Holloway, P. 2005. Horticultural Crop Production for Alaska. Cooperative States Research and Extension Service HATCH report Acc. 0190422

CRIS
Horticultural Crop Production for Alaska
Principal Investigator
Dr. Patricia S. Holloway

Outcomes

Peony roots were planted at three different times to determine if there is any difference in cut flower productivity with fall, spring or containerized plantings. Roots of four cultivars were planted in September, held at 34F in wood chips until April, potted and grown in the greenhouse and outdoors until July; or held until mid May and direct planted. Two cultivars, Duchess de Nemours and Dr. Alexander Fleming showed significant bud break and root rot in storage despite an application of dusting sulfur. Many stems died in storage, but the roots remained alive. These cultivars had significantly fewer vegetative stems, flowering stems and shorter stem height in the first year of field growth. 'Sarah Bernhardt' roots and crown buds were weighed, counted and measured prior to planting in order to learn if a correlation exists between root quality and subsequent growth and flowering. Three root attributes were correlated with the total number of stems produced: total number of eyes per plant, total number of roots per plant and root fresh weight. Characteristics such as root length and maximum diameter were not correlated with subsequent growth. In addition, we found no relationship between any root characteristics and number of flowering stems and foliage height in the first year. The attributes that showed correlation could not be fitted to a linear or curvilinear model explaining the nature of the correlation. Larger sample sizes will be necessary to clarify these relationships. Best methods of handling peony cut flowers for greatest vase life include cutting peonies dry and storing them dry in a cooler (34°F) at 80+% relative humidity until shipping. Use of water in buckets in the field or pulsing flowers with water in the cooler does not improve vase life of peonies. Under optimum conditions, 'Sarah Bernhardt' peonies lasted up to 15 days in a vase, 8-9 days from bud break to full bloom and an additional 5-6 days in full bloom. Chilling in a cooler is the most important attribute to long vase life. More than 500 cultivars or annual, perennial ornamentals, herbs and vegetables were grown in trial plots to examine their usefulness in Alaska landscapes. Most notable perennials worth testing include: Fraxinus mandshurica, Ligularia dentate, Paeonia 'Early Scout', Hydrangea paniculata, Rosa 'Jens Munk' and Amelanchier alnifolia 'Martin'.

IMPACT:

Thirty three peony growers are now members of the Alaska Peony Growers Association, fifteen of whom have 500 or more roots in the ground. This research as provided the foundation for a new industry in Alaska. The vegetable research is designed for small market gardeners and homeowners. It provides comparative trial information that is useful in developing regional truck farms and expanding produce choices as farmers' markets. The annual and perennial flower trial research is used by seed companies, nurseries, growers, landscapers and home gardeners to identify

hardy perennials, disease resistant annual flowers for home and commercial production. Specific trial information was requested by Denali Seed (AK),Territorial Seeds (OR), Pan American and Ball Seed Co.(IL), Goldsmith Seeds (CA) and Kieft Seeds (Holland). Six undergraduate students completed internships in horticulture during the past year. Mr. Sean Willison is completing his MS degree in Natural Resources Management by working on native plant seed germination/revegetation project. Ms. Tina Buxbaum is completing her MS research on pollination biology of Vaccinium uliginosum. Ms. Rayhanon Pampell is completing her MS degree on bumble bee biology for crop pollination in Alaska. The following were the target audiences for this project: UAF graduate and undergraduate students in natural resources management, Alaska homeowners, commercial horticulture businesses, Alaska Peony Growers Association, Alaska Mater Gardeners Association, numerous Alaska garden clubs, agencies including: Alaska Department of Natural Resources Division of Agriculture, UAF Cooperative Extension Service, USDA Agricultural Research Service.

OUTPUTS

As a direct result of peony research, 33 commercial businesses have planted trial plots of peonies for field cut flower production. More than 100 Alaskans attended a meeting of the newly-formed Alaska Peony Growers Association in Feb 2009 to explore the potential for field grown peonies in Alaska. The perennials collection was used in NRM 215 Plant Propagation undergraduate class. Information on bedding plant production was incorporated into NRM 212 Greenhouse management class.

Participants:

Individuals: Dr. Patricia S. Holloway, Principal Investigator designed and initiated all research projects and contacted potential partners.

Partner Organizations: Alaska Department of Natural Resources Division of Agriculture and the UAF Cooperative Extension Service have agreed to sponsor a joint workshop on peony production for growers. The USDA Agricultural Research Service, Alaska has agreed to continue joint research on diseases, especially viruses of peonies.

