Somatic Embryogenesis and Plant Regeneration from Immature Inflorescences of *Pennisetum purpureum* Schumach (Napier Grass)

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The 21st International Grassland Congress / 8th International Rangeland Congress took place in Hohhot, China from June 29 through July 5, 2008.

Proceedings edited by Organizing Committee of 2008 IGC/IRC Conference

Published by Guangdong People's Publishing House

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Key words : *Pennisetum purpureum* (Napier grass) , embryogenic calli , tissue culture , *in vitro*

Introduction *Pennisetum purpureum* Schum .(Napier or elephant grass) is a major fodder and energy crop in tropic and subtropical region . Napier grass N51" was introduced to China from US in 1985 . Although the formation of somatic embryos and plants from inflorescence segments of napier grass was reported (Wang and INDRA , 1982) , there is a number of difficult problem because of different genotype of each species responding optimally in vitro . This paper describes extensive somatic embryogenesis and plant regeneration from cultured segments of immature inflorescence of napier grass N51" , which does not usually set seeds in nature and is principally propagated vegetatively . It will make a possibility of industrial tube seedling production and breed by biotechnology .

Materials and methods Immature inflorescences (1-3 cm in length) of *Pennisetum purpureum* Schum .(N51) were obtained from field in sunny day . After stripping and wiping outside leaves with cotton soaked in 70% ethanol every layer , the inflorescences were dissected out , cut into 1-3 mm segments and placed in trigonal glass bottle on 0 .8% agar medium containing 3% sucrose ad different concentrations and combinations of 2 ,4-D and KT at 3-week intervals . Embryogenic callus was subcultured on the same medium about 4 weeks . Healthy somatic embryogenesis was transferred on differential medium added with 2 , 4-D and 6-BA . 3-leaf plant was grown on root vigor medium supplemented with CPPU and NAA . The basic nutrient media used were MS . The pH of the medium was adjusted to 5 .8 before autoclaving . All cultures were incubated at 26～28℃ in a growth chamber under 16 h of diffused light .

Figure 1 *Calli of dry , compact small pellet .*

Figure 2 *Intact regenerated plantlets .*

Results The frequency of callus of compact , small pellet induction reached separately 79 .0% and 72 .6% in the callus induction medium supplemented with 4 .0 mg/L 2 ,4-D + 0 .05 mg/L KT and 4 .0 mg/L 2 ,4-D + 0 .1 mg/L KT(Figure 1) . During subculture , callus of small pellet were maintained 40 .9% and 74 .0% in the callus subculture medium added 3 .0 mg/L 2 ,4-D + 0 .2 mg/L 6-BA . The rate of green plant regeneration of small pellet callus from subcultures reached 36 .4% and 38 .5% , respectively , in the differentiation medium supplemented with 2 .0 mg/L CPPU +0 .01 mg/L NAA or 0 .5 mg/L KT + 0 .5 mg/L IAA . Green plant of regeneration with three leaves was transferred to root vigor medium added 0 .5 mg/L NAA in 1/2 MS basic culture medium (Figure 2) . The surviving rate of green plant cultured in soil reached above 95% . It was a simple effective method to overcome the obstruction of plant generation by selecting the callus of dry , compact , small pellet in early generation .

References

WANG , Dayuan , I . K . VASIL .(1982) . Somatic embryognesis and plant regeneration from inflorescence segments of *Pennisetum purpureum* Schum(Napier or elephant grass) , *Plant Science letters* , 25 ,147-154 .