

Tool 5: Invasive Plant Contractors Guide to Invasive Plant Field Assessment and Cost Proposal Development

This tool is intended to help invasive plant contractors:

- ✓ Understand the steps they need to take to become an invasive plant contractor
- ✓ Know the important components of being a licensed herbicide applicator in Vermont
- ✓ Assess a property with invasive plant treatment in mind
- ✓ Understand details of completing invasive plant treatment work
- ✓ Determine what to consider when developing a cost proposal for treatment work

Disclaimer: Invasive plant contractors should employ Integrated Vegetation Management (IVM) and consider all treatment options for prevention and treatment of terrestrial invasive plants. This tool mentions the use of herbicides as one treatment method, but is not intended to weigh one method of treatment against another, nor provide suggestions to which treatment methods should be employed. However, if using herbicides to treat invasive plants, you must be certified to use them on a client's property, and you have the responsibility to use them judiciously and appropriately.

Getting Started

- 1. Educate Yourself and Landowners:** As an invasive plant contractor, you are responsible for killing invasive plants, and this comes with a large responsibility to do so appropriately. Educate yourself about each invasive plant species and the most commonly accepted and used methods to treating them. Talk with other contractors, foresters, and ecologists about treatment methods, and attend invasive plant workshops to learn and share valuable treatment information. For species-specific information go to the Gallery of Invaders at www.vtinvasives.org. As a contractor, you are also responsible for educating and communicating to your client the knowledge you have about the natural world. Attempt to educate your clients not only about invasive plants and treatment methods, but about natural communities and plants.
- 2. Service Provider:** Determine what type of service you will provide to landowners as an invasive plant contractor. This could range from assessing/mapping infestations, operating harvesting machinery, treating infestations manually, or treating infestations using herbicides. Have a clear goal in mind when launching into this business. There is much need in Vermont for more contracting professionals to help landowners in all of these areas, and there is much room for your business to grow and develop as you become more involved with the process.
- 3. Acquire the Tools You Need:** Determine which tools you will need to complete the service you wish to provide. This list could include: GPS and mapping technologies, weed wrenches, back pack sprayers, and even harvesting equipment such as a brontosaurus, etc. This list will evolve as you become more involved with the process and learn more about the tricks of the trade. Several of the items you need can be purchased online, in basic forestry supplier catalogs, or in hardware stores.
- 4. Certified Pesticide Applicator:** If you decide that applying herbicides to landowner's properties is part of the service you will provide as an invasive plant contractor, **you will need to obtain the correct**

pesticide applicator certification. In the State of Vermont, certification is overseen by the Vermont Agency of Agriculture, Food and Markets. Keep in mind the following information:

- a. Pesticide applicators must pass a written exam and pay the appropriate fees to obtain the certificate. These exams are held at several locations around Vermont and are closed-book, written tests. The certification you wish to obtain will dictate which exam(s) you take. Commercial applicators will all be required to take the **“Commercial Core exam” based upon the VT CORE Manual** and the appropriate **“category exams” which are based upon additional specific category manuals, all available through the Vermont Agency of Agriculture.** A portion of the **core manual** will include regulations specific to the State of Vermont, titled **“The Vermont Regulations for Control of Pesticides”**. You are responsible to know all of the national and state regulations outlined in the manuals.
 - b. Your company will need to purchase a **“company license”** if your business is applying pesticides to the lands of others for remuneration.
 - c. In order to keep your personal certification active, you will need to obtain **“continuing recertification credits”**.
 - d. **Chemical Storage:** As a commercial applicator, you are responsible for the safe and legal storage of herbicides. Make sure that your business is appropriately set up to have this. If purchasing herbicides, you will need to find an herbicide dealer that can legally sell restricted herbicides.
5. **Questions:** For **all** questions regarding certification and pesticide application in Vermont contact the Pesticide Certification and Training Coordinator at 802-828-2431.

Assessing and Mapping the Site

Depending on your familiarity with the site, you may want/need to visit the site to assess it and determine how to execute the invasive plant treatment work. In some cases, you may have enough existing information about the site and infestation to begin treatment work without visiting the site. However, in most cases, invasive plant contractors typically like to assess a site before they bid on the project and begin the treatment work. Although a site assessment is an added initial cost to the landowner, it will aid the contractor in determining appropriate methods of treatment and costs, which may save the landowner money in the long run. As a contractor, if you are unsure about any of the items listed below in the **“What to Assess on Site”** you should take the time to visit the site.

