6. Conclusions

Following are the salient findings of the present work:

1. Sequential reduction of chromosome complement in interspecific hybrids (F₁, BC₁, Sibs and F₂) between tetraploid pearl millet (2n=4x=28) and *P. squamulatum* confirmed *P. squamulatum* as an octoploid at with 2n=8x status, and x=7 alike pearl millet.

2. Induced tetraploids in male sterile diploid pearl millet lines (with A1 and A4 cytoplasm) were successfully produced.

3. BC₁ derived from pearl millet x *P. squamulatum* cross in this study offer potential for production of MAALs/DAALs, and many desirable characters like perenniality, high tillering, multi cut, apomixis were introgressed for pearl millet improvement.

4. Restricted pairing between chromosomes of pearl millet and *P. squamulatum* revealed different genomic status of the two species, however, homeology for at least one chromosome was observed.

5. New cytotypes was derived from interspecific hybrids involving *P. glaucum* and *P. orientale* containing 2n=37 representing 28 glaucum and 9 orientale chromosomes. This represents fourth generation of recurrent addition of *P. glaucum* chromosomes into *P. orientale* background utilizing unreduced female gametes. These hybrids offer resource to study characters such as perenniality, apomixis and genome analysis.

6. Trispecific hybrids between *P. glaucum*, *P. orientale* and *P. squamulatum* was produced for the first time involving [F₁ (pearl millet x *P. squamulatum*) x BC₁ (*P. glaucum* x *P. orientale*)] cross, that contained 2n=44 chromosomes representing 21 glaucum + 14 squamulatum + 9 orientale chromosomes. These hybrids are named as GOS hybrids. These hybrids offer material for production of multiple alien addition lines, apomixis genetics and genome analysis.