Fact Sheet

SHRUB **PERFORMANCE** ON ORGANIC **SOILS**

612-5

(Plant Materials - Forestry)

United States Department of Agriculture

Soil Conservation Service

INTRODUCTION: The USDA Soil Conservation Service Rose Lake Plant Materials Center established a combination field **evaluation/demonstration** windbreak in 1987 on Michigan State **University's** Muck Research Farm. The soil type was a Houghton Muck--level, deep, organic soil with moderate permeability and neutral pH. Classification was a Typic **Medisaprists.** The purpose of this planting was to evaluate plant performance of various shrub species commonly used as windbreaks on organic soils. Evaluations were carried out for four years (1987-1991).

PROCEDURE: Eleven species were selected for this study: (1) 'Roselow' Sargent crabapple, Malus *sargentii* Rehder; (2) Eastern ninebark, *Physocarpus opulifolius* (L.) **Maxium;** (3) spirea, *Spirea* x *vanhouttei* (Broit) Zabe; (4) arrowwood, *Viburnum dentatum* L; (5) 'Indigo' silky dogwood, *Cornus amomum* Miller; (6) highbush cranberry, *Viburnum trilobum* Marshall; (7) 'Cling-Red' Amur honeysuckle, *Lonicera maackii* Maxim; (8) nannyberry, *Viburnum lentago* L.; (9) tall hedge Rhamnus, *Frangula var. columnaris* L.; (10) Cheyenne privet, *Ligustrum vulgare* L.; and (11) 'Magenta, hybrid crabapple, Malus sp.

Twenty bare-root plants of each species were planted in a single row with 180 cm (6 ft.) spacing between plants. Weed control, both chemical and mechanical, was provided for the first four years. Annual application of fertilizer was applied according to soil tests. Supplemental application of manganese was important for good growth of shrubs on organic soils.

DISCUSSION: **Some observations made** on **the** planting **are:** Survival and growth rate for the planting was very good. This can be attributed to good weed control during the establishment period.

It was observed that those species with a fiberous root system, such as silky dogwood, were better able to resist frost heave. Those species with a non-fiberous root system, such as the crabapples, had portions of their roots exposed.

Discussion of the individual **species, in order** of their **effectiveness,** follows: (1) 'Indigo, silky dogwood developed into a solid, uniform hedge. Survival was excellent. The plants were healthy and much tillering was evident; (2) Cheyenne privet had excellent survival. The plants were large and healthy; (3) Arrowwood had excellent survival. The plants were slightly smaller than the top performers; (4) 'Cling Red, Amur honeysuckle grew fast but suffered die-back in the upper portion of its branches each year; (5) Eastern demonstrated good growth but survival was not good; (6) Tall hedge had excellent survival and good growth but was too compact to form a barrier at the selected spacing; (7) Nannyberry had excellent survival but initial growth was irregular. Growth that occurred later in the study was more uniform; (8) 8 was slow to establish and growth rates were irregular; (9) American cranberrybush survival and plant vigor was low; (10) 'Roselow, crabapple growth was irregular. Individual plant health was not uniform; (11) Spirea was a failure. A drought in 1988 stressed the plants and the majority of them died.

DATA SUMMARY

1991

SPECIES	% SUR.	AVE. HT. (cm.)	AVE. WIDTH (cm.)	UNI- FORMITY [1]	EFFEC- TIVENESS [2]	REL. RANK
'Indigo' silky Dogwood	100	250	320	2	2	1
'Cheyenne' Privet	100	273	273	2	3	2
Arrowwood	100	210	210	3	3	3
'Cling-Red' Amur Honeysuckle	85	263	297	5	3	4
Eastern, Ninebark	85	197	225	6	5	5
Tall Hedge	100	256	120	5	7	6
Nannyberry	100	232	209	5	5	7
'Magenta' Crabapple	88	212	141	7	7	8
American Cranberrybush	90	177	175	5	7	9
'Roselow' Sargent Crabapple	95	144	115	6	8	10
Spirea	20	88	106	8	9	11

[1]

   Uniformity of size and shape.   1 = Identical - 10 = Extremely variable

[2]

   Occular estimate of effectiveness as a windbreak based on size, density
   and uniformity.   1 = Excellent - 10 = Totally ineffective.