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Annual Flower Trials

David K. Wildung, Horticulturist

The 1998 growing season was an excellent one for flower gardeners of the region because it was longer, warmer and drier than average. Certainly the flower trials at North Central were above average. There were a number of unique factors about this year's trials that I would like to share with you.

First, Steve Poppe, Plot Coordinator at Morris, and I spent considerable time last winter revamping and deciding how we could combine our trials results and what we wanted to trial. Steve took the lead in contacting the seed companies and securing the seed. We each chose what we wanted to grow but we both used the same evaluation forms and rating system. At the end of the season the results were tabulated into a single report that is now available for area gardeners to use.

Second, the Itasca County Master Gardeners did most of the evaluation of the flower varieties in 1998. Using a common evaluation system the group of nine Master Gardeners either singly or in pairs evaluated the flower plots twice during the season. In the process they learned something about the varieties on trial and something about flower evaluation. Those participating in these evaluations were: Leah White, Sheila Hunter, Mark Hepokoski, Ann Hensula, Brenda Hernesman, Lois Bendix, Mary Richie, Diane Nelson and Louise Mattila. At the end of the season Lois Bendix tabulated all of the Grand Rapids evaluations and they were sent off to Morris. It is anticipated that this will become an annual project for the Master Gardeners and that they will use the trial results in spring gardening programs and make flower recommendations to area gardeners. I really appreciate all of their fine efforts in this project.

The third unique factor this season was development of a new area to evaluate shade loving flower plants. It started as a result of trying to find an easier better way to evaluate shade plants in the trials. Tom Carpenter, Horticulture Plot

Coordinator, came up with the idea and developed the area. It was by far the best flower shade trial we have ever had at the Station. This new area will allow us to get a good evaluation each year of shade loving plants in a setting that adds beauty to the campus and is less work than the system we used previously.

Fourth, as mentioned earlier, the season was great for flowers. It started out early, allowing for earlier than average planting and ended late with our first frost occurring late in September. In between it was warmer than average allowing the plants to fully develop to their potential. The drier than average summer with no severe storms to beat the blossoms down allowed the plants to develop fully when supplemental irrigation could be applied. The end result was plants that grew to their potential, less disease, and excellent flower development.

Finally, the selection of flower types was better than ever. Seed companies are coming up with many new and different types of flowers. From the maxi-petunias to double Victorian Rose Impatiens, there is something that will please any flower lovers fancy. In the early 1990s, NCES became an All America Display Garden. In 1999 there will be eight All America Selections available to you to grow. We trialed all of them in 1998. We also trialed many other new and unique varieties. It is our objective to continue to trial the newest varieties and unusual, unique types of annual flowers each year.

With the assistance of the Master Gardeners the results of this year's trials and future trials will be available for you to use to select new and unusual flowers for your garden. If you are interested in obtaining a copy of this year's trial results, contact us at NCES, 1861 East Hwy 169, Grand Rapids MN 55744. Cost of this report is \$3 (make check payable to the University of Minnesota).

The Top 50 Flower Varieties for 1998 at Grand Rapids

Ageratum: Blue Hawaii
Begonia: Encore White, Pink, Pink Rose, Prelude Pink, Senator Rose, Senator White.
Celosia: Flamingo Feather, New Look, Pink Candle.
Dianthus: Princess Scarlet
Flowering Kale: Nagoya Red, Nagoya White.
Flowering Cabbage: Osaka White, Rose Boquet.
Geranium: Maverick Salmon, Maverick Scarlet, Maverick Star, Strawberry Ripple.
Globe Amaranth: Quis Carmine, Purple, Woodcreek Red.

Impatiens: Accent Deep Pink, Accent Pink, Accent Salmon, Cajun Salmon, Carnival Metallic Deep.
Melampodium: Derby, Showstar.
Nicotiana: Hummingbird Cherry Blossom, Hummingbird Lemon Lime, Hummingbird Red, Hummingbird Rose Pink.
Pansy: Maxim Supreme, Maxim Supreme Rose.
Petunia: Bravo Lavender, Freedom Blue, Misty Lilac Wave, Primetime Scarlet, Primetime White.
Phlox: 21st Century.

Rudbeckia: Indian Summer, Sonora, Toto.
Salvia: Strata
Viola: Fama Zitrin
Zinnia: Oklahoma Scarlet, Peter Pan Flame, Peter Pan Gold, Peter Pan Mix.

Two other publications on 1998 NCES trial results are now available: Small Fruits (\$3.00) and Vegetable Trials (\$5).

This archival publication may not reflect current scientific knowledge or recommendations.
Current information available from University of Minnesota Extension: <http://www.extension.umn.edu>.

