

CANADIAN SHADE TREES GO METRIC¹

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Abstract

On 26 September 1975 the Canadian Metric Commission approved the formation of Subsector Committee 8.1.7: Urban Forestry-Arbiculture. As Canada moves through conversion to the metric system it will be the function of 8.1.7 to assist the Canadian Shade Tree Industry in its adoption of metric measurements. In this paper an outline of the 8.1.7 Subsector operations plan describes the sequential steps leading to an orderly transition to metric. A summary of 35 activity programs illustrates the work blocks requisite to final implementation of conversion.

general use of their indigenous measurement systems, imperial measure, or combinations thereof. However, virtually all of the international scientific community, regardless of nationality has used the metric system for the last 80 years. Biologists, chemists and physicists have led the way.

On the North American continent, Mexico has been a metric nation since the Paris Treaty. On the other hand, Canada and the United States have, until very recently, primarily used the yard/pound system for measurements of length, area, volume, weight, electro-optics, etc. and associated ratios.

A Metric World

As Canada and the United States prepare for metric conversion, the North American shade tree industry has the opportunity to standardize existing systems and adopt a uniform, simple system of measurement. Even though conversion from the currently dominant yard/pound system to the metric S1 system is voluntary and could involve a lengthy time frame, it behooves all those agencies, corporations and organizations with shade tree orientation to begin work now for an orderly and rapid transition to metric measurements.

This paper reviews the Canadian approach to metric conversion for the shade tree industry. Also proposed is a coordinative and cooperative scheme to link the Canadian effort to the American endeavor, for both have a common goal. Further, the International Society of Arboriculture can serve the two nations to create a genuine international effort.

Although most of the world's nations agreed to and adopted the principles and standards established at the 1875 Paris Treaty of the Metre (Lohrenz 1974), several countries (including Canada and the United States) opted to continue

Metric conversion seems to be inevitable. Once all of North America officially adopts the metric system, fewer than six of the total world's nations will be using a different scheme of calibration. Aside from conformity, one of the stronger justifications for metric conversion is the enhancement of trade and commerce. Considering the substantial national income derived from exchange sales of goods and commodities between the United States and Canada and externally between North America and the other continents, the North Americans have little option but to join a metric world. Acceptance of change and implementation of metric measurements in the market place is long overdue. The shade tree industry, as an integral component of free enterprise, will derive, both at home and abroad, a variety of benefits from conversion.

Metric Conversion in Canada

At present, and looking toward more favorable investment returns, the majority of Canadian busi-

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ness and industrial leaders favor the adoption of the metric system. When Canada embraces the metric system, economists predict an export dollar benefit of 5 to 10 per cent over current returns. As a supplemental opportunity, conversion offers the option to re-examine and streamline the entire method of operations for Canada's commercial and industrial sectors. Further, stocks of materials and component parts can be substantially reduced if we use a single, standardized system.

When it introduced the White Paper on Metric Conversion in January 1970, the Federal Government began the process of adopting the metric system in Canada (Lohrenz 1974). Policy statements of the White Paper included:

1. The eventual adoption in Canadian usage of a single coherent measurement system based on metric units should be acknowledged as inevitable and in the national interest.
2. This single system should come to be used for all measurement purposes.
3. Planning and preparation in the public and private sectors should be encouraged in such a manner as to achieve the maximum benefits at minimum cost to the public, to industry, and to government at all levels.

By Order-in-Council and in accord with a recommendation in the 1970 White Paper, the Canadian Metric Commission was established in June 1971. The Commission then convened 11 Steering Committees, each responsible for coordinating a constituent group of related economic interests. For example, Steering Committee 1 incorporates transportation, broadcasting, power and meteorology; Committee 6 includes agriculture (ornamental horticulture), fishing, food and tobacco; and 8 deals with the forest products industry. Further, the Commission created 60 Sector Committees that report to their respective Steering Committees. Each of the Sector Committees is committed to preparing a conversion plan and implementation system for a particular industry, group of industries or special interest body.

Shade Tree Industry Needs

On 10 April 1975, the author attended a Toronto "Teaching Metric" seminar given by Robert B. Loughlin of the Ontario Forest Industries Association. During the discussion period I

asked what provisions had been made or what programs were underway to meet the needs of the Canadian Shade Tree Industry? After a dialogue on the significance of the Shade Tree Industry (STI) (a consensus opinion reinforced its importance) it became evident that metric conversion considerations for the STI had been overlooked. The omission would have to be rectified. In response to STI needs, Subsector Committee 8.1.7: Urban Forestry-Arboriculture was formed on 26 September 1975 at the Montreal meeting of Sector Committee 8.1: Forestry.