Keep in mind the time of year when you are visiting the site. Spotting plants during the active growing months will be far easier than during the dormant months, especially for herbaceous plants that die back to the ground every year. For woody stemmed invasive plants, an infestation may look less dense or severe if you visit the site after the plants have dropped their leaves, so keep this in mind when determining when treatment work will take place.

The level of detail in which you assess and/or map the property will depend on the landowner’s goals. It will also depend on what, if any, work has been done prior to you being hired to execute invasive plant treatment work. Below is a table with several scenarios that might apply to you and will guide you to how best assess and map the site. For all scenarios below, mapping tools (such as GPS’s, compass, mapping computer software) will be helpful in completing the job, For scenarios 2-4, having a printed map of the property and/or invasive plant infestations may prove to be extremely helpful, even if you are collecting/mapping slightly different information. *While assessing and mapping keep the following things in mind:*

1. You will need to determine how to group infestations of invasive plant. Some people tend to lump several smaller infestations together, while other split each individual infestation out. There is no exact science to making these decisions because every infestation and property is different. You may also not be able to make the “lumping/splitting” call until the entire site (or what you are asked to assess) has been looked at.
2. Try to determine where isolated and source infestations are. This information will be crucial in determine how to prioritize treating a site.

Scenario	Landowner/ Contractor Goals	Contractor Goals	Mapping/data collection method
1	Landowner wants a complete invasive plant survey of the property.	Contractor surveys entire property for invasive plants and maps them	<ul style="list-style-type: none"> • Data is collected at assigned or random sampling points along transects • Transects length and spacing will depend on size of property and level of detail desired • Data will show general trends of invasive plant infestation on entire property
2	Landowner has an idea of where they would like invasive plant treatment to occur	Contractor walks property with landowner or land manager and looks at specific locations on site	<ul style="list-style-type: none"> • Data is collected at locations where landowner is interested in having treatment work done • Landowner may have developed a map (using imap) or contractor can develop a map if necessary
3	Landowner defers to land manager’s (forester’s) suggestions of where to complete invasive plant treatment	Contractor walks property based on land manager’s suggestions	<ul style="list-style-type: none"> • Data is collected at locations where landowner is interested in having treatment work done • Map of invasive plant infestations may exist in forest management or other land management plan • Contractor can develop a map if necessary
4	Landowner has signed up for an NRCS program and an NRCS conservation plan and map has been developed	Contractor walks to property based on NRCS conservation plan, visits locations that will receive NRCS cost-sharing funding	<ul style="list-style-type: none"> • Data is collected at locations that NRCS staff have identified invasive plant treatment work should be conducted • Map of property has already been developed in NRCS conservation plan
5	Landowner defers to contractor for suggestions of where to complete invasive plant treatment	<ul style="list-style-type: none"> • Contractor walks entire property if they are not familiar with the site <i>or</i> • Contractor walks property to inspect areas they are familiar with and know will need treatment 	<ul style="list-style-type: none"> • Data is collected at locations where contractor recommends having treatment work done • Contractor will develop a map of treatment areas

What to Assess on Site

See the “Invasive Plant Contractor’s Field Form” at the end of this document as an example or template for collecting the following information.

Permission, Access, and Boundaries

1. **Permission:** Make sure you have permission from the legal landowner to complete treatment on their property. It is also a good idea to get a sense of the goals your landowner has for their property. These

can be short term or long term goals, but may affect your treatment decisions (where to begin work, what treatment method to use, how much area to treat, etc.). Determine how you will access the property and the infestation and discuss this with the landowner. In some cases, the easiest way to access the infestation or property may be via an adjacent neighbor's property, in which case permission from the neighbor is necessary.

2. **Access:** Scout out the feasibility of moving equipment and crew members around the property and infestation. Make sure that right-of-ways (such as railroad and roads) are granted to you before treatment work commences. Think about where you will begin the treatment work, and how you will most feasibly and effectively move through the site during treatment. On public lands, trail closures may be necessary during treatment to keep the public safe.
3. **Boundaries:** Be familiar with the boundaries of the property you are treating, as well as the extent of the infestation that is scheduled for treatment. Ask the landowner if their boundaries with neighbors are clear and if /what they are marked with (blazing, boundary paint, barbed wire, etc.). *Applying herbicides onto a neighbor's property without their knowledge is illegal.* Many properties that receive funding from the Natural Resource Conservation Service (NRCS) may have the boundaries of the invasive plant infestation flagged (see Tool 3: A Landowners guide to Seeking Funding from the Natural Resource Conservation Service (NRCS)).
4. **For other properties, consider flagging the boundaries of the infestation before treatment work begins and discuss the boundaries with the landowner.** This will make certain that everyone knows what work is going to happen on the site.
5. **Certified Organic:** Be aware that landowners can obtain organic certification for different forest types (for example maple sugar bushes, apple and other fruit orchards, Christmas tree plantations). Many organic certification organizations have restrictions about applying herbicides in or adjacent to a certified organic parcel. Discuss with the landowner if they, and/or any neighbors have organic certification that you should be aware of. NOFA example, website

