



Herbicide Use

J.D. Irving, Limited Woodlands

Overview:

At J.D. Irving, Limited, we are committed to sustainable forestry. This means being good stewards of the land to ensure that a diverse and healthy forest landscape remains for future generations. Factors that affect forest structure include soil type, drainage and climate as well as the history of the land over the past centuries. History includes not just the activities of man but of fire, insect epidemics, wind and other natural forces.

Experienced and dedicated foresters assess the land prior to harvesting. For some stands, partial harvesting of a healthy stand is a good choice. Such stands will regenerate for the foreseeable future providing habitat, recreational values and wood. For other stands that contain trees near the end of their lifespan, of poor quality or at risk for loss by insect mortality or wind, clear-cut harvesting may be used. In these situations, natural regeneration is often sufficient to develop a new healthy forest. If there is not enough good quality natural regeneration, tree planting is used along with regeneration.

When tree planting is undertaken, care is needed to ensure

that the species selected are suited to the site and that the seedlings get off to a good start. Shade and competition for water and nutrients from faster-growing plants is the primary concern. The competing plants need to be held back for a short while until the young seedlings get established. After this, the seedlings are tall enough to grow and the other vegetation takes its place in the emerging stand.

There are a variety of ways to provide this early start. For over 40 years, often in cooperation with government and university researchers, J.D. Irving, Limited has studied different strategies to manage early competition. Each site requires a different approach. This begins with an understanding of the particular species of competing vegetation, land preparation, the mixture of tree species reflecting site characteristics and what additional measures are needed. Some sites can be treated by manual weeding, brush saws or more intensive site preparation. Each one of these methods

has strengths and weaknesses. In many cases aerial or ground spraying is the most environmentally acceptable and practical approach. The following describes in general terms the approach used by J.D. Irving, Limited when the decision to use herbicide is taken.

Planted stands are assessed to determine when competing vegetation is reducing growth or killing the seedlings. As noted above, how competing growth is managed depends on factors such as the landscape type, the particular mixture of planted species and competing species as well as proximity to watercourses and houses. An experienced team of foresters and silviculture managers make specific site prescriptions. When the decision to apply herbicide is made, we apply for the necessary regulatory permit(s).

Decision Process:

Planted trees are assessed following establishment to ensure tree growth is not seriously impeded. Management of competing vegetation is considered when softwood trees are over-topped, and a serious loss of growth or mortality is anticipated.

How competing vegetation is managed depends on factors such as long-term forest

management goals, type of planted species and competition, proximity to houses and closeness to watercourses. Trained foresters or technicians make the decision concerning the safest, most efficient method. When the decision to apply herbicide is made, regulatory and product issues as well as method of application are carefully considered.



Regulation and Approved Products:

All herbicide application is conducted by trained and certified personnel using approved products. Application is conducted according to the laws and regulations of the appropriate jurisdiction. (New Brunswick Department of Environment and Local Government, Nova Scotia Department of Environment, Nova Scotia Department of Natural Resources, and Maine Board of Pesticide Control). Different jurisdictions have specific requirements for obtaining government approval to apply herbicides.

Prior to herbicide application, all J.D. Irving, Limited managed lands are identified, mapped, and marked on the ground using state-of-the-art technology such as geographic information systems (GIS) and global positioning systems (GPS). (See above photo)

In the mapping and application process, a minimum of 65-metre buffers are placed around all bodies of water. Although this precaution is not required by regulatory authorities, J.D. Irving, Limited does not apply herbicide by air closer than approximately 1 km of occupied houses.



Products:

J.D. Irving, Limited mainly uses herbicide formulations comprised of a surfactant (detergent) and the chemical glyphosate. This comes from different manufacturers under different product names: Accord®, Vision®, Vantage® and Forza®. Vision®, Vantage® and Forza® are registered for aerial application for forestry by the Pest Management Regulatory Agency (PMRA) of Health Canada through the Pest Control Products Act. Accord® is registered for aerial application in the United States by the Environmental Protection Agency (EPA).

When glyphosate is applied to foliage, it is absorbed by leaves and rapidly moves through the plant. It affects an enzyme not present in humans or animals that produces an essential amino acid. This prevents the plant from producing protein and growing.

Glyphosate is among the most widely used herbicides worldwide. In the United States and Canada, almost all glyphosate is used in agriculture with a small percentage used in forestry. This chemical has been tested extensively not just by the manufacturers but also by university and government laboratories in many countries for safety to human and environmental health.

The US Environmental Protection Agency and the Canadian Pesticide Management Regulatory Agency and the Canadian Wildlife Service have reviewed the safety of glyphosate a number of times. In addition, reviews have been performed by the Commission of the European Union, the Food & Agricultural Organization of the United Nations and the World Health Organization. The results of all these reviews are available

to the public. Studies have been conducted on laboratory animals, fish, invertebrates, non-target plants and microorganisms. In addition, epidemiology studies have been performed on farm workers regularly applying glyphosate to crops. These reviews have concluded that glyphosate has low toxicity to non target organisms including humans and does not accumulate in soils or the food chain. The EPA concluded that there was not evidence that glyphosate causes cancer in humans.

The World Health Organization reports that "A review of studies in laboratory animals and in vitro test systems supports the conclusion that glyphosate has very low toxicity...does not induce sensitization [immunological effects], and shows no mutagenic, carcinogenic, or teratogenic (birth defect) activity."

Glyphosate in the environment:

Herbicide spraying is usually necessary only once during a tree's 50 – 80 year life span and occurs in late summer from mid August to late September one to two years after planting. When competing vegetation is sprayed, glyphosate only controls plants that come in direct contact with the herbicide. Glyphosate has no effect on plants that are not sprayed directly with

the solution . It becomes inactive once in contact with the soil and does not move from the treated area nor into surface or ground water. Microorganisms naturally present in the soil rapidly degrade glyphosate. This has been shown in many experimental and field studies worldwide. This includes studies under actual conditions of use in J.D. Irving, Limited stands in New Brunswick.



Public Concerns:

Responsible and sustainable forest management is important. Part of this commitment includes investigating alternatives to herbicide spraying. Our company consults with scientists and experts to advise us and to help direct research related to herbicide spraying. The goal of these efforts is to ensure J.D. Irving, Limited is using the best science to achieve forestry that is ecologically, so-

cially and economically sound.

Our foresters are available to discuss concerns and address any questions related to our herbicide-spraying program. Please contact us at 1-888-305-5755 for any spray related questions or concerns.

To arrange for a tour of our woodlands to discuss our forest management practices, we ask you to please call the local woodlands office in your area.



Our doors are open. Regulatory agencies are also available to provide additional information on the use of pesticides in our forests.

The following web sites contain valuable information on numerous research studies pertaining to the use of pesticides:

The United States Environmental Protection Agency: www.epa.gov

World Health Organization: www.who.int

United States Department of Agriculture: www.usda.gov

Health Canada Pest Management Regulatory Agency: www.hc-sc.gc.ca/pmra-arla

