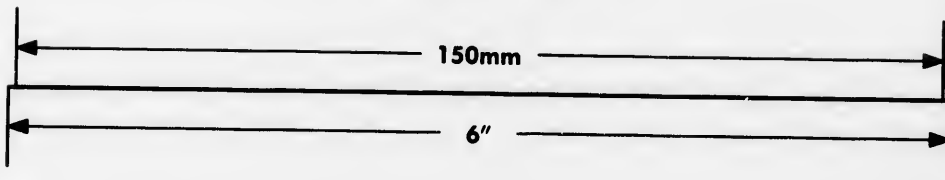
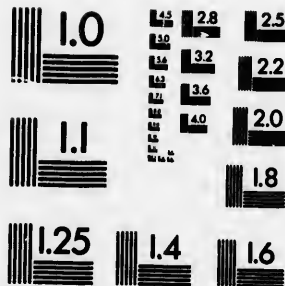
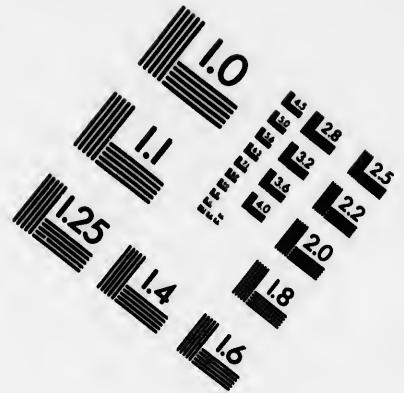
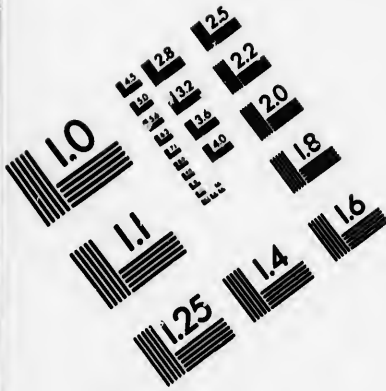


# IMAGE EVALUATION TEST TARGET (MT-3)



**APPLIED IMAGE, Inc**  
 1653 East Main Street  
 Rochester, NY 14609 USA  
 Phone: 716/482-0300  
 Fax: 716/288-5989

© 1993, Applied Image, Inc., All Rights Reserved

**CIHM  
Microfiche  
Series  
(Monographs)**

**ICMH  
Collection de  
microfiches  
(monographies)**



**Canadian Institute for Historical Microreproductions / Institut canadien de microreproductions historiques**

**© 1993**

Technical and Bibliographic Notes / Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for filming. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of filming, are checked below.

L'Institut a microfilmé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de filmage sont indiqués ci-dessous.

Coloured covers/  
Couverture de couleur

Coloured pages/  
Pages de couleur

Covers damaged/  
Couverture endommagée

Pages damaged/  
Pages endommagées

Covers restored and/or laminated/  
Couverture restaurée et/ou pelliculée

Pages restored and/or laminated/  
Pages restaurées et/ou pelliculées

Cover title missing/  
Le titre de couverture manque

Pages discoloured, stained or foxed/  
Pages décolorées, tachetées ou piquées

Coloured maps/  
Cartes géographiques en couleur

Pages detached/  
Pages détachées

Coloured ink (i.e. other than blue or black)/  
Encre de couleur (i.e. autre que bleue ou noire)

Showthrough/  
Transparence

Coloured plates and/or illustrations/  
Planches et/ou illustrations en couleur

Quality of print varies/  
Qualité inégale de l'impression

Bound with other material/  
Relié avec d'autres documents

Continuous pagination/  
Pagination continue

Tight binding may cause shadows or distortion along interior margin/  
La reliure serrée peut causer de l'ombre ou de la distorsion le long de la marge intérieure

Includes index(es)/  
Comprend un (des) index

Blank leaves added during restoration may appear within the text. Whenever possible, these have been omitted from filming/  
Il se peut que certaines pages blanches ajoutées lors d'une restauration apparaissent dans le texte, mais, lorsque cela était possible, ces pages n'ont pas été filmées.

Title on header taken from: /  
Le titre de l'en-tête provient:

Title page of issue/  
Page de titre de la livraison

Caption of issue/  
Titre de départ de la livraison

Masthead/  
Générique (périodiques) de la livraison

Additional comments: /  
Commentaires supplémentaires:

This item is filmed at the reduction ratio checked below /  
Ce document est filmé au taux de réduction indiqué ci-dessous.

