



Lowbush Blueberry Fact Sheet

Blueberry Grower's Code Of Practice For Pest Management

"A Growers Guide"

Wild Blueberry Growers Association of Nova Scotia

In the year 1970, a group of active blueberry growers working with representatives from the Nova Scotia Department of Agriculture and Marketing formed an organization and aptly named it "Blueberry Producers Association of Nova Scotia". The organization of this group did not take place overnight. Already two attempts at organizing had collapsed. With months of preparation, this new organization was formed and over the years has grown and developed into one of the strongest commodity organizations in Nova Scotia.

The Association has advised government on many policies affecting the industry, been active in promotional programs, and lead in support of innovative technology. During this time blueberries, in terms of acreage and exports, have become the most important horticultural crop in the province.

As we move towards the twenty-first century, one of our areas of concern is the environment. Blueberries are one of the most environmentally friendly food crops produced and we are proud to initiate this publication, *Blueberry Grower's Code of Practice For Pest Management*. Common sense is the guide for using pesticides to grow blueberries. Our goal is to promote greater use of common sense by everyone involved in the industry.

Introduction

Pesticides are best employed within a strategy of integrated pest management (IPM). IPM depends on detailed knowledge of pest and crop biology and combines natural control for pests with synthetic pesticides. Pesticides can help to attain sustainable development of the blueberry industry.

The wild Blueberry Producers Association of Nova Scotia recognizes the importance of pesticides as components of IPM. Pesticides must be registered by the federal government. The registration process involves a rigorous review of data on the products toxicity, environmental impact and degradation. Pest control products can be used safely and have no long term impact on the environment when used according to label directions! The Association developed this Grower's Guide to assist producers in improving management of pesticides within the industry.

The Association identified six concepts that are crucial to responsible use of pest control products. The philosophy of each concept should be incorporated into all decisions regarding pest management and pesticide use. These concepts are:

1. Integrated Pest Management
2. Application Technology
3. Protection of Environmentally Sensitive Zones
4. Effective Storage, Cleaning and Container Disposal
5. Applicator Safety
6. Public Information and Good Neighbor Policy

Producers can use the Guide to evaluate their own practices, identify areas for improvement and further training.

Following the Guide will allow growers to maximize value of their pesticide inputs, protect the environment, and more effectively communicate with the general public the benefits and risks of pesticide use in blueberry production.





Integrated Pest Management

IPM involves a “whole system” approach to producing a crop of blueberries and managing the associated plants, insects, disease organisms and vertebrates. IPM strives to maintain a balanced ecosystem of plants, animals and microorganisms while maintaining sufficient crop production to ensure a profitable enterprise for the grower. These concepts can be applied to controlling vegetation, insects or diseases.

IPM utilizes all possible tools and techniques to manage a pest population in an economical and environmentally safe way. Monitoring or scouting the crop to determine levels of pests and natural controls is essential. This information is used to determine appropriate pest management techniques.

IPM Requires

1. **correct identification** of both pests and beneficial organisms such as parasitic wasps, which help control span worms and leaf tiers,
2. **knowledge of pest biology**, so treatments can be applied at the most effective time,
3. ongoing **monitoring of pests**, usually on a weekly or bi-weekly basis,
4. application of an **economic threshold level or tolerance**, *ie*, the level of pest activity at which a treatment must be applied to prevent unacceptable crop losses from occurring,
5. application of a **treatment when pest populations exceed threshold levels**. This may consist of a pesticide, a biological control, physical controls such as cutting weeds or cultural controls such as plant nutrition.

Pesticides are only applied when pest populations exceed established levels or tolerances known to result in unacceptable crop loss. Accurate identification of weeds, insects and diseases is essential to IPM; growers should familiarize themselves with the major pest problems. Natural pest controls are used whenever possible. Pesticides are selected to minimize possible adverse affects and are used to augment naturally occurring controls when possible. In many years beneficial insects and other naturally occurring phenomena such as weather conditions may prevent pest populations from reaching levels that would warrant use of pesticides.

Application Technology

Pesticide use in IPM assumes accurate application of a recommended rate to a defined target. Accurate application requires determining the volume of spray or dry product delivered by equipment over a specified unit of land - usually an acre or hectare. This process of determining delivery volumes is known as calibration. Calibration of equipment is crucial for the economic well-being of the farm as well as ensuring environmental integrity. Pesticides are expensive! Excessive use through inaccurately calibrated equipment may lead to crop injury, residues that will prevent sale of the crop and loss of operating capital.

Spray droplet size is an important consideration to maximize efficient dispersal and deposition of pesticide on the target. Herbicides are usually more effective with relatively large droplet sizes, while insecticides are usually more effective when applied as mist size droplets. Choosing the correct spray and application pressure will ensure generation of the appropriate droplet size. Farm machinery dealers, private consultants, IPM and machinery engineering specialists with NSDAM can provide assistance.

Weather conditions and terrain are factors that will also influence equipment and droplet size choices. The larger droplet sizes that should be used with herbicides are less vulnerable to off-site movement as a result of wind and air currents. Granular applicators are particularly suited to rough terrain. Spot treatments with back-pack sprayers or “wipers” are appropriate to control pest populations confined to small areas.


