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Expression of shade-avoidance reduce gene on transformed Zoysiagrass by Agrobacterium-mediated

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Objective

Zoysiagrass (Zoysia japonica Steud.) is a common grass in far east aria. However, without enough sunlight they can't growth well and elongate stem and leaf because of shade avoidance. We report here shade avoidance reduce gene (S598A Oat phyA mutant) expression on transformed zoysiagrass through Agrobacterium-mediated.

Material and Methods

1 materials

Plants - zoysiagrass (Zoysia japonica Steud.)

A.tumefaciens strain - EHA 105 /pCUMB-VF2 coding S598A Oat phyA mutant gene

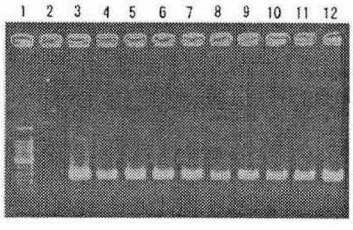
2 Methods

Callus that has high regeneration ability was used as the target tissue for infection.

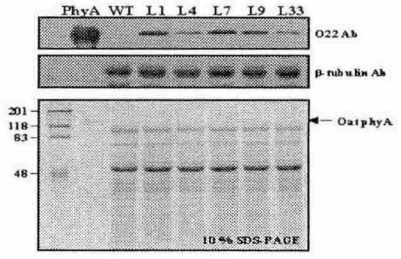
Genomic DNA analysis and protein analysis using transgenic plant.

Result and Discussion

The Oat S598A phyA mutant gene's main function is to reduce extension growth. It also reduces shade avoidance, increases seed numbers and increases leaf number. The A.tumefaciens strain EHA 105 carrying the binary vector pCUMB-GFP, coding for the Oat S598A phyA mutant and phosphinothricin acetyltransferase (bar) and β-gluconidase (gus), was utilized in this experiment. We optimized pH on co-culture medium and apply to do transformation. 1~2 plants per 100callus of infected callus survived on the selected medium with 1g/L bialaphos. Bialaphos resistant plants were done PCR analysis, southern hybridization. PhyA mutant protein expression was confirmed by western blotting. This reduced shade-avoidance and herbicide-tolerant zoysiagrass will require less mowing and provide easy weed control in this widely cultivated turf grass.



PCR analysis S598A phyA gene primer
Lane1 : DNA ladder marker Lane2: DNA from non transgenic plant
Lane3: Plasmid DNA Lane4~12 : 5g/L herbicide resistant plants



SDS-PAGE and Western blot analysis of S598A transgenic turfgrass.
Lane phyA, oat phyA control; lane WT, wild-type zoysiagrass.
β-tubulin is compare to amount of loaded protein

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