10X	12X	14X	16X	18X	20X	22X	24X	26X	28X	30X	32X
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The copy filmed here has been reproduced thanks to the generosity of:

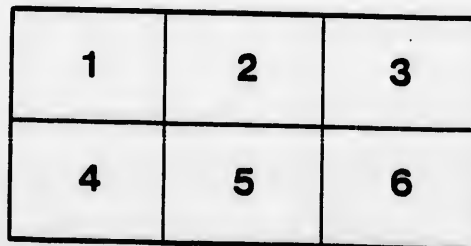
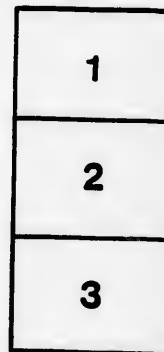
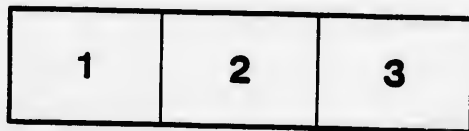
Library  
Agriculture Canada

The images appearing here are the best quality possible considering the condition and legibility of the original copy and in keeping with the filming contract specifications.

Original copies in printed paper covers are filmed beginning with the front cover and ending on the last page with a printed or illustrated impression, or the back cover when appropriate. All other original copies are filmed beginning on the first page with a printed or illustrated impression, and ending on the last page with a printed or illustrated impression.

The last recorded frame on each microfiche shall contain the symbol  $\rightarrow$  (meaning "CONTINUED"), or the symbol  $\nabla$  (meaning "END"), whichever applies.

Maps, plates, charts, etc., may be filmed at different reduction ratios. Those too large to be entirely included in one exposure are filmed beginning in the upper left corner, left to right and top to bottom, as many frames as required. The following diagrams illustrate the method:



L'exemplaire filmé fut reproduit grâce à la générosité de:

Bibliothèque  
Agriculture Canada

Les images suivantes ont été reproduites avec le plus grand soin, compte tenu de la condition et de la netteté de l'exemplaire filmé, et en conformité avec les conditions du contrat de filmage.

Les exemplaires originaux dont la couverture en papier est imprimée sont filmés en commençant par le premier plat et en terminant soit par la dernière page qui comporte une empreinte d'impression ou d'illustration, soit par le second plat, selon le cas. Tous les autres exemplaires originaux sont filmés en commençant par la première page qui comporte une empreinte d'impression ou d'illustration et en terminant par la dernière page qui comporte une telle empreinte.

Un des symboles suivants apparaîtra sur la dernière image de chaque microfiche, selon le cas: le symbole  $\rightarrow$  signifie "A SUIVRE", le symbole  $\nabla$  signifie "FIN".

Les cartes, planches, tableaux, etc., peuvent être filmés à des taux de réduction différents. Lorsque le document est trop grand pour être reproduit en un seul cliché, il est filmé à partir de l'angle supérieur gauche, de gauche à droite, et de haut en bas, en prenant le nombre d'images nécessaire. Les diagrammes suivants illustrent la méthode.

ON

By J.

regard  
butio  
thous  
of the  
weeds  
of the

W

from a  
which  
ing fr  
which  
fact th  
enemie

Ins

of loss,  
be susta  
involve  
add imp  
and foo

In

warfare  
made to  
ties: C  
Couch C  
Oat. I  
which, t

In ex

embracin  
tain form  
consider  
useful fo

# ONTARIO AGRICULTURAL COLLEGE

## BULLETIN XCI.

PUBLISHED BY THE DEPARTMENT OF AGRICULTURE,  
Toronto, November 15, 1893.

### WEEDS OF ONTARIO.

By J. H. PANTON, M.A., F.G.S., PROFESSOR OF NATURAL HISTORY AND GEOLOGY.

For some time past the writer has been collecting information regarding the weeds of Ontario with special reference to their distribution in the province. Having received replies from over one thousand persons to whom circulars were sent through the medium of the Bureau of Industries asking for the names of the ten worst weeds in the district he is able to give in this bulletin a summary of the information received.

Weeds of late years have received considerable attention not only from students of botany but also from practical agriculturists, a fact which indicates that farmers are advancing and that they are departing from careless methods of cultivation, and adopting systems in which cleanliness of the field forms an important factor. In fact they are now convinced that weeds must be classed with such enemies as parasitic plants and insects.

Insects, mildews, blights, etc., were early condemned as sources of loss, but farmers have been slow to consider that much loss could be sustained by growing weeds. However, they see now that weeds involve extra labor, smother useful plants, take food from the soil, add impurities to the grain, rob the soil of moisture, afford shelter and food to injurious insects, and give fields an unsightly appearance.