Protection of Environmentally Sensitive Zones

Pesticides are safe and effective tools in pest management when used according to label directions. Product labels specify use procedures and practices that will mitigate against adverse environmental effects. Users are legally required to adhere to label requirements! Failure to do so may seriously damage the environment and result in prosecution of the offender.

Contamination of ground and surface water supplies is perhaps the greatest environmental concern relative to use of pesticides. Products that are highly soluble in water and slow to degrade are more risky than products that are of low water solubility and degrade quickly. Research has shown that most contamination occurs as a result of accidents and carelessness; *ie* spills of concentrated pesticides into or near wells or bodies of water or spraying over open wells. The implication is that risk of water contamination can be minimized by taking extra precautions to ensure that spills and over-sprays do not occur. Maintenance of an appropriate width unsprayed buffer zone between treated areas and bodies of water will prevent pollution of streams and ponds.

Products that are highly soluble in water may wash down-hill and accumulate at the bottom, harming sensitive terrestrial or aquatic life found there. For this reason highly soluble pesticides should not be used on steep terrain.





Hilly fields in early stages of development may be especially vulnerable to erosion. Herbicides remove most weedy vegetation, leaving the soil bare in areas where blueberries have not completely filled in. Heavy rainfall may then wash top soil away causing exposure of sub-soil and siltation of streams. Once top soil is gone the crop may never establish in these areas. Therefore, herbicides should be used carefully in developing fields so as to maintain some grass or weedy vegetation in areas where the crop had not yet spread. Grassed waterways should be considered on particularly sloped fields.

Consider developing buffer zones of unmanaged vegetation around sensitive areas like streams and swamps or near potable water supplies. In some instances buffer zones are legally required, either by Federal or provincial law. Always consult the product label!

Understanding properties, such as toxicity, water solubility and persistence of the product is essential to assure correct use. Growers must ensure that label instruction relative to precautions and setbacks from sensitive areas are followed.

Effective Storage, Cleaning and Container Disposal

Many accidents with pesticides occur not in application, but in storage. Children and adults can inadvertently contact chemical containers and spilled concentrate when pesticides are improperly handled and stored. Children have been known to confuse pesticides with food products and consume them, when they were not stored in their original container.

Just as medicines should be kept under lock and key, so too should stored pesticides. Special storage rooms or cabinets which can be locked are mandatory. Ventilation of storage units is advisable to prevent the buildup of potentially toxic fumes. Pesticides should be stored in their original containers. Check all containers periodically for leaks. If leaks have occurred take measures to prevent additional leakage and use an absorbent material to soak-up the spilled product. Check with the Department of the Environment (NSDOE) or the manufacturer to determine how to clean up leaked material or dispose of unusable product.

Pesticide storage areas should be posted. Local fire departments should be notified when large quantities are being stored on farm. Build storages of non-combustible or fire retardant materials. Keep safety equipment and a fire extinguisher close by. Absorbant material like dry peat moss should be on hand in case of a spill or leakage.

On-farm storage for private use can be very safe with the application of common sense. The first step is to store as little as possible. Try to buy only enough pesticide to cover your land base requiring treatment. Knowledge of label rates and land measurement is necessary for this. Vendors can assist in the process of determining pesticide volumes required for a treatment.

Retail or wholesale storages are regulated under the provincial Pest Control Products Act and must meet specifications outlined in the Regulations.

Cleanup and proper disposal of application equipment and containers is essential for economic reasons and to ensure environmental integrity. Equipment should be thoroughly cleaned with large volumes of water. The rinsate should be sprayed-out over a large land area, preferably the same area treated with the pesticide in the first place. For instructions regarding decontamination of equipment when used with specific products, consult the label.

Product containers should be flushed with a spray of water and shaken vigorously a minimum of three times, This is commonly referred to as "triple-rinsing". Jet-rinsers, available from most farm chemical outlets, can be attached to the by-pass line of the sprayer and provide a very effective and efficient means for triple-rinsing. Rinsate from triple-rinsing is disposed of by adding it to the spray tank as the applications mix is being prepared.

Research has shown that the short time taken in triple-rinsing containers is much more than paid for the by product saved. Knowing that containers are clean and do not pose a health or environmental hazard will give peace of mind and a clear conscience!

Rinsed containers should be punctured to prevent re-use. Clean, dry containers can be taken to a recycling depot.

Applicator Safety

Pesticide labels all carry information regarding necessary safety precautions to be taken by applicators to minimize their exposure and risk of injury. Depending upon the toxicity (ability to poison) of the individual pesticide, differing levels of personal protection are recommended. Minimum personal protective equipment that should always be used when handling concentrates would include safety goggles, coveralls, nitrile rubber gloves and apron. Coveralls over regular clothes are a good idea for applicators. Disposable coveralls are available; however, if non-disposable clothing is used, remember to wash it in a separate cycle from the family wash. Product labels will stipulate wearing a respirator and chemical resistant clothing when necessary.

Growers must be able to recognize and respond to label safety precautions. Additional sources of information of safe use might include NSDAM specialists, technical sales representatives and staff of NSDOE.

Two facts worthy of remembering are:

1. Greatest risk of exposure occurs during handling of concentrated pesticides while measuring, mixing and filling sprayers.

