

COTTON PLANTERS FOR DIRECT SEEDING INTO COVER CROPS

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OBJECTIVES: To adapt, modify or design planters and planter controls for direct seeding into cover crops.

PROCEDURE: Determine desirable and achievable planting conditions associated with direct seeding into cover crops, including type of cover crop, method of vegetation suppression and preparation prior to planting. Test operation and performance of unmodified cross slot planter designs. Design mechanisms and procedures for improving performance to acceptable levels. Investigate application of other planter designs and procedures for direct seeding into cover crops.

PROGRESS: Combining two years experience with the unmodified cross slot planter design, six conclusions can be stated: 1) the design is acceptable only within a narrow range of application which includes the original design criteria, ie dry soil planting of grains; 2) the depth of planting varies greatly with soil tilth and moisture with all seeds; 3) the design without modification is unsuited for cotton either for planting into cover crops or into prepared soil; 4) cotton planted into cover crops with this design requires rain or simulated rain for emergence; 5) cotton planted into prepared moist soil did not emerge or the emergence was well below any acceptable standard; 6) cotton planted into dry prepared soil with postplant irrigation emerged acceptably.

The heavy footprint of the gage-wheel-furrow-closure component was determined to be the cause of poor performance as described in conclusions 2, 3, 4, and 5. A mechanical-hydraulic servo control was designed as a combination seed depth control and footprint pressure control. The design was tested and found to perform as anticipated allowing control of seed depth within .25 inch and accurate control of footprint pressure. With the control operating seed emergence in prepared moist soil was comparable to 'normal' planters. With cover crops, the closure pressing could be increased and controlled for improved, if not completely adequate, emergence. The mechanism for the control was described for possible patent and therefore has not been disclosed to the public. Application to other existing designs was claimed in the patent description.

FUTURE PLANS: The operating parameters of the control will be documented and application to other planters and related devices will be determined. Depending upon interest, the control may be developed for technology transfer beyond publication of any potential patent.