

DISTRIBUTION LINE CHEMICAL APPLICATIONS¹

by W.R. Rossman

Abstract. Vegetation management on a power line right of way requires extensive planning and field investigation to be successful. Foresters have successfully developed and carried out a vegetation management program over the extensive power line system of the Pennsylvania Electric Company. A detailed specification manual has been of great value to the success of the program. The future of chemical vegetation management holds many problems and challenges.

The management of vegetation on a power line right of way (ROW) is too important to be approached haphazardly or to be left to chance. If properly managed, ROW vegetation can be a valuable asset to the landowner, wildlife, naturalists, and to the power company. The Pennsylvania Electric Company (Penelec) views the management of vegetation on its power line ROW with great care and concern.

Penelec is an investor owned electric utility company serving 490,000 customers over a 17,000 square mile service area in central and northern Pennsylvania. We manage the vegetation on 22,000 miles of transmission and distribution line ROW over the Penelec system.

Planning for the management of vegetation on a new power line ROW begins before the new ROW is cleared. A detailed study of the ROW is made in the field by a forester to prescribe various clearing procedures and the chemical herbicide treatment of vegetation. The forester's input is vital at this stage to the future development of desirable vegetation on the ROW. Penelec utilizes foresters in all phases of power line ROW clearing and maintenance.

All herbicide applications on Penelec ROW are made by line clearance contractors. A major portion of the herbicide work is bid by the acre. The balance of the applications are made on a time and materials basis by contractor crews who are also trimming and removing interfering trees and hand cutting brush. These combination-type crews are always equipped with herbicide supplies and knapsack type sprayers.

Penelec utilizes all of the available methods of herbicide application including selective basal, selective pellet, waterborne stem-foliage, and helicopter applications. The correct method of application and herbicide solution is determined by the Division Forestry Supervisor after an intensive field inspection of each individual line right of way.

Helicopter Line Patrol

The Forestry Department has responsibility for the helicopter line patrol. This service is performed by an outside contractor. One of the items reported by the helicopter observer is danger trees and large brush condition along the power line ROW. The reports submitted by the helicopter line patrol are helpful in locating problem areas and in keeping abreast of line clearance conditions. At present Penelec patrols over 5,000 miles of transmission and major distribution lines twice annually.

Herbicide Specification Manual

Penelec has developed a detailed specification manual covering each of the application methods. This manual is used as a field guide by the contractor applicator crews in making herbicide applications to Penelec ROW. The first part of the manual covers General Specifications that are common to all of the application methods.

General Specifications. These shall apply to all applications of chemical treatment of brush of Company ROW.

Contractor crews will not begin chemical treatment of brush until instructed in proper application techniques by Penelec Division Forestry Supervisors.

Property owners must be advised by the contractor in advance of spraying brush on their property. The contractor must record and provide to Penelec a complete record of all property owner contacts. Property owner record forms will be supplied by Penelec. In the event that a property

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owner objects to spraying of brush, the work shall be postponed for that property. Such cases shall be referred at once to the Company. The work shall not be undertaken on that property until the owner's approval is obtained.

Treatment shall not be initiated on State or Federal lands until written approval has been obtained from the agency or office in charge of such lands. The method of treatment and chemical to be used shall be that for which approval has been obtained. This approval shall be obtained by a Penelec Forestry Supervisor.

The contractor shall work progressively along the line from the starting point and shall complete all work in a given portion of the line before starting work in another portion.

During the progress of the work, the foreman on the job shall call the local Penelec office each working day to report progress and give location for the next day. Foreman must also call the office when the crew changes from one job to another.

Areas of treated ROW showing evidence of incomplete coverage shall be re-treated immediately. It shall be the responsibility of the contractor to inspect the treated ROW within one week of treatment and re-treat those areas which have received incomplete application.

The minimum volume of spray material (in gallons) to be applied to the average acre of each line ROW shall be included with the information supplied for bidding. Total volume of spray material to be applied to each ROW shall be calculated on the basis of actual measured acres on each ROW.

The correct chemical concentrate and concentration of chemical in the mixed spray solution shall be included with the information supplied for bidding. Any substitute material shall first be approved by the Company. Chemicals must meet the specifications listed under the heading "Chemicals."

The spray solution must be thoroughly agitated prior to and during application to insure uniform dispersion of the concentrate through the carrier.

In the event that weather, insects, or other agencies seriously affect the condition of vigor of the brush, operations may be temporarily suspended or permanently cancelled at the

discretion of the Company.

The solution shall not be applied when the stem, trunk, or leaves of the plant are wet from rain, dew, or fog. Brush sprayed thirty (30) minutes or less prior to rain shall be re-sprayed but not until thirty (30) minutes after run-off has stopped.

The contractor shall immediately inform the Company of any damage complaints that may arise. The contractor shall keep the Company informed of the status of each complaint and of any settlement made with the damaged party.

