

IMPACT OF CONSECUTIVE YEAR APPLICATIONS OF IMAZAPIC ON WESTERN PRAIRIE FRINGED ORCHID, A THREATENED SPECIES, IN RANGELAND AND PASTURES. Kenneth L. Carlson, Scott Wessel, Gerry Steinauer, and Jeremy Lubke, Field Biologist BASF Corporation Lincoln, NE 68506, Wildlife Biologist II Nebraska Game and Parks Commission Norfolk, NE 68701, Botanist Nebraska Game and Parks Commission Aurora, NE 68818, and Student Wayne State College Wayne, NE 68787.

Western prairie fringed orchid (*Platanthera praeclara*) is a native plant of the American tallgrass prairie and is a threatened plant species under the Endangered Species Act. Prior to pioneer settlement it was commonly found throughout the tallgrass prairie. It is estimated that population location numbers have declined by more than 60%, and plant numbers to an even greater extent. Several factors account for the decline in population of the western prairie fringed orchid. Early habitat losses due to plowing of the prairie by settlers, followed by mechanized agriculture when tractors replaced draft animals resulted in decreased populations. More recent threats to the orchid population include haying of areas instead of grazing, reduced pollination due to reduced hawkmoth numbers, and effects from noxious weeds. The effects from noxious weeds such as leafy spurge include aggressive direct competition, as well as injury from herbicide applications designed to control the leafy spurge. Populations of leafy spurge are commonly found in the same habitat as the western prairie fringed orchid in northern Nebraska. Imazapic (currently sold under the tradename Plateau<sup>®</sup> herbicide) is a member of the imidazolinone herbicide family, and is a broad spectrum herbicide that provides contact, translocation, and residual activity on leafy spurge. The objective of this study was to evaluate the impact of consecutive year fall applications of imazapic, at rates used for the control of leafy spurge, on the population of western prairie fringed orchids. Under heavy leafy spurge infestations consecutive year applications of imazapic have proven to provide the most consistent and effective control. This consecutive year application pattern has become the standard in the Great Plains, thus the need to evaluate the impact on the western prairie fringed orchid. EPA through Nebraska Game and Parks Commission granted approval for this research. Two sites containing western prairie fringed orchid populations were located in Pierce County Nebraska. Plants were located, mapped, flagged, and tagged in June of 2000. Imazapic was applied to 44 areas containing a western prairie fringed orchid using a CO<sub>2</sub> backpack sprayer at 0.188 lb ai/A, the maximum leafy spurge use rate, in combination with a methylated seed oil and liquid nitrogen as spray adjuvants on September 20, 2000 and September 20, 2001. An additional 44 plants were left untreated for comparison. All plant areas were re-located on June 28, 2001 and July 2, 2002 for the presence or absence of the western prairie fringed orchid. Based on counts from both sites, the number of plants present in the imazapic treated plots were greater than or equal to the number present in the untreated plots for both single and consecutive year applications of imazapic. Dry weather from 2000 to 2001 and a significant drought in 2002, along with anthracnose leaf blight greatly affected orchid reemergence, growth, and flowering. These factors greatly influenced our ability to record floristic characteristic observations on the western prairie fringed orchid in the first and second year. The fact that nearly equal numbers of orchids reemerged in both the imazapic treated and untreated plots for both the single application and consecutive applications, even at low reemergence numbers, suggests that imazapic does not impact western prairie fringed orchid populations. Imazapic is registered for the control of leafy spurge in rangeland and pastures in the Great Plains of the United States. Thanks to the Venteicher and Zimmerman families for allowing this research to be conducted on their land.