In Bulletin LXXXV the principles which underlie a successful warfare against weeds were thoroughly discussed and reference was made to the best methods for destroying the following eleven varieties: Canada Thistle, Sow Thistle, Wild Flax, Pigeonweed, Ragweed, Couch Grass, Ox-eye Daisy, Burdock, Blueweed, Mustard and Wild Oat. In this bulletin we give a description of four additional weeds which, though not now so common, may soon become pests.

In examining the various lists we find reference made to 92 species, embracing 76 genera and 28 orders. Only a few observers refer to certain forms, but in order to give some idea of the number of plants considered as weeds, a tabulated statement is given which will be useful for showing in a concise form the weeds of Ontario.

So varied are the names given to some weeds that the writer in several cases had to secure the seed and grow the plant or get the plant itself before the local name reported could be understood. Taking the names given in the 1,015 replies we find the 25 following weeds are ranked as the worst, the figures given indicating the number of persons who gave the above in their list of the 10 worst weeds :

Canada Thistle.....	1,015	Footail .....	152
Mustard .....	666	Pigweed .....	126
Wild Oat .....	472	Black Bindweed.....	112
Ox-eye Daisy.....	463	Milkweed .....	98
Burdock .....	439	Sorrel .....	92
Couch Grass .....	401	Purslane .....	82
Ragweed.....	303	Blueweed .....	79
Wild Peas.....	288	Mullein .....	69
Cockle .....	241	Mayweed .....	60
Dock .....	232	Lamb's Quarters.....	55
Redroot.....	217	Sow Thistle.....	50
Bur .....	212	Bindweed .....	46
Wild Flax.....	173		

#### Penny<sup>1</sup> Cress.

Penny Cress (*Thlaspi Arvense*) is not yet a common weed in our province, but we may reasonably expect to find it get a firm foothold if its approach is not carefully guarded. It is very common in the Red River valley of Manitoba where it is called the French weed, and as much wheat is being imported from that country this plant will certainly come in the seed. Already it has been found in several parts of Ontario. It belongs to the mustard family and like the other members of it, produces many seeds which are endowed with much vitality. The pods of this plant are very characteristic, being somewhat circular and flat with a distinct notch at the top. The leaves are oblong, arrow shaped at the base, toothed and smooth. It bears very small white flowers. It is an annual, about one foot high and emits a strong somewhat offensive odor when bruised. The method followed in destroying mustard may be adopted to get rid of this pest and exercise vigilance to keep it from getting a foothold. The accompanying cut will prove useful in identifying this new-comer.



PENNY CRESS (*Thlaspi Arvense*).

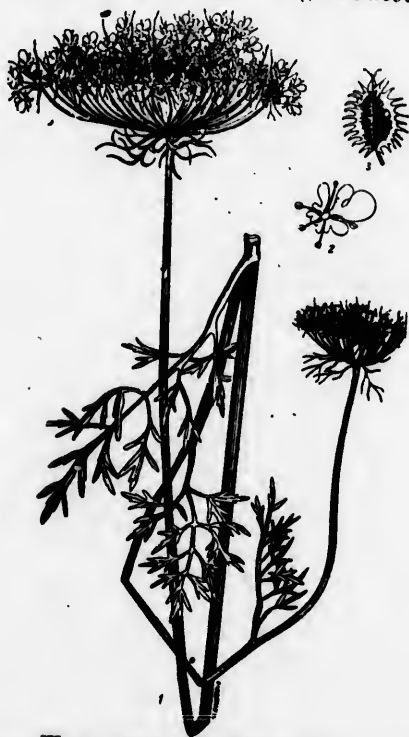
feet hi  
sort of

*Tumbling Weed.*

Another weed that we may expect from the west is known as Tumbling Weed (*Sisymbrium Sinapistrum*), also a member of the mustard family. It is reported by Prof. Fletcher as common around Indian Head, N. W. T. This annual is about two feet high, bears many pods, each well filled with small round brown-colored seeds. It matures its seed about the same time as mustard. Great care should be taken to prevent the plant getting a foothold in Ontario. It is not a native of the Northwest Territory but seems to have been introduced there. It is a native of Europe.

