids by hybridization with different desirable diploid strains.

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OCCURRENCE OF FREE THRESHING TRAIT IN *TRITICUM DURUM – T. MONOCOCCUM AMPHIPLOID* (A^mA^mAABB)

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NINE *Triticum durum–T. monococcum amphiploids* (A^mA^mAABB) were synthesized at this Research Station by chromosome doubling of F_1 sterile hybrids[1]. These were meiotically stable and fully fertile showing a high degree of selective pairing of the A genomes of diploid and tetraploid wheats. They also showed hybrid vigour for many tillers per plant, 100-grain weight, protein content and Karnal bunt (*Neovossia indica*) resistance. However, all these amphiploids contained very hard threshing attributed to diploid wheat *T. monococcum*. Since some quadrivalent association was observed in these amphiploids, it was presumed to have free threshing genotype by raising its large population.

About 5000 plants of one of the amphiploids (× *Durococcum*-I), a cross of *T. durum* cv. PCD 57 from CIMMYT and a line of *T. monococcum* (Acc. No. 304) (supplied by Dr B. L. Johnson, University of California, Riverside, USA), were raised in C_3 generation during 1985–86. One plant with relatively lax head was noticed (figure 1). One ear of this plant was cytologically examined by fixing in Carnoy's solution. The chromosome number in pollen mother cells was $2n = 42$ with normal chromosome distribution at anaphase I. This plant had free threshing and tough rachis trait. All the plants in the progeny in C_4 generation were fully fertile during 1986–87 indicating its true breeding habit (figure 2).

The occurrence of free threshing plant in self-progeny of this duplex amphiploid (A^mA^mAABB), with a high degree of selective pairing, is possible only when there is quadrivalent formation between

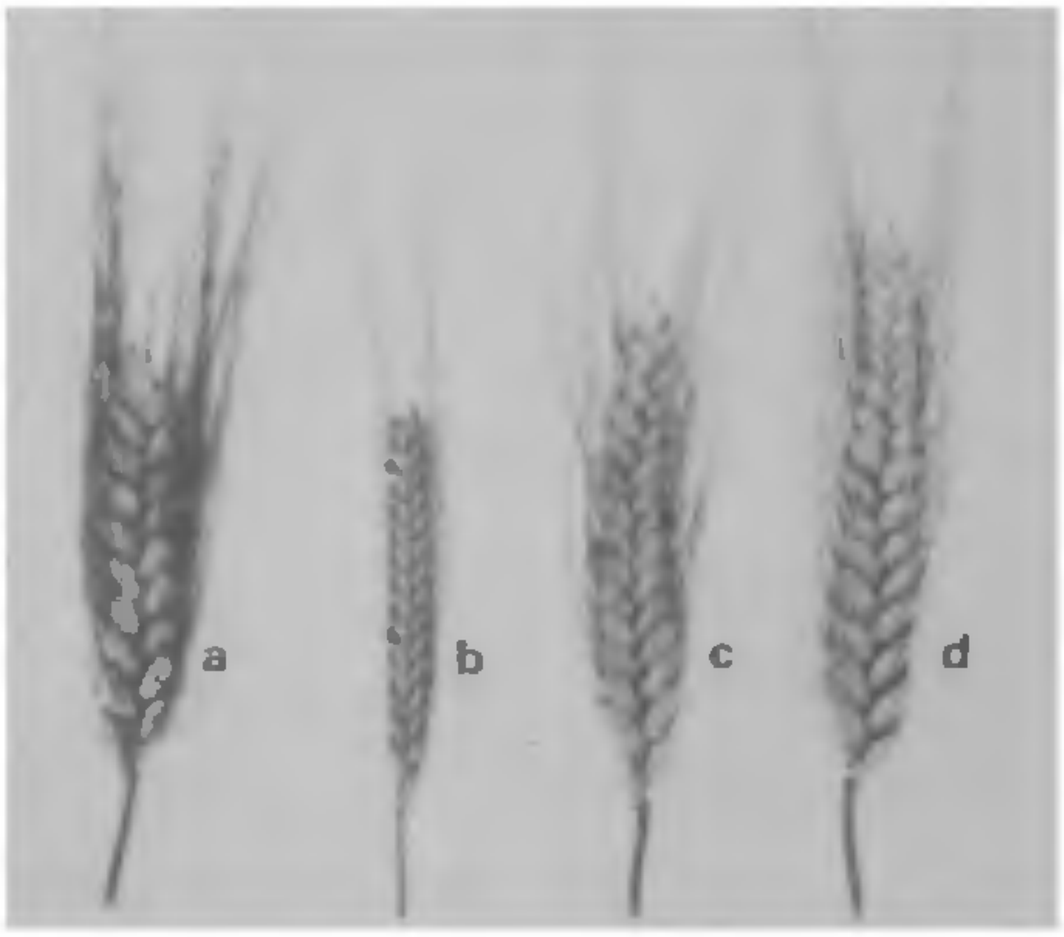

Figure 1a–d. Ears of *Triticum durum* cv. PCD 57; *T. monococcum*; PCD 57 × *T. monococcum* amphiploid (× *Durococcum*-I, with hard threshing and brittle rachis); and a plant of × *Durococcum*-I (with relatively lax ear selected from C_3 population) respectively.