To assure arboricultural representation and coordination with the nursery trades industry the following 8.1.7 membership was initiated (Table 1):

Table 1. Membership of Canadian Metric Commission Subsector Committee 8.1.7: Urban Forestry - Arboriculture.

Member	Affiliation	Representing
J.W. Andresen* †	Professor of Urban Forestry, University of Toronto	Urban Foresters (Committee Chairman)
J. Hayward†	Superintendent of Parks, Borough of North York	Municipal Arborists
C. Holetich	Arboriculturist, Royal Botanical Gardens	Arboreta, Botanical Garden, General Arborists
J. Leiss	Production Superintendent, Sheridan Nurseries Ltd.	Nursery Trades Industry
A.G. Sellers* †	Vice President, Cedarvale Tree Service	Commercial and Utility Arborists

*Members: International Society of Arboriculture

†Members: Ontario Shade Tree Council

Many cooperating individuals, agencies, and organizations are involved in the 8.1.7 effort. Space limitations preclude a complete listing but several representative groups are: Bell Canada, Canadian Forestry Service, International Society of Arboriculture, Landscape Canada, Landscape Ontario, Ontario Hydro and the Ontario Shade Tree Council.

Guidance for 8.1.7 activities and meetings generates from the Planning Section of the Canadian Metric Commission and from R.E. Keen,

Sector Committee Chairman of 8.1: Forestry. Although Keen (1975) is assigned to the Forest Management Institute of the Canadian Forestry Service his full time job centers about metric conversion.

Operations

To complete STI metric conversion by the scheduled date of June 1979 (estimated by the Metric Commission) two major program elements are required: 1) preparation of a subsector plan for metric conversion, and 2) completion of essential activities to meet desired outcomes of the conversion program.

Rationale. The Subsector plan for 8.1.7 includes a number of components common to all Sector and Subsector plans and is subject to final approval by Metric Commission. The purpose of the plan is to carry out logically inter-related conversion activities of Subsector 8.1.7 within a period frame of a given critical path of time. This path is governed by the longest time of activity duration from the initial to the terminal event. This is also the shortest time in which the entire 8.1.7. conversion project can be executed.

The Plan. As being prepared, the Subsector plan includes six major headings:

1. Plan Description: A precis or summary highlighting the scope of the plan, its major elements, any special target dates or critical events, the major problems or benefits anticipated.
2. Subsector Activity Breakdown: An explanation of why any major activity areas were split into more than one stream, why the conventional terminology was modified to better reflect the situation in the sector, why certain activity groups are absent or transferred into another one, the approach which led to the level of detail depicted, the reasons for the adoption of a single or multiple subsector structure for the planning.
3. Activity List and Subsector Activity Descriptions (sheets): These two sets are usually presented separately, but can be discussed together since they partly duplicate each other's data. Comments should relate to the level of detail presented in the objectives and outline of work, the approach taken to identifying intersectorial dependencies, any critical description which merits specific attention, the existence of identifiable end results which can be used for monitoring, the philosophy as to level of detail in preparing the outline of work for activities which are to be performed by individual organizations in the sector.
4. Bar Chart: Highlighting of some key events on the bar chart, where applicable, comment as to non-

continuous nature of some of the solid bars, where the key start dates for industry action are located in what areas.

5. Network Diagram: Highlights of the network, key constraints, the reality or otherwise of the critical path(s), interface points with other sectors, key intra-sectorial dependencies and activities where previously identified assumptions could affect conversion, why a given logic was or was not represented such as when what might appear to represent a constraint has not logically (in terms of network flows) been treated as such, why activities not in the sector have been included, the critical constraints to action by industry, and what these are.
6. Appendices: Coordinative data with other subsectors, sectors and in this instance ancillary work with the United States shade tree industry.

The Program. The foregoing plan and its application are based on a careful review of existing conditions that take the form of seven assumptions.

1. If properly informed, individuals, firms, endowed organizations and government agencies will be interested in rapid conversion to the metric system.
2. Complete conversion, though, may be delayed because of a poor communication network within the shade tree industry. Less than 10% of Canada's arborists have direct contact with a parent trade or professional organization.
3. Communications difficulties can and must be overcome. Conversion programming will be acceptable only if 90% or more of those engaged in shade tree activities are aware of and accept the program.
4. We anticipate little difficulty in coordinating with other Metric Commission Sector Committees or their American counterparts.
5. A modicum of financial assistance for 8.1.7 will be forthcoming from organizations within the shade tree industry. However an active fund raising campaign is required.
6. In the assessment of time required for any activity, it is assumed that all activities up to the beginning of that activity are completed and all required input has been received. The time estimate covers only the time required to complete what

is defined on the activity description sheet (see following sections).

7. Our work in 8.1.7 will be completed well in advance of similar endeavors in the United States, so we estimate that the American shade tree industry will look to us for guidance.

