ESRM 412 – Native Plant Production
JD Bakker
Spring 2007

TAXONOMY	
Family Names	
Family Scientific Name:	Liliaceae
Family Common Name:	Lily
Scientific Names	
Genus:	*Maianthemum*
Species:	*racemosum*
Species Authority:	(L.) Link
Variety:	
Sub-species:	
Cultivar:	
Authority for Variety/Sub-species:	
Common Synonym(s)	
Genus, species, species authority:	*Smilacena racemosa* (L.) Desf.
Common Name(s):	False Solomon's seal, feathery false lily of the valley, feathery false Solomon's seal, false spikenard.
Species Code (as per USDA Plants database):	MARA7
GENERAL INFORMATION	
General Distribution:	*M. racemosum* is found within temperate deciduous and coniferous forests of North America. (Baskin, 2001). Ranges in elevation from seal level to 3050 m. Moist forests, stream banks, meadows, shady to open forests. Grows in soils rich in organic matter. (Rose at al, 1998) Healthiest stands are almost always in partial shade and soft soils. (Tilford, 1997)
Local habitat and abundance; may include commonly associated species:	There are two subspecies of this species, one native to the eastern half of North America (*Maianthemum racemosum spp. amplexicaule* (Nutt.) LaFrankie) and one native to the western half of the continent (*Maianthemum racemosum spp. racemosum* (L. Link). There is some overlap of the two ranges in the central continent. (USDA Plants Database) The propagation protocols outlined in this paper are applicable to both subspecies.
Plant strategy type / successional stage:	Perennial herb, weedy/colonizer spreading by rhizomes.
PROPAGATION DETAILS	
Ecotype :	
Propagation Goal :	Plants

Propagation Method :	By seed, or vegetative propagation by rhizomes or division.
Product Type:	Container (plug)
Stock Type:	
Time to Grow (from seeding until plants are ready to be outplanted):	**Seeds**: Has double dormancy and requires two years to reach target specifications. **Rhizomes or division:** one growing season
Target Specifications :	Must have developed root system and at least one green leaf above ground.
Propagule Collection :	**Seeds**: Collect seeds when ripe, usually in August or early fall. (Rose et al, 1998) (Snyder, 1991) Seeds ripen from a mottled green and red to a deep red. (Leigh1999)
Propagule Processing/Propagule Characteristics (including seed density (# per pound), seed longevity, etc):	**Seeds:** Fruit is a many seeded berry. Berries are red, sometimes spotted with purple in August. Dormancy characterized as deep simple double morphophysiological dormancy, usually referred to as "double dormancy." In other words seeds exhibit a combination of root and epicotyl dormancy. (Barton and Crocker,1948)
Pre-Planting Propagule Treatments (cleaning, dormancy treatments, etc):	**Seeds**: **Pretreatment for root production** is 6 months @ 41ºF. (Barton and Crocker, 1948) If conducting stratification outside, best done Sept-Feb. Sow in fall immediately after seed has ripened. (Rose et al, 1998). **Rhizomes**: Can be grown from rhizome pieces with ease (Krukeberg, 1982). Only 7.5 cm or less of the rhizome is sufficient for propagating. (Rose et al, 1998)
Growing Area Preparation / Annual Practices for Perennial Crops :	**Seeds**: Possible to conduct entire germination process, from seed sowing to plants, in a board covered cold frame outside, (Barton and Crocker, 1948) or in the pots of the parent plants that produced the seeds, if these pots are being cared for as stock plants in an outdoor, container nursery setting. (Schollmeyer, 2007) Otherwise use a moist, sterile growing media and no light. Heated green houses and coolers can be used to create necessary temperature fluctuations. **Rhizomes**: plant into a moist sterile medium such as peat moss. (Rose et al, 1998)
Establishment Phase:	**Seeds:** Requirement for germination of root and growth of seedling before pretreatment for epicotyl dormancy is three months @70° F. The cotyledon pushes the radicle and small shoot bud to the outside of the seed in early summer (May or June) and a persistent root system develops during the summer. The shoot must develop to a minimum size of around 0.5 cm before epicotyl dormancy is broken by a second

	cold stratification. Otherwise the repeated cold temperatures will be ineffective. (Barton and Crocker, 1948) (Baskin and Baskin, 1998). **Rhizomes:** Plant rhizomes 2.5 cm deep and horizontal.
Length of Establishment Phase:	**Seeds**: A minimum of three months are needed, although if propagation is taking place outside in ambient conditions, this phase could be up to six months long (March-August).
Second Pretreatment, for Epicotyl Dormancy (**seeds only**):	3 months at 41-50° F, (Barton and Crocker, 1948) or 5 months at 41° F (Barton and Schroeder, 1941)
Active Growth Phase:	**Seedlings**:If growing outside, shoot will elongate rapidly in mid-March of the second spring after sowing. By the second May a single leaf will have appeared above the ground. (Barton and Crocker, 1948) If growing in an atmospherically controlled setting, return the propagule to 70° F for germination after the second cold stratification. (AOSA) Once germinated, seedlings need a relatively shaded area with consistently moist soil. (Rose et al, 1998)
Length of Active Growth Phase:	
Hardening Phase :	
Length of Hardening Phase:	
Harvesting, Storage and Shipping:	
Length of Storage:	
Guidelines for Outplanting / Performance on Typical Sites :	Best growth is achieved in open woodland. (Krukeberg 1982) See information on general distribution and habitat for characteristics of areas where outplanting will have greatest success. Seedlings can take five or more years to bloom. Space plants 30 cm apart. (Snyder, 1991)
Other Comments:	
INFORMATION SOURCES	
References:	AOSA, Suggested Purity and or germination testing methods for species without AOSA testing procedures. Barton, L.V. and W. Crocker (1948) Twenty Years of Seed Research at Boyce Thompson Institute for Plant Research. Faber and Faber Ltd., London, England Barton, L.V. and E.M. Schroeder 1941. Dormancy in seeds of *Convallaria majalis* L. and *Smilacina racemosa* (L.) Desf. Contrib. Boyce Thompson Institute. As cited in: Baskin and Baskin, 1998, and by the

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References consulted but not cited:	Deno, N.C. 1993 Seed Germination Theory and Practice, 2nd edition. N.C. Deno, State College, PA
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