5A chromosomes of *T. monococcum* and *T. durum* respectively. Gene-controlling hard/free threshing is located on the long arm of 5A chromosome[2]. The $5A^m$ chromosome of *T. monococcum* and 5A chromosome of *T. durum* might have been involved in quadrivalent formation resulting in crossing over and ending of both free threshing alleles in the same gamete. This amphiploid had 53.66%, 19.51% and 4.07% cells with one, two and three quadrivalents respectively[1]. As only one free threshing plant was observed out of 5000 plants, it shows that the 5A chromosomes of two genomes have been rarely involved in quadrivalent association. When quadrivalent formation is complete and 50% crossing over occurs between kinetochore and the locus, the zygotic genotypic ratios for a duplex individual are 20.8A : 1a under random chromatid assortment and 35A : 1a under random chromosome assortment. Genetic analysis of 5A chromosome shows that free threshing locus (q) is close to the centromere between b_1 and Vrn_1 loci determining the presence of awns and winter habit respectively[3]. Allard[4] suggested growing of large populations in tetraploids, especially autohexaploids like × *Durococcum*, for obtaining the desired recessive types.

Hard threshing and brittle rachis attributes in newly synthesized amphiploids (A^mA^mAABB) were limiting factors in their commercial utilization in the wheat improvement programme. So far no free threshing amphiploid with A^mA^mAABB genetic constitution has been reported.

Figure 2. Progeny of selected plant with relatively lax ear (free threshing and tough rachis) in C_4 generation.

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CYTOGEOGRAPHY AND NOMENCLATURAL NOTES ON *SOLANUM* L. SECTION *SOLANUM*

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Solanum nigrum L. complex (*Solanum* section *Solanum*) is a polyploid group with $x = 12$ chromosomes. The occurrence of diploid, tetraploid and hexaploid cytotypes was reported in India[1] but the hexaploid cytotype is not yet recorded in South India[2]. Recent taxonomic studies suggest a separate specific status to each cytotype and restrict the binomial *Solanum nigrum* L. to hexaploid taxon[3,4]. However, Indian botanists have been using the epithet *S. nigrum* L. for all the three cytotypes. The present note reports the occurrence of hexaploid cytotype in Tamil Nadu and provides correct binomials for diploid and tetraploid species together with a diagnostic key.

During the field survey, it was found that the diploid and tetraploid taxa are common throughout Tamil Nadu, whereas the hexaploid form has restricted distribution. The latter grows in Ooty and the adjacent places in Nilgiris. The tetraploid taxon is easily recognizable in the field by its short-spreading habit and translucent orange-red berries. The diploid and hexaploid taxa are similar in their habit, but differ in the nature of inflorescence, flower size and shape, berry colour, pollen grain diameter, and seed size and number.

The confusion in nomenclature is apparent while considering the diploid and tetraploid species. The names *S. americanum* Mill. *S. nodiflorum* Jacq., *S. photeinocarpum* Nak. and *S. nigrum* L. are used for the diploid taxa. They are readily crossable and conspecific with each other[4-7]. *S. americanum* Mill., being earlier, is the correct epithet for this taxon. The binomials *S. villosum* Mill., *S. luteum* Mill., *S. miniatum* Bernh., *S. alatum* Moench, *S. flavum* Kit., *S. rubrum* Mill., *S. ochroleucum* Bast. and *S. roxburghii* Dun. are used for orange-red/yellow berried tetraploid taxa. It is thus proved that they are synonyms and *S. villosum* Mill., being earlier, is the correct name for this taxon[8,9]. These two are the most common species in Tamil Nadu. Therefore, future flora should record *S. americanum* Mill. and *S. villosum* Mill. in addition to *S. nigrum* L.

Key for the field identification:

I. Fruits orange-red, longer than broad, translucent; plants short with spreading branches; pollen diameter 21–26 μm. Chromosome number $2n = 48$, common throughout... *S. villosum* Mill.
I. Fruits black, plants erect and tall... II.
II. Fruits shiny bluish-black; seeds small 0.8–1.2 mm long and 0.6–0.9 mm wide. Inflorescence unbelliform, fruiting pedicels pendulous, flowers small, corolla 5–7 mm in diameter. Pollen grain 18–23 μm across, chromosome number $2n = 24$, common throughout... *S. americanum* Mill.
II. Fruits dull purplish-black, seeds large 1.1–1.4 mm wide. Flowers large, corolla diameter 8–11 mm; pollen grain 25.5–31.2 μm across; chromosome number $2n = 72$. Grows in high altitude regions of Nilgiris only... *S. nigrum* L.

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FLOWER ON TENDRIL IN *TRICHOSANTHES ANGUINA* LINN.

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Tendril is a typically long and slender structure that may be branched or unbranched[1]. It is a