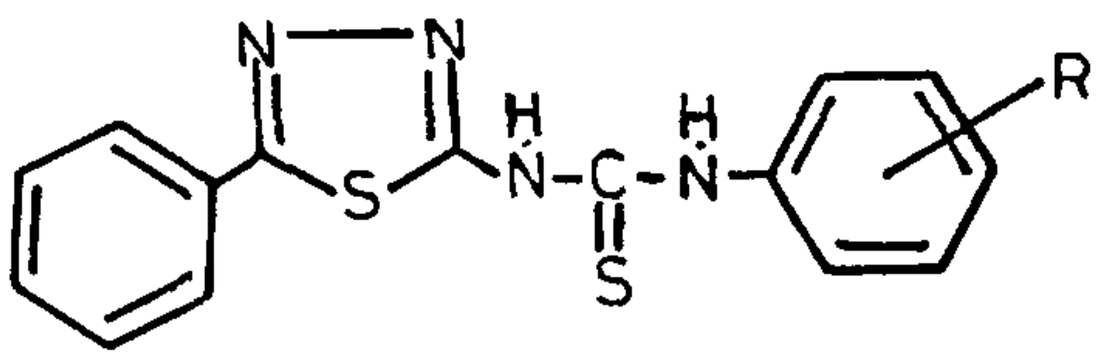
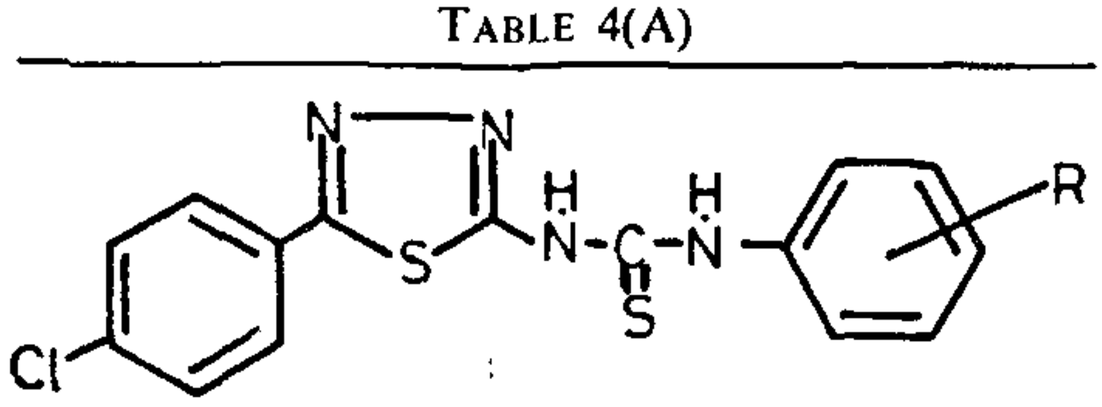
TABLE 3



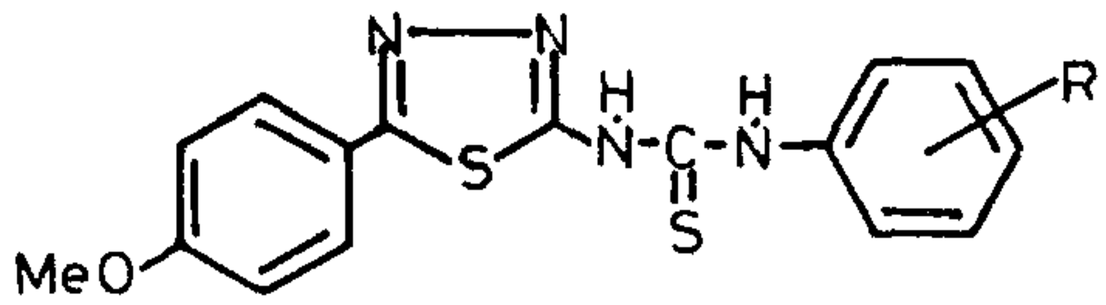
| Sr. No. | R | m.p. °C | Minimum inhibitory concentration mcg/ml |
|---|---|---|---|
| XXVI | H | 271 | 3.0 |
| XXVII | *p*-Cl | 258 | 1.5 |
| XXVIII | *p*-$CH_3$ | 245 | 10.0 |
| XXIX | *m*-$CH_3$ | 260 | 10.0 |
| XXX | *p*-$OCH_3$ | 238 | 5.0 |
| XXXI | *p*-$OC_2H_5$ | 237 | 4.0 |
| XXXII | *p*-$OC_3H_7$ | 239 | 1.5 |
| XXXIII | *p*-$OC_4H_9$ | 253 | 20.0 |

