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Rodent-Agriculture Interactions in No-Tillage Crop Fields

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Acreage in reduced- and no-tillage farming systems has increased markedly in recent years, a trend that is expected to continue. However, small rodent populations thrive in these fields and at times dig and consume newly planted seeds and seedlings.

During 1983, no-tillage corn, wheat and grain sorghum fields in western (Red Willow Co.) and eastern (Saline and Jefferson Cos.) Nebraska were evaluated to determine the distribution and food habits of the rodent species present, the damage to crops, and the availability of alternate rodent food sources. During June (post-emergence) and August (maximum corn height), 676 rodents were captured in 11 corn fields, and during July, 105 rodents were captured in 2 wheat and 2 sorghum fields. Species captured included thirteen-lined ground squirrels spermophilus ilus tr decemlineatus Ord's kangaroo rats Diopodomys ordii deer mice (Peromyscus maniculatus), ndT-thern grasshopper mice (Onychomys leucogaster voles (Microtus spp.), hispid pocket mice (Peromyscus leucopus), western harvest mice Reithrodontomys megalotis house mice (Mus musculus) and short-tailed shrews (Blarina brevicauda). Rodents were distributed throughout study fields although the sample size of several species was not great enough to determine patterns.

Damage to newly-planted corn seeds and seedlings was greater in the western area than in the eastern area, and was more severe on terraces than between terraces. Because of excessive rainfall, sampling was delayed in the eastern area and may have caused the amount of damage to be underestimated. Foods other than corn available to rodents in the study fields included wheat and pigweed (Amaranthus sp.) as well as various other seeds, insects and insect larvae.

Knowledge of the foods eaten and foods available to rodents in reduced- and no-tillage fields will permit better evaluation of their beneficial and harmful aspects and will enhance predictability of rodent responses to such damage control measures as toxic baits or repellents. The economic impact of small rodents on reduced- and no-tillage farming systems will increase in the years to come; information about these rodents and the damage they cause will be of increasing importance.