All brush over five (5) feet in height (except small tree and shrub species to be saved) located within one hundred (100) feet of all improved roads and highways shall be treated by the selective basal method and then cut. The cut brush shall be disposed of in a manner acceptable to the adjoining property owner and so as not to be visible from the road or highway.

Contractor crews are not permitted to discard empty chemical containers, drinking cups, food wrappers or other waste materials anywhere along the ROW.

The contractor shall carefully measure and record the brush areas treated. All measurements shall be horizontal distances. Measured areas shall include treated brush of any density. Brush growing near poles and structures located in fields that are not being treated, shall use the measurement of thirty (30) feet times the width of the ROW. Brush growing in fence rows across the ROW with untreated fields or other areas on both sides shall use the measurement of thirty (30) feet times the length of the fence row on the ROW. Areas without brush or that receive no treatment shall not be included. These measurements, subject to checking and approval by the Company, shall be the basis for making payment to the contractor. The location of the brush areas treated shall be clearly labeled and outlined by line pole numbers and other available identifying landmarks. This report of the contractor's activities shall be submitted to the proper Company personnel at the end of each week's work.

The Contractor shall provide adequate storage off Penelec property for all herbicide materials used on Penelec ROW. Adequate storage will include tamper proof enclosure that must be kept

securely locked to prevent unauthorized access.

All acres of ROW contracted for chemical treatment but not completed as follows: Waterborne-Stemfoliage — August 15; Helicopter — August 15; Selective Basal — November 30; in any calendar year shall be deemed incomplete. Any contractor with incomplete acreage after the above specified dates shall be required to make payment to Penelec in the amount of one hundred (\$100.00) dollars for each incomplete acre including time and materials work.

The contractor must make every effort to prevent chemical solution spillage on and off the ROW. Leaking tanks, pumps, hoses, and spray guns must be repaired immediately. Evidence of spill or of chemical spray solution leaking from contractor's equipment will be cause for cancellation of contract.

Contractor crews are responsible for proper mixing of herbicide solution to meet Penelec specification. Authorized Penelec personnel will obtain samples of the herbicide solution for chemical analysis by a chemical laboratory.

Herbicide solution not meeting Penelec minimum specification (\pm .3 gal. conc.) will be rejected and shall be cause for contractor penalty. The contractor shall make payment to Penelec of one hundred (\$100.00) dollars per acre for the total acreage estimated on the line where the unsatisfactory sample was taken.

The contractor shall meet all of the requirements of the Pennsylvania Pesticide Law.

The second part of the manual specifies each treatment method individually.

Selective Basal Application. All woody plant species in the ROW, except species designated to be left for future ground cover, shall be treated with chemical in oil so as to saturate each stem completely at the ground line and to a height of twelve (12) to eighteen (18) inches on the stem and completely encircling each stem. Where sprout growth originates from a stump, the treatment shall also be applied to completely encircle the stump at the ground line, including any exposed roots.

Extreme care must be taken to treat only the tall growing tree species. Damage to low growing plant species by careless application of chemical

solution will be cause for cancellation of contract.

All chemical solution shall be applied by nozzlemen walking the ROW. The applying equipment may be either power-driven equipment or knapsack spray tanks. Spray nozzles shall be adjusted to produce a coarse spray of large droplets at thirty (30) pounds or less pressure.

Treatment season shall be year around except when specified otherwise in the bidding information.

All evergreen plants, except those included in the list of plants not to be treated on the ROW, shall be treated over their complete height, including all leaves, twigs, and stems, in addition to the basal treatment covered in this specification.

All stems of ash species over five (5) feet in height shall be removed by completely cutting at the three (3) inch height after treatment. The brush from this mechanical cutting shall be disposed of in a manner acceptable to the property owner where the brush is cut. No burning of this brush will be permitted except with the specific approval of the Company.

The following plants are not to be treated on the ROW:

All grasses, ferns, and herbaceous plants.

All annual weeds and annual plants.

Low-growing shrubs including:

1. Mountain laurel
2. Sweetfern
3. Bush honeysuckle pinxterbloom azalea
4. Huckleberries
5. Low blueberries
6. Viburnums
7. Trailing arbutus
8. Checkerberry wintergreen
9. Partridge berry
10. Meadow sweet
11. American yew
12. Hazelnut
13. Witch hazel
14. Dwarf willow
15. Holly
16. Choke berry
17. Choke cherry
18. Elderberry
19. Rhododendron
20. Scrub oak
21. Spice Bush
22. Blackberry
23. Raspberry

Small trees to be preserved on the right of way where conductor height will permit:

1. White flowering dogwood
2. Redbud
3. Hawthorn
4. Blue Beech — American hornbeam
5. Shadbush
6. Iron wood — Hophornbeam
7. Red cedar — Juniper
8. Sumac — staghorn, smooth, dwarf
9. Striped maple
10. Mountain maple
11. White cedar
12. Wild apple
13. American crabapple
14. Alder
15. Hercules club

All brush over five (5) feet in height (except small tree and shrub species to be saved) located within one hundred (100) feet of all improved roads and highways shall be treated by the selective basal method and then cut. The cut brush shall be disposed of in a manner acceptable to the adjoining property owner and so as not to be visible from the road or highway.

