

ชื่อเรื่อง

**Genomic Manipulation for Eco-Friendly Plantation and Enhanced Productivity of Essential Oil in Vetiver**

ชื่อผู้วิจัย

U.C. Lavania and Sushil Kumar

ชื่อหน่วยงาน

Central Institute of Medicinal and Aromatic Plants, INDIA

ปีที่ดำเนินการ

ปีที่พิมพ์รายงาน

**Abstract**

Profuse seed formation enriches vetiver population in its natural habitat but lead to a heterogeneous mix of inbuilt genetic variability that may not be always desirable. Nevertheless, the vegetative mode of propagation attendant in this species promises a distinct advantage for realising uniform population and the resultant plant products. But this does not take care of the menace that is likely to take place on account of seed dispersal, disturbing genetic purity of the growing population as well as spread of vetiver to undesired destinations, lest the flowering tops are excised before seed-set. Therefore, an eco-friendly should aim at isolating the desired plant types that either do not bloom or bear only infertile seeds.

In India, tremendous amount of genetic variability exists in vetiver that can be clustered into five distinct groups on account of karyomorphological characteristics and 2C nuclear DNA content (range 2.0 to 2.6 pg). Although, nonflowering/infertile plant types naturally occur in southern parts of India, their genetic manipulation to attain desirable attributes is greatly handicapped for lack of an amenable reproductive system. Therefore, resorting to artificial polyploidy is the obvious choice to meet the twin objectives of genetic manipulation for bringing a desirable change in agrobiological characteristics as well as causing a breakdown in sexual reproductive system.

Curiously, the artificial autotetraploids developed in this species have shown their superiority over diploid progenitors with respect to economic yield by 60% and enhanced soil binding capacity on account of thicker roots. The seed sterility associated with such autotetraploids and the expected triploids would not only restrict their unwanted spread, but facilitate channelisation of saved biological resource of the plant towards vegetative vigour and secondary metabolism.