A WEED PROFILE for

Urticacea; Nettle Family
Urtica dioica L.-Stinging Nettle

R GARDNER 1977

INTRODUCTION

The following is a synoptic profile of the Dicotyledon, Urtica dioica L.; common stinging nettle. Attached for interest is an unpressed leaf or leaves and an example of the underground rhizome. A plate from the Geigy Weed Tables is also attached.

NAME DERIVATIONS

The Latin name Urtica is derived from the classical Latin "urere" meaning unpleasant stinging or burning, which refers of course to the stinging hairs on the whole or part of the plant. Dioica is derived from the dioecious reproduction of the plant from "di", two and "oikos," houses, hence the name dioica. Although stinging nettle is the common English name, Devil's leaf and Devil's plaything are common in England. Hidgy pidgy is used in Scotland and tanging nettle in Yorkshire. In North America it has been referred to as tall nettle and big sting nettle.

TAXONOMY

The order Urticales contains plants with a relatively simple flower structure. The order however includes Elm; Ulmus spp., fig; Ficus carica, Hop; Humulus lupulus, hemp and hashish variants of Cannabis sativa and the nettles. The nettles form part of the family Urticaceae which has 42 genera and over 700 species. These include, in North America in addition to Urtica diocia, the annual nettle; U. urens, the narrow leaf nettle; U. gracilis and the Lyall nettle; U. lyall.

ORIGIN & SPREAD

It would appear that the nettles originated in Eurasia. It appears fairly certain that transhumanae and zoochary played a substantial part in the weeds spread from the Balkans. It is now considered to be a typical example of a ruderal plant; see also edaphic requirements. Its appearance in North America is recorded by John Josselyn in 1672 and it would appear that settlers to New England were responsible for the introduction of the plant to this continent possibly in cattle fodder.

RANGE

The geographical distribution of stinging nettle would class it as a cosmopolitan weed as it is found throughout the world except Arctic and tropical regions. In North America it grows throughout the United States and Canada except Southern Georgia, most of Florida and west of a line drawn from Northwest Washington through Texas. It is not found in Alaska nor in the Yukon or Northwest Territories of Canada.

OCCURANCE

Stinging nettle can be found along roadsides, the edge of moist woods and in timber clearings, especially of lowlands forest and shelter belts, the rich soil of hedge rows, on derelict land, around city dumps and ash dumps, old dwellings, farm yards, animal quarters and most arable lands, especially those used for soft-fruit crops.

GENETICS

A tetraploid with marked vegetative spread.

RECOGNITION

Size: 30 to 150 centimeters tall.

Habit: Dioecious perennial with much branched woody rhizome normally orange to yellow in colour.

Stem: Erect to ascending four angled and hairy.

Leaves: Oblong - ovate, acuminate, cordate at base opposite, hairy, and twice as long as length of the petiole. Leaf margins are serrate with the apical tooth much longer than the lateral teeth.

Stipules: Are distinct green to pale brown.

Flowers: The staminate flowers are unisexual with the stamens inflexed in bud. The superior ovary is one celled with solitary ovule.

A good key for recognition can be found in Muenscher (see references).

BIOLOGY & PHENOLOGY

This dioecious perennial with a prolific underground woody rhizometous root stock begins growth very early in the season - for example during mid March in the Spring of 1977 in British Columbia. Flowering takes place in Summer to Autumn (June to September). The stamens are coiled and spring open scattering the pollen in the wind at maturity. The fruit is a flattened achene and the seed 1.0 to 1.2 millimeters in size, yellowish grey and 0.00016 grams in weight on average. The seed has a memranous coat which adheres to the perecarp. Length of dormancy, before viability is severely effected, is not recorded however germination which will occur from March to October is normally as high as 70%.

WEED CLASSIFICATION

The nettle is well known for its stinging hairs which will produce an intense burning, swelling, and itching which may last for a few minutes to hours. The resulting skin inflamation may lead to secondary infections which require medical attention depending on skin tenderness and the percentage of area contacted. Mechanical effects on livestock and other animals is not extensively reported, however it appears that horses avoid nettle, dogs may suffer excessive salivation, pawing at the mouth, emesis, resperatory distress, slow irregular heartbeat and muscular weakness. There are two records in the literature of dogs becoming lame and later dying. There is a historical record in the literature of U. pilulifera variety dodstis being grown in 18th century gardens for a practical joke. Since this plant did not look like a nettle, people were invited to smell the flower and were stung on the face!

