

ABSTRACT

A Comparison of Rice Crop Establishment Systems With
Different Seeding Methods Under Submerged Conditions.

Direct seeding of rice Oryza sativa L. can replace transplanting under limited water control if yields are similar and the agronomic practices simplified. This investigation compared direct seeded pregerminated and transplanted rice grown normally and under flood of 5 and 15 cm, with dry seeds coated with calcium peroxide (CaO_2) under permanent flood of 5 and 15 cm. Weed growth was monitored as affected by the seeding methods and flooding regimes. The cultivar used was IR36.

Flooding reduced weed growth and promoted early plant height. However reduction in seedling emergence, and crop yield also occurred with flooding. The depth of flooding between 5 and 15 cm increased early plant height but did not affect weed growth or yield. The findings supported previous work that direct seeding normal and transplanted rice produced similar yields (5.85 and 6.21 t/ha, respectively). Seeds coated with CaO_2 established under permanent flood gave similar yields (5.69 t/ha) to direct seeded and transplanted rice grown normally. However pregerminated seeds grown

under permanent flood gave reduced yields(3.81 t/ha). Permanent flood at five and 15 cm permits the sowing of CaO_2 coated seeds to replace transplanting and/or normal direct seeding by having similar yields. Reduced weed growth was also observed from seeding under flood. Extra costs incurred for coating materials and machinery for crop establishment may reduce labour requirements and weed growth. Establishing a crop with pregerminated seeds under flood may require increased seeding rates and improved technology to realize similar yields to normally grown direct seeded rice.