*Wild Carrot.*

The Wild Carrot (*Daucus Carota*) is a degraded form of the cultivated carrot and, like it, is biennial. It grows about two or three



WILD CARROT (*Daucus Carota*).

feet high and bears many flower clusters which, as they mature, form a sort of bird-nest structure with each umbel. Being a biennial it



cannot survive long where thorough cultivation is carried on, and hence is most frequently found along roadsides, railway tracks, etc. Hand pulling and destroying as fast as it reaches flower will be effective. Spudding a few inches below the surface will kill it, but cutting it at the surface has a tendency to make it increase the number of its branches.

*Clot-bur.*

Clot-bur (*Xanthium Canadense*) is a large coarse annual reported from the western part of the province. It bears some resemblance to the burdock in having large coarse leaves and the seed in a bur. The bur is oval, about an inch long and covered



*Clot-bur (Xanthium Canadense).*

with stiff hooked prickles. Like Ragweed it has two kinds of flowers—staminate at the summit in spike clusters and pistillate below. The plant is about three feet high. *Xanthium Spinosum*, a very thorny form, is found in the vicinity of Dundas, but it is more confined to the Southern States where it is a very obnoxious weed.

wh  
we  
see  
the  
wh  
tha  
we

as it  
which  
site.  
remov  
plant  
clean  
smalle  
injurio

*Dodder.*

The Dodder (*Cuscuta Trifolii*) is a parasitic plant, an annual which is found twining around the stem of clover. Some specimens were received for identification from the vicinity of Drayton. The seeds of the dodder are sometimes found among clover seed. When these are sown they germinate and reach the clover plants around which they twine and send out from all parts of their stem rootlets that penetrate the clover stems and absorb sap from them and soon weaken the plants upon which they grow. The dodder stem as soon

DODDER (*Cuscuta Trifolii*).

as it gets a firm hold of the clover breaks away from the seed from which it started and lives entirely upon the clover as a regular parasite. When found attacking clover the plants affected should be removed. It is easily recognized as a yellow, leafless, string-like plant twining around the clover. Care should be exercised to sow clean clover seed. Dodder seeds though similar to clover seed are smaller and may be screened. In Europe this parasite is often injurious. The specimens which have come under the writer's

observation were attached to stems of lucerne in one case and clover in another; the latter were sent from the vicinity of Drayton and it would appear that this weed is being introduced into some parts of the province. Every precaution should be taken by farmers to prevent its distribution.

In the following tabulated list of weeds we find the Mustard family supplies 7; Pink, 6; Bean, 5; Sunflower or Composite, 22; Figwort, 4; Bur, 4; Mint, 3; Buckwheat, 6, and the Grass, 6. The other orders or families are represented by only one or two forms.

A TABULATED LIST OF THE MOST COMMON WEEDS IN ONTARIO.

Order.	Scientific name.	Common name.
Ranunculaceae	<i>Ranunculus acris</i>	Buttercup
"	<i>Ranunculus scleratus</i>	Cursed Buttercup
Cruciferae	<i>Camelina sativa</i>	False Flax
"	<i>Capsella Bursa-pastoris</i>	Shepherd's purse
"	<i>Lepidium Virginicum</i>	Pepperwort
"	<i>Thlaspi arvense</i>	Pennycross
"	<i>Brassica Sinapistrum</i>	Wild mustard
"	<i>Sisymbrium officinale</i>	Hedge mustard
Papaveraceae	<i>Erysimum cheiranthoides</i>	Worm-seed mustard
Hypericaceae	<i>Chelidonium majus</i>	Celandine
Caryophyllaceae	<i>Hypericum perforatum</i>	St. John's wort
"	<i>Lychnis Githago</i>	Corn Cockle
"	<i>Lychnis vespertina</i>	White Cockle
"	<i>Silene inflata</i>	Bladder Campion
"	<i>Cerastium arvense</i>	Field Chickweed
"	<i>Saponaria officinalis</i>	Bouncing Bet
Portulacaceae	<i>Stellaria media</i>	Chickweed
Malvaceae	<i>Portulaca oleracea</i>	Purslane
Anacardiaceae	<i>Malva rotundifolia</i>	Mallow
"	<i>Rhus venenata</i>	Poison Sumach
"	<i>Rhus toxicodendron</i>	Poison Ivy
Leguminosae	<i>Rhus radicans</i>	Climbing Ivy
"	<i>Trifolium arvense</i>	Rabbit-foot clover
"	<i>Vicia Cracca</i>	Wild Tare
"	<i>Medicago lupulina</i>	Black Medick
"	<i>Melilotus alba</i>	Sweet clover
Umbelliferae	<i>Melilotus officinalis</i>	Yellow Melilot
"	<i>Daucus carota</i>	Wild Carrot
"	<i>Conium maculatum</i>	Poison Hemlock
Onagraceae	<i>Pastinaca sativa</i>	Wild Parsnip
"	<i>Oenothera biennis</i>	Evening Primrose
Crassulaceae	<i>Epilobium angustifolium</i>	Willow-herb
Dipsacae	<i>Sedum acre</i>	Mossy Stone-crop
Compositae	<i>Dipsacus sylvestris</i>	Teasel
"	<i>Senecio vulgaris</i>	Groundsel
"	<i>Ambrosia artemisiifolia</i>	Ragweed
"	<i>Leucanthemum vulgare</i>	Ox-eye Daisy
"	<i>Achillea millefolium</i>	Yarrow