Surface Water (including wetlands, rivers and streams)

1. **Wetlands and wet areas:** note if infestations are near or in wetlands or other wet areas. This will affect your ability to access the site/infestation during specific times of year. Certain herbicides are required to be used only in areas that are dry, or seasonably dry. Being limited in the type of herbicide you can use may also limit which type of treatment method you can use in wet areas. *BE AWARE: if applying herbicides in or adjacent to standing or running waters, you will need to obtain the proper category license (See "Certified Pesticide Applicator" above) and possibly an Aquatic Nuisance Control Permit from Vermont Dept. of Environmental Conservation. For more information on aquatic permits see: http://www.vtwaterquality.org/permits/htm/pm_anc.htm*
2. **Wells:** Locate all private and public wells on site and in or near the invasive plant infestation. For private wells, State of Vermont law requires that herbicides are not applied within a fifty foot buffer unless permission of a lesser distance is granted in writing by the well owner. For public wells, herbicides may not be applied within 200 feet.

Special Features

1. **Rare, threatened or endangered species (RTE):** Identify any RTE species that may be present within the treatment areas. You must take great care to protect these species during invasive plant treatment.

Check the Endangered Species Protection Bulletins issued by the Environmental Protection Agency for instructions per county and month of any proposed herbicide application. Herbicide applicators must heed any instruction in this bulletin (if there is one posted) and any instructions on the label of the herbicide being used.

2. **Other Special features:** Talk with the landowner to determine if there are any areas (within the larger treatment area) that should be avoided during treatment.

Invasive Plants

1. **Species:** Note which invasive plant species are present. Some plants are more difficult to kill than others and will require several treatment methods and others will not. You will also need to determine which treatment method you will use for each plant.
2. **Density (cover class):** The level of detail of this piece of information will depend on the detail of your assessment methods (collecting detailed data vs. a general assessment). Density and/or cover class refers to the density of invasive plants that are in the area that is scheduled for treatment. This can be reported in general terms (such as “high, medium or low”) or can be more quantitative (such as 100%, 75%, 25%, 1%). You should try to report this in general terms (for example, “the area has a **high level** of infestation”) and for each individual plant species (for example “the infestation was 75% honeysuckle, 10 % buckthorn”).
3. **Size (diameter and height):** This is perhaps one of the most important pieces of information to collect while visiting the site. Several woody invasive plants can be treated using a variety of different manual (digging, mowing) and herbicide application treatment methods (foliar spraying, cut stump, basal bark) but the height and/or diameter of the plant is a key factor in determining which methods are possible to use. For example, you may be able to hand pull seedlings of honeysuckle, but not a mature, six foot plant. Or, you may be able to foliar spray seedlings of buckthorn that are knee high but not be able to reach the foliage of a twelve foot tall mature buckthorn.
4. **Distribution:** While visiting the site, try to determine where each population of plant species occurs. Determine if it is distributed throughout the entire property, or isolated in one location. Attempt to locate possible source populations (these could be either on the property or on an adjacent property) and satellite populations. Although only certain portions of the property may be scheduled for treatment, knowing this information will help you make decisions about what treatment methods are best and where to begin treatment work.
5. **Non-target vegetation:** Notice to what extent non-target vegetation is present in the invasive plant infestation. You will want to attempt to limit unintentional damage to non-target vegetation as much as possible. This may dictate which treatment type you choose for the invasive plant (for example, using a foliar herbicide application will likely damage non-target vegetation more so than a cut stump application).

The Right Tools for the Job

A large component of the site assessment will be for you to determine which method of treatment you will use to treat or eradicate each individual invasive plant species. Choosing the right treatment methods and tools will be based on the information you collect during the site assessment and the discussion you have with the landowner. Be aware that the effectiveness of treatment methods may differ for different plants and that some are more costly to employ than others. See individual management factsheets at www.vtinvasives.org to determine which treatment methods are recommended for each invasive plant species.

