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ASPECTS OF SEED TRANSFER WITHIN

A DIRECT DRILLING COULTER (OPENER).

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of the requirements for the degree
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ABSTRACT.

A number of laboratory and field experiments were conducted in order to identify and quantify seed and seedling spacing variations produced by an experimental direct drill. Seed contact with both stationary and moving components of the coulter assembly was considered to contribute to the increased variability of seed spacing that resulted from the positioning of a chisel direct drilling coulter beneath a "Nodet Gougis" seed selection mechanism.

Alternatives for transferring the seeds from the seed selection mechanism to the soil were considered. The simplest of these alternatives, a seed-transfer tube, was tested in a number of different shapes and positions. It was found that the seeder required modifications to its release characteristics in order to satisfactorily incorporate the tube transfer system. A number of deflector plates were fitted to the seeder to control seed release trajectory. A 40 degree seed deflector plate was found to produce a seed path that was most compatible with a straight vertical seed-transfer tube.

A video recording technique was used to assess the effects of seeder modifications on seed release trajectory.

The modified seeder and the tube transfer system were combined with the chisel direct drilling coulter, and seed spacing performance was retested. Seed spacing variability was found to be considerably less than with the original experimental drill in the laboratory, although field performance was not improved to the same extent. It was considered that this effect

(ii)

may have been attributable to the effects of soil flow with the direct drilling coulter and the manner with which the seed was released into the soil, which differed with the tube system compared with the unmodified coulter tested initially.

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