Accomplishment of the several phases of STI metric conversion within the next several years is dependent upon an orderly progression of events leading to final conversion. As a preamble to the actual activities a brief review of five elements of progression is in order:

Goal:

Using the Subsector plan, it is the long range intent of 8.1.7 to assist Canadian shade tree agencies and organizations with their metric conversion programs.

Objectives:

In meeting our long range goal our immediate objectives are to:

1. Provide conversion guidelines and strategies.
2. Develop a plan of activities and operations accompanied by a conversion network or time table.
3. Coordinate efforts or related domestic and foreign organizations.

Opportunities:

1. Minimize confusion and trauma of conversion process.
2. Accomplish conversion as rapidly and smoothly as possible.
3. Incorporate standardization whenever appropriate.
4. Establish a model for other non-metric nations.

Policy:

1. Operate within established procedures of the Metric Commission Canada.
2. Utilize interagency resources.
3. Maximize cooperation and information exchange.
4. Optimize time.

Strategy:

1. Inventory problems and resources.
2. Describe and predict needs.
3. Prepare a subsector plan.

4. Gain fiscal and moral support for 8.1.7.
5. Distribute concise, periodic progress reports to participants.
6. Meet target dates of activities within critical path of time and implement relevant components.
7. Complete 8.1.7 mission by June 1979 and dissolve.

Activity Programs

Of the 14 major activity areas (MAA) that guide individual action programs of all Sector Committees, our subsector will utilize eight that have direct applicability, viz. 01, 03, 07, 08, 09, 12, 13 and 14. The complete listing of MAA is:

01. Measurement Units
02. Standards
03. Legislation & Regulations
04. Employer/Employee Relations
05. Design & Engineering
06. Production Processes
07. Equipment
08. Materials & Supplies
09. Business Systems
10. Research & Development
11. Marketing
12. Training
13. Public Awareness
14. Management

Those MAA not developed by 8.1.7 are identified with large commercial or industrial organizations that manufacture or market consumer products.

To document assignments of 8.1.7, the following outline enumerates specific subsector activity description (SAD) titles and activity objectives (AO).

01. Measurement Units.

0101. Identify customary units to be changed.
 - AO. Prepare a list of all measurement units presently used in the shade tree industry (STI).
0102. Specify SI (Standard Units) equivalents for customary units.
 - AO. Develop a list of metric equivalents to those yard/pound and other measurements in use by the STI.
0103. Consult related sectors.
 - AO. Ensure that preferred units of STI organization are compatible with those of related section elements (e.g. fertilizer manufacturers, chemical industry, spray equipment manufacturers).
0104. Rationalize measurement units.
 - AO. Prepare a set of measurements in units that can be evidenced and expressed in simple multiples (e.g. dbh, 1 to 10 cm).

0105. Prepare interim metric practices guide (MPG).
AO. Develop and publish an advance practices guide to advise users of preferred units and usage.
0106. Identify final specifications and connections.
AO. Review and catalog specific metric units. This will incorporate feedback from potential users who have reviewed preliminary MPG.
0107. Prepare metric specification brochure.
AO. Assemble materials and write the manuscript for the final version of the supplementary metric practice guide.
0108. Publish metric specifications brochure.
AO. Print and distribute the final version of recommended STI metric specifications. (Flyers, stickers, cards.)

03. Legislation and Regulations.

0301. Identify measurement unitive legislation.
AO. Inventory and determine metric conversion relevance of Federal and Provincial (10 provinces) legislation.
0302. Consult governmental organization about vis a vis "changes" difficulties.
AO. Determine feasibility and applicability of legislative revisions to accommodate metric conversion. Study how current and future legislation would constrain or encourage metric conversion.
0303. Solicit revised legislation.
AO. Through MP or Ministries, advocate for legislative changes that would enhance and encourage metric conversion for the STI.

07. Equipment.

0701. Identify equipment to be changed.
AO. Inventory STI constituencies to determine if any equipment changes are necessary to convert to the metric system.
0702. Specify equipment changes.
AO. Develop a tentative catalog of convertible or new STI equipment.
0703. Coordinate with equipment manufacturers.
AO. Advise equipment manufacturers of desired equipment needs of STI as it converts to the metric system.
0704. Recommend metrically calibrated equipment.
AO. Provide a series of recommendations and specifications to enable the STI to convert pre-metric equipment and advise where new metric equipment can be purchased.

08. Materials and Supplies.

0801. Identify materials and supplies to be changed.
AO. Inventory STI constituencies to determine if any materials and supplies changes are necessary to convert to the metric system.
0802. Specify materials and supplies changes.
AO. Develop a tentative catalog of convertible or new STI materials and supplies.
0803. Consult supplying sectors.
AO. Advise materials and supplies manufacturers of desired equipment and supplies needs of STI as it converts to MS.

