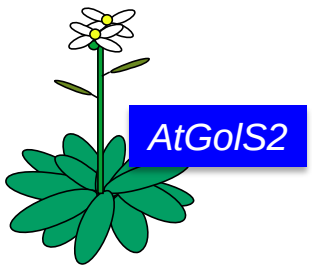
*AtGolS2*遺伝子を導入したイネは干ばつ条件下での収量性が原品種より高い

Overexpression of *AtGolS2*, an Arabidopsis galactinol synthase gene, increases grain yield in rice under drought stress in the field

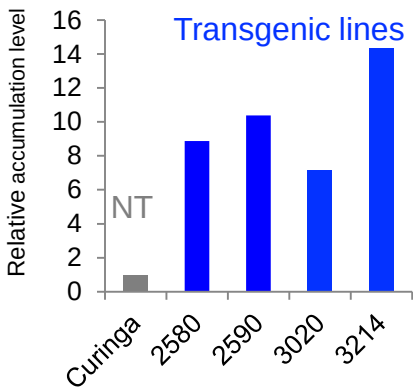
乾燥耐性候補遺伝子であるシロイヌナズナのガラクチノール合成酵素の遺伝子*AtGolS2*を過剰発現する遺伝子組換えイネ系統を、ブラジルの陸稲品種Curingaおよびアフリカの陸稲品種NERICA4を背景に作出した。遺伝子組換えイネ系統は、原品種（CuringaおよびNERICA4）に比較して、ガラクチノールを多量に蓄積した（図1）。3年間にわたる圃場試験の結果、常に原品種より高い収量を示す遺伝子組換え系統が見出された。*AtGolS2*は圃場の干ばつ条件下におけるイネの収量低下を軽減する上で、有益なツールとなり得る。

We generated transgenic rice lines that express *AtGolS2* in two upland varieties, Curinga and NERICA4. Curinga is a Brazilian local variety, and NERICA4 is a popular variety in African countries. Experiments showed that each transgenic line accumulated significantly higher amounts of galactinol as compared with the non-transgenic rice plant (Fig. 1). Three consecutive field trials identified the transgenic lines that consistently had higher grain yield than each non-transgenic variety. *AtGolS2* can thus be a useful biotechnological tool for reducing grain yield losses in rice under drought stress in the field.



Isolation of *AtGolS2* from Arabidopsis

Generation of transgenic rice lines in Curinga and NERICA4



Accumulation of higher amounts of galactinol in transgenic lines.
NT, non-transgenic

Higher yield under drought stress in the field

図1 *AtGolS2*を発現する遺伝子組換えイネ系統はガラクチノールを多量に蓄積し，干ばつ条件の圃場において原品種より高い収量を示す．

Fig. 1. Transgenic rice lines that express *AtGolS2* accumulated higher amounts of galactinol and had higher grain yield than non-transgenic varieties under drought in the field.

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