

Influences of Yield and Soil by Irrigation of Polluted Water at Each Growth Period of Rice

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Summary

Several kinds of waste water obtained from various kinds of factories were used to irrigate rice for studying their effects on the rice yield and soil conditions. Results showed that rice irrigated with polluted water had lower yield. Irrigated rice with polluted water from plastic, asbestos, and leather factories caused a yield losses of 21.7, 16.0, and 12.2% in the first crop season; 6.8, 9.7, and 6.8% in the second crop season, respectively. Lesser yield loss for second rice crop was found due to the dilution effects of rainfall. Degrees of rice yield reduction varied with different growth stages when polluted water applied. Severe yield losses was showed when irrigated polluted water to rice at the earlier growth stage for the first crop season and at the middle growth stage for the second crop season.

Yield losses can be reduced when waste water was diluted to suitable COD, BOD, and pH values. Only 4.4, 1.4 and 3.6% of yield reductions were found when irrigated the diluted polluted water from plastic, starch, and asbestos factories, respectively.

Slight increases of heavy metal elements such as Cd, Pb, Cu, and Zn in rice tissue and soil were observed when applied polluted water to the paddy field.