SPECIAL ADAPTATIONS

The common stinging nettles have stinging hairs covering the whole plant except roots. These stiff sharp hairs on stems and foliage have hollow centers from the tip to the bladder like base. The minute heads are bent over to one side and when touched break off discharging the sap into the skin. The cell walls of the tip appear to be impregnated with silica making them hard and brittle causing them to break off from all but the slightest touch. The cell sap is variously reported to contain sodium formate, acetylcholine and histamine. Reports that the plants contain 5-hydroxytryhtamine (S.H.T.) are disputed by some authors. In addition to the stinging hairs one author (Hardin) reports that the roots are brittle allowing the plant to remain in the soil even when grubbed out.

EDAPHIC REQUIREMENTS

Stinging nettle is reported as a nitrophilous species and may contain up to 3.4% N on a dry weight basis. Its common appearance around derelict buildings, especially farm buildings, is accounted for in the high ammonia and nitric acid content of soil in that location. In general it requires rich moist soils, rich in nutrients and high humus content and may be used as a site indicator for such.

CLIMATIC REQUIREMENTS

Urtica is a north temperate species found in both hot and cold areas. It is remarkably tolerant of extreme climatic conditions and may be found up to alpine altitudes.

LIGHT REQUIREMENTS

The plant appears to prefer dappled shade but may thrive in light intensities as low as 5 to 10% of open daylight. Best values appear to be in the 10 to 20% range.

VIGOUR AND COMPETITIVE ABILITY

Stinging nettle would appear to be grow up to three quarters of an inch a day on good sites and support rapid proliferation from the roots. This rapid height growth and the vigorous vegetative rooting allows for the formation of dense stands.

ECOLOGICAL RELATIONSHIPS

The weed apparently may grow interspersed with monocots and sociologically is classed as a"companion"found frequently in Artemisietalia and Atropetalia. It is also commonly found in maple and poplar hardwood stands where it again grows in dense,uniform patches.

INSECT RELATIONSHIPS

The common galls on stinging nettles are produced by the gall gnat Ceicdomyia urticae. The plant is apparently an important source for the larvae of the Lepidop tera: red admiral, peacock, and small tortoise shell. Davies working in the United Kingdom indicates that the colonization of isolated patches of nettle by insects in the first year found 28 species commonly associated with the nettle rising to 39 species within three years. 18 of the species were hosts specific, 21 polyphagous or predatory. Perrin also working in the United Kingdom found the nettle an important source of aphides which played a role early in the year as prey for beneficial natural enemies of insects. Later work is also reported on the importance of nettle as a reservoir of such beneficial natural enemies. see references

PALATABILITY

Herbage abstracts indicates that the stinging nettle is high in protein, Vitamin A and C. Historically it has been used in France as a soiling crop for mules and milk cows. It is indicated that its seeds have been used to feed horses. North America it is reported that deer may crop nettle.

USES

A reference is made by the Scottish poet Thomas Campbell of dining on a tablecloth made from nettle fibres and sleeping between cloth sheets also made from nettle. Campbell lived from 1777 to 1844. Certainly nettle was used at one time for spinning as its common name is derived from "net". Nettle fibres have been recovered in Danish graves of the late Bronze Age, and it was certainly still made in the 18th Century in Denmark. More recently weaving of nettle fibres was carried on in the Tyroll in 1917. Recorded medicinal uses include blood purification, a cure for dandruff, rheumatism, backache, gravel in the bladder, curing worms, urine flow and as an astringent. It has been commonly collected as a substitute for spinach.

AESTHETIC IMPORTANCE

The plant has no flowers of interest and with its stinging hairs no real redeaming features.

CONTROL

Cultural Control

Regular cutting for hay or silage seems to eliminate the plant from pastures. In addition areas frequented by cattle where the soil becomes compacted also reduces nettle infestations. General literature strongly recommends that grass be sown after chemical spraying of nettle to compete with seed

germination.

Control Mechanical

Plowing followed by arable rotation before reseeding, mowing close to the ground and grubbing out root stocks and leaving them on the surface to dry are reported by a number of authors.