TABLE 4(A)



| Sr. No. | R | m.p. °C | Minimum inhibitory concentration mcg/ml |
|---|---|---|---|
| XXXIV | H | 287 | 1.5 |
| XXXV | *p*-Cl | 258 | 3.1 |
| XXXVI | *p*-$CH_3$ | 245 | 1.5 |
| XXXVII | *p*-$OCH_3$ | 238 | 6.2 |
| XXXVIII | *p*-$OC_3H_7$ | 239 | inactive |
| XXXIX | *p*-$OC_4H_9$ | 253 | 6.25 |

TABLE 4(B)



| Sr. No. | R | m.p. °C | Minimum inhibitory concentration mcg/ml |
|---|---|---|---|
| XL | H | 257 | 1.5 |
| XLI | *p*-Cl | 275 | inactive |
| XLII | *p*-$CH_3$ | 236 | 1.5 |
| XLIII | *p*-$OCH_3$ | 243 | 6.25 |

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All melting points are uncorrected. All compounds gave satisfactory elemental analysis.

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## ABSORPTION AND TRANSLOCATION OF $^{59}Fe$ BY SOME RICE GENOTYPES

M. B. MISAL AND Y. S. NERKAR
Department of Genetics and Plant Breeding, Marathwada Agricultural University, Parbhani 431 402, India.

IN calcareous soils, iron content, especially under aerobic conditions, is low[1]. The high yielding semidwarf varieties of rice develop severe symptoms of iron

TABLE 1

*Absorption and transport of $^{59}Fe$ by rice seedlings*

| Strain | $^{59}Fe$ absorption (nanomoles/g./fr. wt.) | | $^{59}Fe$ transport (Shoot/whole plant) |
|---|---|---|---|
| | Root | Shoot | |
| Ambemohor local | 277978.8 | 834.6 | 0.003 |
| Tuljapur 1 | 55102.2 | 685.0 | 0.012 |
| PBN 1 | 27958.8 | 889.4 | 0.30 |
| K 35-3 | 25482.6 | 468.0 | 0.018 |
| Pusa 33 | 15984.5 | 582.2 | 0.035 |
| S. E. ± | 24168.9 | 124.39 | |

chlorosis on the calcareous vertisols[2]. Local tall varieties and induced semidwarf mutants developed from these varieties are tolerant or iron chlorosis when grown on such soils[3,4]. Kannan reported that sorghum genotypes differed in their capacity to absorb and transport iron[5]. He did not find apparent correlation between iron uptake capacity and tolerance to iron stress. However, the tolerant varieties seemed to transport more iron. The present investigation was undertaken to determine the iron uptake and transport capacity of three tolerant and two susceptible genotypes of rice. The tolerant genotypes included two tall local varieties *viz.*, Ambemohor local and Tuljapur 1, and an induced semidwarf mutant, PBN 1. The susceptible genotypes were two high yielding semidwarf varieties *viz.*, Pusa 33 and K 35–3.

Seeds were germinated in distilled water in petriplates. After 3 days, the seedlings were transferred to wire guage kept on enamel trays containing ½ strength Hoagland nutrient medium and allowed to grow till 15 days. Three litre solution of 0.1 mm $FeSO_4$ was prepared in distilled water and isotopic iron ($^{59}Fe$) was added to this solution. At the time of preparation of solution activity of isotopic iron was 237$\mu$ ci with the specific activity of 395 mci/g Fe. A set of 5 uniform seedlings representing a replicate was made and roots were placed in labelled solution for 16 hr. Five such replications were taken for each genotype. At the end of the experimental period, the specific activity of solution was 391 mci/g Fe. At the end of the experiment roots were washed for about an hour to remove $^{59}Fe$ from the free space and exchange sites.

Fresh and dry roots and shoots of the seedlings were weighed. The dried material was digested with 10 ml of concentrated nitric acid and subsequently dissolved in hot distilled water and the volume was made up to 10 ml. The amount of $^{59}Fe$ absorbed and transported was computed from the radioactivities of root and shoot samples measured on a G.M. counter.

Iron uptake was determined on the basis of iron present in root and shoot and translocation was expressed in terms of the ratio: $^{59}Fe$ in shoot/$^{59}Fe$ in whole plant (table 1). There were marked differences among the rice strains for iron uptake and transport. The strains tolerant of iron chlorosis absorbed more of iron as compared to the susceptible ones. Ambemohor local had much higher capacity to absorb iron than the rest of the strains. The semidwarf mutant PBN 1 had more or less similar absorption capacity as that of the dwarf variety K 35–3. Apparently there was no relation between iron absorption and transport. Strains having less absorption capacity (*e.g.* Pusa 33) could transport relatively more iron. It was also evident that tolerance to iron chlorosis was not dependent on iron transport capacity. Higher efficiency of the tolerant varieties could be due to higher capacity of the roots (i) to reduce iron from ferric to ferrous form or (ii) to produce iron chelating compounds in the exudates[6].

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