Training Mr. Sean Willison is completing his MS degree in Natural Resources Management by working on native plant seed germination/revegetation project. Ms. Tina Buxbaum is completing her MS research on pollination biology of Vaccinium uliginosum. Ms. Rayhanon Pampell is completing her MS degree on bumble bee biology for crop pollination in Alaska.

Target audiences

The following were the target audiences for this project: UAF graduate and undergraduate students in natural resources management, Alaska homeowners, commercial horticulture businesses, Alaska Peony Growers Association, Alaska Mater Gardeners Association, numerous Alaska garden clubs, agencies including: Alaska Department of Natural Resources Division of Agriculture, UAF Cooperative Extension Service, USDA Agricultural Research Service

PUBLICATIONS:

Holloway, P. 2009. A subarctic fern trial garden. Hardy Fern Foundation Quarterly. 19(4):114-117.

Holloway, P. and A. Peterson. 2009. Alaska seeds in the classroom. Georgeson Botanical Notes No 37. 4p.

Holloway, P. S., K.M. Kokx, J. Auer and S. Pearce. 2009. Propagation of Alaska bog blueberry, *Vaccinium uliginosum*. HortScience. 44(4):1102. Abstr.

Holloway, P., G.E.M. Matheke, E. Gardiner, J. Hanscom, J. Weber, B. Blackwell, M. Dunton, J. Michalak, S. Pearce, C. Taylor, V. Hill and E. VanWyhe. 2009. Annual flowering plant evaluations 2008. Agricultural and Forestry Experiment Station AFES Variety Trial 2009-01.

Holloway, P., J. Hanscom, E. Gardiner and G.E.M. Matheke. 2009. Annual Vegetable Trials 2008. Agricultural and Forestry Experiment Station AFES Variety Trial 2009-02.

Holloway, P. and M. Peterburs. 2009. Propagation of 12 Alaska native plants by summer stem cuttings. J. Environmental Horticulture. Journal of Environmental Horticulture. 27(4):207-210.

Robertson, N.L., K.L. Brown, L.M. Winton and P.S. Holloway. 2009. First report of tobacco rattle virus in peony in Alaska. Plant Disease. 93(6):675.

Willison, M.S., P.S. Holloway and S.D. Sparrow. 2009. Reclamation of disturbed arctic wetland sites with native sedges. University of Alaska Fairbanks Department of High Latitude Agriculture. School of Natural Resources and Agricultural Sciences Leaflet. 2p.

Examples of JOURNAL ARTICLES:

Kolodinsky, J., Murphy, M., Baehr, A., and Lesser, S. (2006). Time Price Differentials in the Rent-to-Own Industry: Implications for Empowering Vulnerable Consumers, International Journal of Consumer Studies, 29(2): 119-124.

Alam, M., Li, J., and Guo, M.R. 2007. Production of potassium acetate from cheese whey by fermentation. J. Dairy Science (in press).

Examples of ABSTRACTS:

DAmico, D.J., Druart, M., and Donnelly, C.W. 2006. The 60 day aging requirement does not ensure safety of bloomy rind cheeses manufactured from raw or pasteurized milk when L. monocytogenes are introduced as post-processing contaminants. IAFP Program and Abstract Book Annual Meeting, Calgary, Alberta, Canada(P2-13).

Farley, J. (2005) Ecological Economics 101. Electronic conference proceedings (abstract), US Society for Ecological Economics, Tacoma, Washington. July, 2005

Examples of NEWSLETTERS:

Burczy, S., Lamb, D., Steen, D., Ashman, M. 2006. Words to the Wise. Quarterly. Promotes healthy living among low-income, elderly Vermonters.

Grubinger, V. 2006. Vermont Vegetable and Berry News. Semi-weekly. Provides technical information and observations from network of commercial growers. Via e-mail and in: Agriview, newsletter of the Vermont Agency of Agriculture.

Examples of PAPERS IN PROCEEDINGS:

Barlow, J.W., Zadoks, R.N., and Schukken, Y.H. 2006. Direct and Indirect effects of treating subclinical mastitis. Page 116 to 121 in Proc. 45th NMC Annual Meeting. Verona WI.

Pareek, R., Bond, J., Watson, A., Dowd, S., McFadden, T., and Kerr, D. 2006. Affymetrix GeneChip-based analysis of the genomic response to acute LPS-induced bovine mastitis. Proc. 2006 ISAFG Conference, E. Lansing, MI.

Example of BOOK CHAPTER:

Nyachuba, D. and Donnelly, C. 2005. Sublethal injury, pathogen virulence and adaptation, Chapter 7 In M. Griffiths (ed.), Understanding Pathogen Behaviour. Woodhead Publishing Ltd. Cambridge, England, p. 152-198.

□