In addition to the above numbered specifications, all of the specifications under the heading "General" shall apply to this application.

Similar detailed specifications are described for each of the treatment methods including: Selective Pellet, Waterborne, Stem-Foliage and Helicopter.

Integrated Pest Management. The term *Integrated Pest Management* has been used frequently to describe the practice of introducing an insect predator to control a particular insect pest. I believe it is valid to also use the term to describe the selective management of vegetation on the ROW. We use herbicides to selectively eliminate existing tree species of vegetation from the ROW. We then rely on the aggressive competitive nature of the residual low growing shrubby and herbaceous vegetation to resist the re-invasion of the tree species to the ROW. It is this procedure of protecting and encouraging the low growing vegetation through selective herbicide applications that I believe is a valid application of integrated pest management.

There is another chemical process that enhances the selective management of vegetation that is not too well known and not completely

understood. It is the "biochemical interference exhibited by certain plants that is known as allelopathic inhibition."

Stephen B. Horsley, Research Plant Physiologist, U.S. Forest Service, Northeastern Forest Experiment Station at Warren, Pa. in 1977 reported on the "allelopathic inhibition" of black cherry by fern, grass, goldenrod, and aster. He reported that small black cherry seedlings grow slowly and soon die in low density cherry-maple orchard stands colonized by a dense ground cover of brackenfern, wild oat grass, goldenrod, and flat topped aster. Studies of orchard stand persistence indicated that allelopathic interference occurred between black cherry seedlings and the herbaceous ground cover plants.

The existence of extensive shrubby and herbaceous areas on power line ROW that have resisted invasion of tree seedlings for many years would tend to indicate that allelopathic inhibition could be greatly affecting ROW vegetation over considerable areas. It is at least a potential area for further investigation.

Future of Vegetation Management

It might be well at this point to consider briefly the future of herbicides and vegetation management on power line ROW. For the immediate future I think we can anticipate closer scrutiny and more restrictions by a better educated and more knowledgeable public and by more activist government agencies. We can already see evidence of this by the recent FIFRA regulations and the present RPAR action of the EPA against 2,4,5-T. More of this type of activity is sure to follow in the near future. Despite these negative actions I believe we can continue to expect new developments in chemicals, equipment, and methods although probably at a slower pace than in past years. Better control of budgets, records, and schedules is now and will continue to be achieved by computerization of line clearance programs. Penelec is presently in the process of developing an extensive computer program of all its line clearance activities. New and more competitive methods of bidding and contracting for line clearance work are now being investigated at Penelec in order to demonstrate to the public bet-

ter fiscal control of line clearance programs.

Despite these problems and challenges I anticipate a long and successful future for herbicides in vegetation management.

(Detailed specifications for herbicide solution sampling and testing may be obtained by requesting them from the author. ED.)

References

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MAKING THE BEST USE OF YOUR BANK¹

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The central theme of this presentation is making the best use of your bank. I am assuming that most of you people will be independent businessmen who represent small to medium sized businesses. Your requirements and expectations of a bank, then, vary from that of the private citizen, who is interested strictly in consumer-type banking services. Similarly, your banking needs will also vary from those of the large multi-national corporation. Banking systems have the flexibility to cater to various individuals and groups and provide tailor-made services for all sectors. The banking industry is heavily committed to supporting independent business. Let us consider the various ways in which a small to medium sized business may be financed. Almost every business, no matter what its size, needs some form of financial help from time to time. It may need money to get the business started, perhaps it involves financing to expand to meet new market opportunities or to meet increased demand in good times but, unfortunately, it also may mean seeking funds to keep going when times are tough.

Very often the independent businessman who has many things to worry about, doesn't place his financing situation on a very high priority. The

businessman may wait until financial crises develop before approaching a lender and the lender may have only limited or sketchy financial information on the business. Our first advice is that the more professional the businessman can be in presenting his case and in planning and forecasting his needs, the more confidence and support he can expect from his banker and the financial community. It is interesting to note that there are two instances where the financing of a business often becomes of acute importance. One is when the business needs more money because it is expanding rapidly and the second is when the business is faced with hard times and struggling to survive. Both situations, of course, demonstrate the need for logical financial planning.

As an independent businessman, before approaching a lender, you should be prepared to answer the following questions.

1. Should I be seeking professional assistance in building my financial plan?
2. What type of financing is best suited to my needs?
3. How much do I need?
4. When is the best time for me to borrow?

¹Presented at the annual convention of the International Society of Arboriculture in Toronto, Ontario, Canada in August of 1978.