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Production of Zoysiagrass with shade-avoidance through *Agrobacterium*-mediated transformation

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Objective

Zoysiagrass (*Zoysia japonica* Steud.) is a common grass in far east area. However, without enough sunlight they can't grow well and elongate stem and leaf because of shade avoidance. We report here shade avoidance reduce gene (S598A Oat phyA mutant) 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.
pH in Co-cultivation medium was optimized and infected *Agrobacterium*.

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 -glucuronidase (gus), was utilized in this experiment. Zoysiagrass callus has four types. The Type 3 callus that has high regeneration ability was used as the target tissue for infection. The effect of pH in Co-cultivation medium was observed, with pH 7.0 being the optimum condition for infection. This optimized protocol was applied to the transformation. 1~2 plants per 100callus of infected callus survived on the selected medium. After painting with 1g/L bialaphos on the leaf for 10 days the transgenic plant survived, while the untransformed zoysiagrass died. A Bialaphos resistant plant was used and PCR analysis was done. This reduced shade-avoidance and herbicide-tolerant zoysiagrass will require less mowing and provide easy weed control in this widely cultivated turf grass.