Chemical Control

A number of authors, especially reporting chemical control in nurseries indicate that stinging nettle is both difficult to control and quickly reinvades area. The underground rhizomes would appear to assist in this process. In one pear orchard Urtica was the first to appear in glythosate and, to a lesser extent paraquat plots. Recommendations from various agencies include simazine, atrazine, Bromacil, and Diuron. However, the most successful controls appear to be either M.C.P.A. at 1.68 KG/HA with repeated sprayings or Mecoprop or 2,4,5-T at 0.23 KG in 45 gallons of water. It is strongly recommended by most authors that the plant be treated before it is 150 millimeters high.

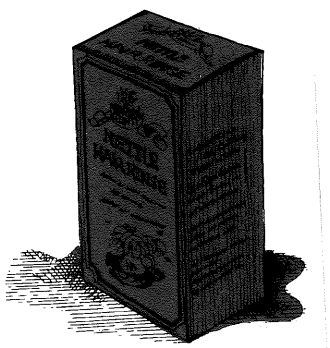
Control Legislation

As far as is known nettle is not included in any noxious weed schedules nor is it specifically mentioned in municipal regulations, however it would appear that the Seed Act may be one method of controlling spread of the seed.

POETICAL ASSOCIATIONS

A poem by Sir. John Harrington:

The Nettles stinke, yet they make recompense
If your belly by the Collicke pain endures
Against the Collicke, Nettle seed and honey
Is Physic; better none is had for money
It breedith sleepe, staies vomit, fleams doth soften
It helps him of the Gowt that eats it often



NETTLE HAIR RINSE

For the girl who has every imaginable shampoo, how about a box of nettle hair rinse? By reputation, nettles help prevent the hair falling out and render it soft and glossy. **1oz for 25p.**

REFERENCES:

Textbooks

Fyre, J 1972 Weed Control Handbrook, Blackwell 7th Edition.

Hardin, J. W. 1974, Human Poison From Native and Cultivated Plants, Duke University.

Kloss, J. 1972, Back to Eden Beneficial.

James W. R. 1973, Know Your Poisonous Plants, Naturegraph.

Medvendev P, 1934 Nettles of the U. S. S. R.

Mulligan, G. 1975 Common Weeds of Canada, McClelland & Stewart.

Salisbury, Sir E. 1961 Weeds & Aliens, Collins.

Smith, J. G. 1900 Fodder and Forage U. S. D. A. Division Argrost. Bulletin #2.

Grison, E. 1915 A Englishman's Flora Pheonix House

Author unknown, 1936 Herbage Abstract.

Gilkey, H. M. 1957 Weeds of Pacific Northwest, Oregon State College.

PUBLISHED PAPERS

Curry, J. P. 1973 The Arthropods associated with the composition of some common grass and weed species in the soil. Soil Biology and chemistry (5) 645-657.

Davis, B & K, 1975 The Colonization of Isolated Patches of Nettles by Insects. Journal of Applied Ecology 12 (1) 1-14.

Dayton, W. A. 1960 Notes on Western Range Forbs, Forest Service U. S. Department of Agriculture 62-64.

Davison, J. G. 1972 The Response of 21 Perennial Weed Species to Glyphosate. Proceedings of 11th British Weed Control Conference 11-16.

Frenkle, R. E. 1970 Ruderal Vegetation along California Roadsigns, University of California Publication Geog. 20 1-16

Kuchly, J. 1975 Destruction of Grasses in Orchards, Compt. Rendu de la Conference du Columba.

Lousley, J. E. 1970 The Influence of Transport on a Changing Flora. In the Flora of a Changing Britain, Editor F. Perring. Hampton Botanical Society of the British Isles and Classey.

Oyavski, K. L. 1970 Chemical Control of Stinging Nettles. Estonsk Inst. Zemledel Melior, Kharyuskii, Raion Tallen U.S.S.R.

REFERENCES (Continued)

Perrin, R. N. 1974 The Ecology of Nettle Aphides with particular reference to their role as prey for beneficial natural enemies, PhD.Thesis University of London.

Perrin, R. N. 1975 The Role of the Perennial Stinging Nettle, The Reservoir of Beneficial Natural Enemies. Annals of Applied Biology 81 (3) 289-297.

Stryckess, J. 1976 Review of the Results Obtained in a Cropping Year. Centrum Voor Onkruiclonderzock, Belgium.

Walkowiak, H. 1973 Necessity Problems and Possibilities of Chemical Weed Control in Grassland. Nachrichtenblatt fur den Pfanzenshutzdienst D. D. R. 27 (6) 129-134 Institute Futterprod. Paulienenaue Akad. Landwistwiss German Democratic Republic.