0804. Advise of materials and supplies changes.
AO. Provide a series of recommendations and specifications to enable the STI to convert pre-metric equipment and advise where new metric materials and supplies can be purchased.

09. Business Systems.

0901. Identify business systems to be changed.
AO. Survey the STI to determine what kinds of record keeping, billing and inventory systems will be affected by metric conversion.
0902. Recommend business systems adjustment.
AO. Advise the STI of what changes in business systems records are required or recommended to assure smooth metric conversion.

12. Training.

1201. Identify training requirements.
AO. Determine content and scope of training required to implement metric conversion.
1202. Develop and implement training program.
AO. Compose a training program package for metric conversion and distribute it to the Canadian STI.

13. Public Awareness.

1301. Identify arboricultural and urban forestry public.
AO. Survey public and private agencies, labour management and general public to determine information requirements to aid in metric conversion.
1302. Determine needs of specific public.
AO. Estimate what specific information is required to create an initial awareness stage for the public concerned.
1303. Formulate resource requirements.
AO. Be prepared to meet specific needs of the public concerned with shade tree metric conversion.
1304. Consult organizations to relate needs and resources.
AO. Coordinate all metric conversion requirements to assure compatibility with using public.
1305. Determine program priorities amongst public.
AO. Tailor metric conversion programs to those publics of maximum need and then activate programs.

14. Management.

1401. Subsector committee formation.
AO. Select membership so it provides representation of all major components of STI.
1402. Committee assignments.
AO. Distribute equitable activity work load to all members including chairman.
1403. Consult with related sectors.
AO. Coordinate current and intended programming with metric conversion liaison staff, and chairmen of 8.1 and 6.1.

1404. Formulate conversion activities schedule.
AO. Develop a preliminary work schedule that leads to preparation of subsector plan.
1405. Prepare subsector plan.
AO. After consultation with STI representatives and internal review, assemble working draft of subsector plan.
1406. Submit subsector plan.
AO. Following thorough review of subsector plan forward through Metric Commission channels for approval.
1407. Monitor activities and report progress.
AO. Adhere to time schedule to complete various activities that lead to implementation of metric conversion for STI.

Expectations and Product

As presently anticipated, metric conversion for the Canadian Shade Tree Industry should be accomplished by mid-1979. Figure 1 illustrates the major activities of the 12 elements of Section 8.1: Forestry and in particular Urban Forestry and Arboriculture. A Shade Tree Industry training program should be prepared by June 19, 1977, followed a year later by the publication of a Shade Tree Growing Stock Specification brochure. June 1979 should be the ultimate target

date for by that time the Canadian Shade Tree Industry will be entirely metric.

By virtue of the exercises being taken in Canada, our Urban Forestry and Arboriculture subsector committee could provide advice and guidance to colleagues in the United States. Hopefully this can be accomplished through a joint international program sponsored by the International Society of Arboriculture.

In closing, the many advantages of metric conversion are obvious, but it will still take vigorous salesmanship to sell the product to the many individuals and corporations that compose the North American Shade Tree Industry.

Literature Cited

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- Lohrenz, J., Ed. 1974. *Introduction to the metric system*. Canadian Metric Commission, Ottawa 60p.

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ABSTRACT

Hardin, G.B. 1976. **A bicentennial elm**. *Agricultural Research* 24(11): 8-11.

New hope is born for preserving the heritage of graceful shade trees as the Nation celebrates its Bicentennial. Diminished is the threat of Dutch elm disease (DED) which has killed millions of American elms throughout most of the United States since the 1930's. The hope comes from the ARS Shade Tree and Ornamental Plants Laboratory, Delaware, Ohio. One development that augurs well in the struggle against the disease is the production of seedlings from a cross between an American elm and a DED-resistant Siberian elm. Siberian elm seeds were treated with the chemical, colchicine, to double the number of chromosomes in the tree's germplasm to match American elms'. One of the Siberian elms has now grown to fruiting size and becomes a parent in the new cross. ARS plant breeders have produced Chinese elm seedlings with four sets of chromosomes as well as Siberian elms. From backcrosses of neo-American crosses with American elms, researchers hope to perpetuate the unique form and other characteristics of long-lived elms that our founding fathers, poets, and generations of Americans have venerated.

Flemer, William III. 1976. **Plant hardiness**. *ALI* 3(2): 14-15.

The subject of plant hardiness would appear to be a concept which is simple and more than easy to understand. Closer consideration and deeper understanding, however, show it to be a very complex matter to which there are not pat answers. Not surprisingly, although most expert plant physiologists and geographers agree in the general outlines, they have substantial and often violent disagreements when exact details of plant hardiness are considered.