NOTE.—A is for annual, B for biennial and P for perennial.

WEEDS IN ONTARIO—Continued.

Order.	Scientific name.	Common name.
Compositæ	<i>Tanacetum vulgare</i>	Tansy
	<i>Solidago Canadensis</i>	Golden Rod
	<i>Rudbeckia hirta</i>	Cone-Flower
	<i>Centaurea Cyanus</i>	Bluebottle
	<i>Sonchus oleraceus</i>	Sow Thistle
	<i>Sonchus arvensis</i>	Corn Thistle
	<i>Erechthitis hieracifolia</i>	Fireweed
	<i>Arctium Lappa</i>	Burdock
	<i>Cichorium Intybus</i>	Chicory
	<i>Taraxacum officinale</i>	Dandelion
	<i>Erigeron Canadense</i>	Fleabane
	<i>Anthemis Cotula</i>	Mayweed
	<i>Anthemis arvensis</i>	Field Chamomile
	<i>Cnicus arvensis</i>	Canada Thistle
	<i>Cnicus lanceolatus</i>	Bull Thistle
	<i>Bidens frondosa</i>	Bur Marigold
	<i>Inula Helenium</i>	Elecampane
	Scrophulariaceæ	<i>Xanthium Canadense</i>
<i>Verbascum Thapsus</i>		Mullein
<i>Veronica arvensis</i>		Speedwell
Verbenaceæ	<i>Veronica peregrina</i>	Neckweed
	<i>Linaria vulgaris</i>	Toad Flax
Labiatæ	<i>Verbena hastata</i>	Vervain
	<i>Leonurus Cardiaca</i>	Motherwort
Borraginacæ	<i>Nepeta Cataria</i>	Catnip
	<i>Brunella vulgaris</i>	Self-Heal
	<i>Echinopermum Lappula</i>	Stickseed
" "	<i>Cynoglossum officinale</i>	Hound's Tongue
	<i>Echium vulgare</i>	Blueweed
	<i>Lithospermum arvense</i>	Pigeonweed
Solanaceæ	<i>Datura Stramonium</i>	Thorn-Apple
	<i>Physalis viscosa</i>	Ground Cherry
Convolvulacæ	<i>Convolvulus arvensis</i>	Bindweed
	<i>Cuscuta trifolii</i>	Dodder
Asclepiadacæ	<i>Asclepias Cornuti</i>	Milkweed
Plantaginacæ	<i>Plantago major</i>	Plantain
	<i>Plantago lanceolata</i>	Rib-grass
Chenopodiaceæ	<i>Chenopodium album</i>	Lamb's Quarters
	<i>Chenopodium capitatum</i>	Strawberry Blite
Amarantaceæ	<i>Amarantus retroflexus</i>	Pigweed
Polygonaceæ	<i>Polygonum aviculare</i>	Goose Grass
	<i>Polygonum Convolvulus</i>	Black Bindweed
	<i>Polygonum Persicaria</i>	Lady's Thumb
	<i>Rumex Acetosella</i>	Sorrel
" "	<i>Rumex crispus</i>	Common Dock
	<i>Rumex obtusifolius</i>	Bitter Dock
	<i>Urtica dioica</i>	Nettle
Liliacæ	<i>Allium tricoceum</i>	Wild Leek
Gramineæ	<i>Bromus secalinus</i>	Chess
	<i>Setaria glauca</i>	Foxtail
	<i>Panicum Crus-galli</i>	Barnyard Grass
	<i>Panicum capillare</i>	Witch Grass
	<i>Avena fatua</i>	Wild Oat
	<i>Agropyrum repens</i>	Couch Grass
	<i>Agropyrum repens</i>	Couch Grass

28 Orders.

76 genera.

92 species.

