

## **DIVERSIFYING WEED MANAGEMENT OPTIONS IN RICE USING ALTERNATIVE TILLAGE AND PLANTING TECHNIQUES**

*Mike Moechnig<sup>1</sup>, Albert Fischer<sup>1</sup>, Jim Hill<sup>1</sup>, and Randall Mutters<sup>2</sup>  
1Department of Plant Sciences, UC-Davis, and 2UC Cooperative Extension*

Alternative rice establishment systems were developed and evaluated for their potential to reduce weed recruitment of targeted weed species and facilitate the use of herbicides with alternative mechanisms of action, such as pendimethalin and glyphosate, which may control weed biotypes resistant to herbicides used in conventional water-seeded rice. Evaluated rice establishment systems included 1) conventional water-seed rice, 2) conventional drill-seeded rice, 3) water-seeded rice after spring tillage and a stale seedbed, 4) water-seeded rice after a stale seedbed without spring tillage, and 5) drill-seeded rice after a stale seedbed without spring tillage. Species compositions of weed communities were distinctly different among establishment systems as the water-seeded systems were dominated by sedge and broadleaf weed species but the drill-seeded systems were dominated by grass weed species. In the drill-seeded systems, grass control from pendimethalin and cyhalofop-butyl was > 89%. Glyphosate used in the stale seedbed systems reduced grass populations by 85 to 100% in drill-seeded rice and broadleaf/sedge weed populations by nearly 100% in the water-seeded rice. In the water-seeded/stale seedbed/no till system, a pre-plant application of glyphosate was the only herbicide application required for nearly 100% weed control over the growing season. Rice yields did not differ ( $P > 0.1$ ) among these establishment systems. Therefore, the alternative rice establishment systems evaluated in this study may be used to effectively manipulate weed species recruitment and enable the use of herbicides that may control weed biotypes resistant to herbicides used in conventional water-seeded systems.