1. **Manual vs. Chemical:** You will need to make the decision if the invasive plant infestations you are assessing can be dealt with manually or will require the use of herbicides. Gauging the desires of the landowner is crucial when making this decision. Social, economic and environmental costs must all be weighed when making this decision. Be aware that as a professional contractor it may be very expensive for a landowner to hire you to execute manual techniques (hand pulling, digging) compared to volunteers and/or non-professional contractors.
2. **Heavy Equipment:** Unfortunately, there are locations in Vermont that are very heavily infested with invasive plants. In some cases, entire understories of forests are now consumed by nothing BUT invasive plants. Moving through these understories may be difficult for a person, but not for a larger machine, such as whole tree harvesters and brontosauruses. Although treating invasive plant infestations before timber harvesting occurs is beneficial to prevent potential spread, treatment may not be possible without the help of larger equipment. It may be necessary to have these machines move through the area before other invasive plant treatment (such as foliar spraying) can occur. This method can be very costly for the landowner, but can also be cost neutral or profitable if combined with a timber sale. This might be a good method to employ where a clear cut is planned for a forest stand. Keep in mind that follow-up treatment, likely foliar spraying of sprouts, must accompany this method to ensure effective treatment.
3. **Herbicide Treatments:** there are many different types of herbicide treatment methods that can be used to treat invasive plant infestations. You should consider the following when making decisions about what herbicide treatment to use. For an explanation of treatment types, see *Tool 4: Invasive Plant Treatment Methods*.
 - a. **Time of year:** Individual species are each treated most effectively at certain times of the year. See management factsheets at www.vtinvasives.org for more information. In addition, certified pesticide applicators MUST be aware of maximum allowable amounts of herbicide that can be applied per acre in one year. This information is listed on the herbicide label. If an infestation is very dense, the treatment may need to occur over the course of several years to not exceed the maximum allowable amount.
 - b. **Mode of Action:** Different herbicide treatments will require the use of different types of herbicides. Depending on the mode of action provided by the herbicide, a certain herbicide will be more effective for a cut stump treatment method than a foliar application method. The herbicide label will indicate what treatment methods are allowed for an individual herbicide.
 - c. **Size of plants:** The height and diameter of the plant will dictate which herbicide application treatment method you can use.
 - d. **Water and sensitive areas:** choose application method that will NOT drift to aquatic or other sensitive areas.

Prioritizing the Treatment Work

How you prioritize the invasive plant treatment work will depend on the specifics of the site. Each site will be different. Below are some suggestions to keep in mind when attempting to prioritize treatment work:

1. **Satellite Populations:** Attempt to treat satellite populations first to avoid them from becoming worse in intensity and/or spreading.

2. **Source Populations:** To limit future spread, attempt to treat source populations. Removing mature, fruiting plants will help limit the spread and introduction of seeds to other places. This may be very difficult depending on the intensity of the infestation and may not be feasible to achieve as a priority.
3. **Landowner Priorities:** Consider which areas are high priorities for the landowner, after all you are treating **their** land. If a client is happy with your ability to meet their priorities they will be more likely to find the financial resources for additional treatment work.
4. **Funded Areas:** Plan to first treat areas that have funding to complete the treatment work (for example, areas that NRCS is willing to cost-share fund with the landowner).
5. **Aggressive Plants:** Be aware that some invasive plants may be more aggressive or more difficult to kill than others. In addition, you may prioritize the same plant differently depending on the given natural community type they are in (for example a plant may be more aggressive in rich, moist soils than upland, dry sites). Regional ranking systems have been developed in other parts of the country, but do not currently exist in Vermont. Ronald D. Heibert and James Stubbendieck have developed a “Handbook for Ranking Exotic Plants for Management and Control”. To view the resource, see:

http://especies-envahissantes.outramer.fr/pdf/methode_hierarchisation_hiebert.pdf

Restoration

As an invasive plant contractor, you or someone else may be responsible for restoring the site, if necessary, after treatment work has been completed. Anticipate this step and discuss with your client. For more suggestions, see *Tool 7: Guidelines for Site Restoration*.

Project Tracking and Wrap-up

You will need to keep track of several pieces of information while you are completing the treatment work. Much of this information should be kept on file. Other pieces of information should likely be conveyed to the landowner during or at the close of the treatment project.

