

GENERAL INSECTICIDE INFORMATION

The following recommendations include only the application of chemicals for the control of some of the important insect and mite pests for each crop. Keep in mind that the most effective and economical controls for many of these pests involve a complete program including cultural, mechanical and chemical operations.

For more complete information on any particular pest, consult reference material, such as textbooks, bulletins, circulars and leaflets covering the specific problem. North Dakota State University Extension Entomology staff can help you find the most up to date information for a given pest.

Insecticides usually are available as emulsifiable concentrates, wettable powders, dusts, granules or solutions. Each is designed for a specific method of application. For example, dusts are formulated to be applied dry; wettable powders are designed mainly for high gallonage pressure sprayers as used for spraying livestock; emulsifiable concentrates, when diluted with water, form emulsions which may be used in low gallonage, low pressure sprayers. The job to be done and the equipment to be used will govern the type of formulation to recommend.

Amount of Active Ingredient per Acre

Most applications to field crops are made with granular, soluble powder or liquid formulations. The labels for most products listed in this guide give application rates in amount of product per acre or per 1,000 row-feet (for variable row spacings). Seed treatments rates are generally given as amount of product per hundredweight (cwt) or a standard seed unit, such as an 80,000 seed unit for corn, but may also be given in amount of active ingredient (AI) per seed. In addition to total product rates, most insecticide labels also indicate the amount of AI applied for a given total product rate. All insecticide labels list percent AI in the product, as well as the AI amount per unit weight or volume of product, depending on the formulation. This information can be found at the beginning of the product label.

Many insecticides have restrictions on the amount of AI that can be used per acre per season. Different insecticide brands can have different total product application rates (based on different AI concentrations) *even though they have the same AI*. These restrictions are often given in amount of AI per acre per season. Therefore, it is extremely important to

understand exactly how much AI is being applied. For example, if a product containing 2 lbs imidacloprid per gallon is applied at a rate of 6 fl oz of product per acre, the amount of AI applied is 0.078 lbs imidacloprid per acre

$$(2 \text{ lbs/gal} \times 1 \text{ gal}/128 \text{ fl oz} \times 6 \text{ fl oz/acre}).$$

If a product containing 4 lbs imidacloprid per gallon is applied at a rate of 3 fl oz per acre, *the same amount of AI is applied as with the 2 lb per gallon product at 6 fl oz per acre*. Some products contain more than one AI, but the same restrictions on use for each AI per acre per season still apply.

Understanding product composition and the relationship between AI concentration in a product and total product application rate also assists growers and applicators in deciding which products are of optimum safety and benefit in their farming operations.

Pesticide Residue Tolerance

Pesticide residue limits in feed, food and food products are set by the Environmental Protection Agency (EPA), as required by the Federal Food, Drug, and Cosmetic Act amended to include the Food Quality Protection Act. These limits are known as tolerances, and are set to protect the nation's food supply and its consumers from harmful levels of pesticide residues. For more information on tolerances, please visit www.epa.gov/pesticides

Preharvest Intervals

A preharvest interval is the time required between applications and harvest which will ensure conformance with tolerance limits. Preharvest intervals vary among products. Also, restrictions are often placed on grazing, foraging, and harvesting hay and straw. In some instances, a product cannot be used simply because it is not possible to adhere to the preharvest interval. In this guide, preharvest intervals for all products are given for each crop. Where applicable, grazing, forage, hay and straw harvest intervals and restrictions are also given. **Be sure to consult the product label you are using at the time of application for all preharvest and grazing restrictions.**

INSECTICIDE FORMULATION ABBREVIATIONS

CF	capsule suspension for seed treatment	EW	emulsion, oil in water	ULV	ultra-low volume
CG	encapsulated granule	F	flowable	WDG	water dispersible granules
CS	capsule suspension	FL	flowable	WP	wettable powder
D	dry	FS	flowable concentrate for seed treatment	WSP	water dispersible powder
DC	dispersible concentrate	GR	granule	XL	other liquid formulation
DF	dry flowable	L	liquid	XX	others
DP	dustable powder	LS	solution for seed treatment	ZC	mixed formulation of CS and SC
DS	dry seed treatment	ME	microemulsion		
E	emulsifiable	OD	oil dispersion		
EC	emulsifiable concentrate	OS	oil-based suspension concentrate		
EG	emulsifiable granule	SC	suspension concentrate		
EP	emulsifiable powder	SL	soluble concentrate		