

THE IMPACT OF VARIABILITY IN CROP PLANT SPACING ON POTENTIAL WEED POPULATION GROWTH RATES. Edward C Luschei, Department of Agronomy, University of Wisconsin – Madison, 1575 Linden Drive, Madison WI, 53706.

Weeds escaping overt control at the seedling stage will likely grow and produce seeds in a manner constrained by resource availability in their local neighborhood. Variability in the constraints imposed on growth potential are largely created by the regularity of crop plant spacing and uniformity of emergence timing. In a three year experiment following introduced velvetleaf and shattercane populations within a continuous no-till corn system, mortality rates under conventional control were sufficiently high to lead to near total suppression of the populations. A neighborhood model describing weed response to its local environment revealed a strong connection between gaps and gap size within the matrix of corn plants and potential population growth rate of the weeds. A spatial model derived from the experiment is used demonstrate the importance of spatial regularity within several different demographic scenarios.