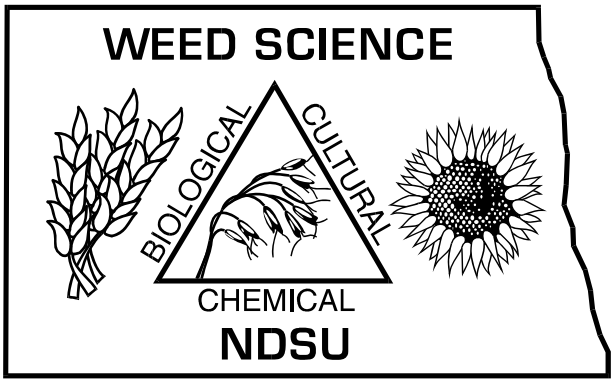
Circular W-253

2009 NORTH DAKOTA WEED CONTROL GUIDE



Compiled by:
Rich Zollinger Extension Weed Science

CONTRIBUTORS:

Mike Christoffers	Research Weed Science, Weed Genetics
Greg Endres	Extension Area Agronomist, Carrington
Shane Friesen	Research Weed Science, Perennial Weeds/Cropland
Greta Gramig	Research Weed Science, Weed Ecology
Kirk Howatt	Research Weed Science, Small Grains/Minor Crops
Brian Jenks	Research Weed Science, NCREC, Minot
Rod Lym	Research Weed Science, Noxious/Invasive Weeds
Jeff Stachler	NDSU/U of MN Extension Weed Science, Sugarbeet
Andrew Thostenson	Extension Pesticide Programs
Harlene H. Valenti	Research High Value Crops

THIS PUBLICATION SUPERCEDES ALL PREVIOUS ISSUES OF W-253 SUBJECT TO CONDITIONS UNDER "WEED GUIDE INFORMATION"

www.ag.ndsu.edu/weeds/

NDSU Extension Service
North Dakota State University

JANUARY 2009

NDSU North Dakota State University
ND Agricultural Experiment Station

Table of Contents

Table of Contents (cont.)

WEED GUIDE INFORMATION

The information in this guide provides a summary of herbicide uses in crops grown in North Dakota and is based on federal and state herbicide labels, research at ND Ag. Experiment Stations, and information from the North Dakota Department of Agriculture.

ALWAYS READ AND FOLLOW LABEL DIRECTIONS. Instructions for registered uses of herbicides are given on container labels. The label is the final guide and should be followed strictly. The information in this guide only applies to North Dakota because some herbicide uses are allowed only by supplemental or specific ND labeling. Persons are required to possess labels at the time of application.

This bulletin is provided for your information. North Dakota State University or its officers or employees make no claims, representations, or guarantees as to product performance nor accept responsibility for results from using herbicides. See legal disclaimer on the next page.

Below is information to aid in using this guide:

Herbicides. Herbicides in tables are listed by trade name followed by common name in parenthesis except where several brands are available. Contact chemical suppliers and the ND Dept of Ag for new label information.

Rates. Rates in tables are based on broadcast application and are expressed according to formulated product per acre with active ingredient (ai) or acid equivalent (ae) per acre given in parentheses. Commercial formulations of the same herbicide may vary in amount of ai.

For example, a pint of 4 lb ae/gal 2,4-D contains 0.5 lb while a pint of 6 lb ae/gal 2,4-D contains 0.75 lb or
a quart of 3 lb ae/gal glyphosate contains 0.75 lb while a quart of 4.5 lb ae/gal glyphosate contains 1.125 lbs.

What is the difference between ai and ae? The ai of glyphosate is the weight of both glyphosate acid plus the salt formulated with the glyphosate molecule. The acid equivalent (ae) of glyphosate is just the weight of glyphosate without the the salt. The label of commercial products list both active ingredient (ai) and inert ingredients. Inert ingredients are not phytotoxic but are used to create stable formulations and to aid in application, herbicide retention, deposition, and absorption. The active ingredient of some herbicides are formulated with salts or esters (See Herbicide Compendium). Glyphosate is formulated at 3, 4, 4.17, 4.5 and 5 lb of pure glyphosate acid per gallon. Glyphosate is also formulated as the pure acid and with three different salts, isopropyl amine (ipa), diammonium (2(NH_3), and potassium (K). The salts that are formulated with glyphosate molecule do not contribute to weed control. Glyphosate formulated at different concentrations and with different salts require using acid equivalent (ae) when calculating rates. The following table will help to understand the relationship between ai and ae.

	Rate as acid equivalent (ae)			
Product/A	0.38	0.57	0.75	1.125
	fl oz/A			
3 lb ae = 4 lb ai	16	24	32	48
4 lb ae = 5.4 lb ai	12	18	24	36
4.17 lb ae	12	18	24	36
4.5 lb ae = 5.5 lb ai	11	16	22	32
5 lb ae = 6.1 lb ai	10	15	20	30

Weed Control Ratings. Herbicide effectiveness ratings listed in tables show general comparative ratings based on field observations. Weed control may be equal or greater than what is indicated in the table under favorable conditions. However, weed control may be reduced and unsatisfactory results obtained in unfavorable conditions.

Abbreviations Used

Units of Measurement

oz	= ounce (16 oz/lb)
fl oz	= fluid ounce (128 fl oz/gal)
pt	= pint (8 pt/gal)
gal	= gallon
ae	= acid equivalent
ai	= active ingredient
conc	= concentration
v/v	= volume/volume
lb, lb/gal	= pound, pounds/gallon
gpa	= gallons per acre

Crop Designation

HRSW	= Hard red spring wheat

Type of Application

EPP	= Early preplant
PPI	= Preplant incorporated
PRE	= Preemergence
EPOST	= Early postemergence
POST	= Postemergence
POST Directed	= Postemergence directed
	= Aerial application prohibited

Types of Formulation

DF	= Dry flowable
DS	= Dispersible solution
EC	= Emulsifiable concentrate
EW	= Emulsion in water
F	= Flowable
ME	= Micro-encapsulated
S	= Solution
SG	= Soluble granule
SP	= Soluble powder
WP	= Wettable powder
WDG	= Water dispersible granule
XP	= Extruded paste (granules)

Miscellaneous

ACCase	= Acetyl CoA carboxylase
ALS	= Acetolactate synthase
AMS	= Ammonium sulfate
CEC	= Cation exchange capacity
DAA	= Days after application
DNA	= Dinitroaniline
IMI	= Imidazolinone
MSO	= Methylated seed oil
NIS	= Nonionic surfactant
NDDA	= ND Dept of Ag
OM	= Organic matter
PHI	= Preharvest interval
RUP	= Restricted Use Pesticide
SU	= Sulfonylurea
TPS	= Triazolopyrimidine sulfonamide
UAN	= Urea ammonium nitrate

GENERAL INFORMATION

LEGAL DISCLAIMER

The weed control suggestions presented in this guide are based on Federal label clearance and on information obtained from the North Dakota Agricultural Experiment Station and the Research Reports of the North Central Weed Science Society and Western Society of Weed Science.

CAUTION: Instructions for registered uses of herbicides are given on container labels. **Read and follow label instructions carefully.** Pesticide labels supercede recommendations given in this guide. The weed control suggestions in this circular are based on the assumption that all herbicides mentioned will continue to have a registered label with the Environmental Protection Agency. This guide contains recommendations for herbicides that are labeled only for North Dakota. The user of any pesticide must possess a copy of the label at the time of application. State labels can be obtained from chemical dealers or distributors or found on the web at: http://www.cdms.net/manuf/manuf.asp.

Use pesticides only on registered crops. Some formulations of an active ingredient may not be labeled for certain uses. Federal law makes liable for seizure any raw agricultural commodity that possesses a pesticide residue for which no exemption or tolerance has been established or that exceeds the tolerances established by the Food and Drug Administration. Persons using pesticides in a manner contrary to label instructions are subject to penalty under federal and state laws. North Dakota State University or its officers or employees makes no claims or representations that the chemicals discussed will or will not result in residues on agricultural commodities and assume no responsibility for results from using herbicides

USE PESTICIDES ONLY AS LABELED.

Pesticide Labeling and Registration
No pesticide may be sold or used in the United States until the U.S. Environmental Protection Agency (EPA) has registered and approved the product use and the labeling. Canadian and other foreign labeled pesticides may not be used in the United States until registered by the EPA.

TYPES OF PESTICIDE REGISTRATIONS
Federal EPA Registrations, also known as 3e and 2ee labels, are the most common and widely used type of pesticide registration. Product labels of pesticides being applied must be at the application site during the time of application. Aerial applicators must have the label at the loading site.

Section 24(c) Registrations, also known as (SLN) State Local Needs registrations:
- are state-specific registrations issued by states
- are used to address a special local need
- must prove there is an existing or imminent pest problem for which a federally registered pesticide is not available
- can be used to address pest resistance management.

SLN registrations can be used to register additional uses or add limitations for a federally registered pesticide, like adding application sites, pests, or alternate control methods to those listed on federally registered labeling. SLN labels are initiated by the ND Department of Ag and must be approved by EPA. Supplemental labeling must be provided for each SLN registration. Applicators must have the SLN label and federal label in their possession at application. These registrations are legal only in the state or local area specified in the labeling.

Section 18 "Emergency" and **"Crisis" exemptions** from FIFRA allows the unregistered use of a pesticide to address an emergency pest situation and are used when an emergency or crisis pest situation:
1. Is an emergency and non-routine
2. Has no or ineffective alternative management tools
3. Is severe and can be documented to cause yield or economic loss (>20%) on the specified crop.

Both types of exemptions from registration allows use of a pesticide for a non-registered purpose for a specified period of time. ND "Emergency" Section 18 exemptions are registrations initiated by the NDDA, are approved by the EPA, and can be declared if both federal and SLN registrations are not or cannot be enacted in time to prevent the condition. In rare occasions, when time is critical and the emergency is acute, NDDA can declare a "Crisis" exemption without written approval of EPA. The NDDA informs EPA of the condition prior to the action and allows EPA to support the state action. This process usually takes 10 to 14 days to complete. The duration of a "Crisis" exemption (14 to 21 days) is shorter than an "Emergency" exemption. If an "Emergency" exemption is being reviewed by the EPA at the time the "Crisis" exemption is declared the EPA may elect to grant the "Emergency" exemption and increase the period of duration. An applicator must possess federal labels and Section 18 exemption labeling at application.

RESTRICTED USE PESTICIDES (RUP)
EPA categorizes pesticides as either unclassified (general use) or restricted. **Restricted-Use Pesticides (RUP)** are pesticides that can cause harm to humans or environment and must be applied by certified applicators. Only certified dealers may sell RUPs and only certified applicators may purchase, apply or recommend an RUP. Private and commercial applicators must record certain information for all pesticide applications.

RESTRICTED USE HERBICIDES:
All products and premixes containing the active ingredients listed below are restricted use pesticides. See Table X1, Herbicide Mode of Action for products containing these active ingredients.
Alachlor = See Mode of Action #15
Atrazine = See Mode of Action #5
Isoxaflutole = See Mode of Action #27
Paraquat = See Mode of Action #22
Picloram = See Mode of Action #4
Brand names of other RUP:
Amitrole-T, Cytrole (amitrole)
Kerb 50W (pronamide)
Sulfuric acid

SAFETY AND EMERGENCY PHONE NUMBERS:

ND Poison Control Line:	800 222-1222
ND Emergency Assistance Line:	800 472-2121
Report pesticide incident to NDDA:	701 328-2232