1. **Landowner Communication:** discuss with the landowner what treatment work was completed and what, if any, the next steps are (such as follow up treatment, additional treatment, etc.). In addition, there are several pieces of information you, as an applicator, **must provide** to the landowner at the completion of a job. These things can typically be reported on your invoice to the client. They include: **brand name of herbicide, active ingredient named of herbicide, total amount of active ingredient used in herbicides or other product, EPA Registration # of the product, date of treatment.** Things you can also include are name and license # of certified applicator and hours to complete treatment work.
2. **State of Vermont Reporting:** At the end of every year, you will be required to report the total amount of pesticide you applied within the State of Vermont for each county. The Vermont Agency of Agriculture will mail all certified applicators a reporting form along with certification renewal paperwork at the end of each calendar year. Applicators must complete this form and submit to the Vermont Agency of Agriculture.
3. **Internal Project Tracking:** It is a good idea for you to record the details of treatment work during or directly following a project. You may want to develop your own “internal project tracking” sheet and keep this information on file for you reference:
 - a. Landowner name and property location
 - b. Weather during treatment

- c. Date of treatment
- d. Brand of herbicide used
- e. Concentration of herbicide used
- f. Amount of herbicide and active ingredient used
- g. Targeted species
- h. Number of hours to complete job
- i. Cost to complete the job

Developing a Cost Proposal

Once you have collected the necessary data about the site from the field you may want to develop a project/cost proposal. A cost proposal can serve as a way to indicate to the client what treatment work you anticipate doing and how much the treatment project will cost the client. The cost proposal can also serve as a short term (1-2 year) and/or long term management plan. The details of the cost proposal will depend on the needs of the client. In some cases, the client may not require a cost proposal and/or may have an additional document that serves as a management plan (for example an NRCS conservation plan). It is a good idea however, to have a document that outlines the expectations for the client and the contractor.

Direct and Associated Costs of Treatment for the Contractor

As a contractor, you will need to decide how you anticipate charging the client to complete the treatment work. Below is a list of tasks you can anticipate charging the client for.

- Project scoping and planning: site visit(s), travel to the site, discussion with the client, additional research about the site, drafting a management plan/cost proposal
- Initial treatment work-labor for work*, travel and accommodations to complete work
- Material costs- cost of herbicide, surfactant, additional equipment
- Completing follow up treatment- labor for work*, travel and accommodations to complete work
- Monitoring- short term or long term monitoring, discussing next treatment steps

*labor to complete treatment work is typically charged hourly or on a per acre basis, or both. As you complete more treatment projects, you will be able to determine which system makes the most sense for you and your business.

What to include in a costs proposal

- Name and address of landowner
- Invasive plant contractor's name and company
- Background information including
 - Details of the site (location, topography, land features)
 - Goals/expectations of the landowner and contractor
- Map of the property and proposed treatment areas
- Treatment planned, including treatment method, proposed method and herbicide type,
- Discussion of individual task costs and total project cost.
- Proposed timeline
- General or specific notes about how treatment went

Invasive Plant Contractors Field Form

Landowner's Name:		Date of Site Visit:
Describe goals of Landowner:		
Landowner's contact info: Address (street, town, zip)	Email:	Phone:
Property Managers (including foresters, NRCS staff):		
Property Location:	Total acreage of property:	
	Total area assessed:	
Property details (% or amount forested, % or amount open, previous treatment work):		
Notes on access and permission:		
Notes on boundaries and adjacent lands:		
Are any of the treatment areas within 50' of a private well or 200' of a public well? <input type="checkbox"/> Yes <input type="checkbox"/> No Are any of the treatment areas near or in certified organic areas? <input type="checkbox"/> Yes <input type="checkbox"/> No Are any of the treatment areas adjacent to wetlands, rivers, streams? <input type="checkbox"/> Yes <input type="checkbox"/> No Do any of the treatment areas include special features worth noting (RTE)? <input type="checkbox"/> Yes <input type="checkbox"/> No Describe details:		

Area # or Description	Species Name	Density (high, medium, low) or (%)	Size (height) and Diameter of stem	Presence of non-target vegetation	Proposed Treatment Method
For Example:					
Area 1, Stand 1, or White Pine Plantation	Common buckthorn	High to moderate or 100-75%	Seedlings to 3 ft, <1 inch diameter; AND >10 ft, 6 inches diameter	Heavily intermixed with honeysuckle	Foliar spray

General Notes/Comments: