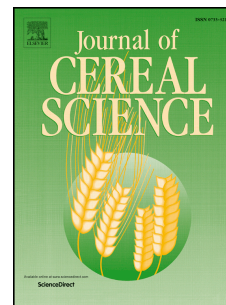


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The impact of foliar applied zinc fertilizer on zinc and phytate accumulation in dorsal and ventral grain sections of four thai rice varieties with different grain zinc

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1 **The impact of foliar applied zinc fertilizer on zinc and phytate accumulation in dorsal**
2 **and ventral grain sections of four Thai rice varieties with different grain zinc**

3

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13

14 **Abstract**

15 This study investigated the effect of foliar applied zinc (Zn) on the distribution of Zn
16 and phytate in rice grain between four Thai rice varieties that differ in grain Zn. Foliar Zn
17 application at 0.5% ZnSO₄ was applied at flowering and the early milky stage compared with
18 non-foliar applied Zn. Among the high-yielding, low grain Zn varieties (CNT1 and RD21),
19 foliar applied Zn increased Zn concentration in both dorsal and ventral sections of unpolished
20 rice by up to 17.7 and 14.3%. In the low-yielding, high grain Zn varieties (KPK and NR), Zn
21 concentration increased by 11% in the dorsal section of NR, but no effect was found in both
22 sections of KPK. In polished rice, the Zn concentration increased by 20% in both sections but
23 it was increased only in the ventral section of KPK and CNT1 by 21.0% and 25.0%
24 respectively, while there was an increase of 12.5% in the dorsal section of RD21. The phytate
25 in the seed fractions was measured as an indication for Zn bioavailability within humans. A

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