Tall Fescue for Beef Pastures

Russ Mathison, Forage Agronomist

Cool-season grasses and perennial legumes form the nutritional foundation of Minnesota's beef cow-calf industry. In a recent survey, beef producer members of the Minnesota Forage and Grassland Council identified alternative crops as one of the more important areas where research is needed. This need may be linked to the recent emphasis on using intensive rotational grazing management as a means to increase the profitability and sustainability of beef cow-calf production systems. Pasture species currently in use may or may not be the most productive under intensive rotational grazing. Tall fescue may warrant consideration by cow-calf producers searching for a suitable cool season pasture grass species. Although tall fescue is commonly spoke of, it is not used to any extent in Minnesota even though there is sufficient research data to support tall fescue as a valuable forage species.

Tall fescue was most recently evaluated for dry matter yield in varietal trials at the Morris, Rosemount and Grand Rapids Experiment Stations. Data in Table 1, taken from Varietal Trials of Farm Crops, Minnesota Agricultural Experiment Station Report MR-7135, shows tall fescue forage dry matter production to be comparable to cool-season grasses commonly grown in Minnesota such as orchardgrass, timothy or smooth bromegrass. In addition to the potential for excellent forage production, tall fescue has other traits which make it an excellent component in rotational grazing systems. It establishes rapidly, tolerates drought and persists well, especially in areas of reliable snow cover. Tall fescue forms a dense sod when well established, permitting it to withstand animal traffic better than many other grass species. For this reason, tall fescue would be an excellent species to seed in a calving pasture.

Table 1. Dry Matter Yields, Tons Per Acre – Tall Fescue.
Varieties seeded at Grand Rapids, Morris and Rosemount (1994 – 1996)

Variety	Grand Rapids			Morris			Rosemount	
	1994	1995	1996	1994	1995	1996	1994	1995
Barcel	4.4	2.7	1.8	5.6	4.4	1.5	6.1	3.8
Fawn	4.2	3.2	2.4	5.5	4.8	1.8	5.5	3.9
Ky 31 – endophyte infected	5.1	3.2	2.3	5.4	4.8	1.6	6.4	4.4
Ky 31 – endophyte – free	4.6	3.0	2.2	5.4	5.0	1.8	5.8	4.4
Martin	4.8	3.5	2.5	5.3	5.1	1.9	5.8	4.3
Mozark	4.8	3.4	2.4	5.8	4.9	1.7	5.7	4.2
Mustang	3.7	2.5	1.8	-	-	-	5.3	3.6
Stef	4.5	3.3	2.2	5.5	4.8	2.2	6.0	4.5
LSD 5%	0.6	0.5	0.3	0.7	NS	0.7	0.6	0.6

Extending the grazing season is often cited as one of the major criteria necessary to increasing profitability of beef cow-calf as well as many other types of livestock production systems. A major strength of tall fescue is it remains productive in the fall when other grasses become dormant, thus making it an excellent species for stockpiling. Research at the North Central Experiment Station in Grand Rapids measured yield and quality of tall fescue under two cutting managements and four nitrogen fertilizer treatments for fall stockpiling (Table 2). A first harvest in mid-June followed immediately by a nitrogen application of 50 lb/acre resulted in a substantial supply of adequate quality forage for fall grazing. Also, this harvest management did not reduce seasonal forage dry matter yield compared to a three-cut-per-year harvest management. Even though inorganic fertilizer was used as the nitrogen source and the forage was harvested mechanically in this study, it may be possible to accumulate and harvest a forage supply of similar quantity and quality at a lower cost by grazing tall fescue in mixture with a perennial legume. Additional research would help answer these questions.

Table 2. Dry Matter Yields and Crude Protein Concentrations¹ of Fall-Saved Tall Fescue at Grand Rapids

Summer Cut & N x Fall Cut		Crude Protein %	Forage Yields	
			Fall Harvest	Year's Total
06/15, 0# N	09/01	9.3	0.8	1.8
	09/16	10.1	0.2	1.4
	10/01	9.2	0.5	1.6
06/15, 50# N	09/01	7.5	1.7	2.8
	09/16	7.5	1.1	2.3
	09/30	7.3	1.4	2.8
06/15, 08/01, 50# N	09/01	12.1	0.4	2.4
	09/15	12.3	0.1	2.3
	10/01	11.0	0.2	2.5
06/15, 08/01, 100# N	09/01	15.7	0.6	2.8
	09/15	14.0	0.4	2.9
	09/30	11.7	0.6	2.9

¹Values are an average of two year data. **Note:** Deer grazing may have reduced mid and late September yields.

Persistence under grazing is another important component in the consideration of tall fescue for beef pastures. Although well documented in the agricultural literature for other geographic areas, there is little hard data on animal performance or tall fescue persistence under grazing in Minnesota. A study done in Grand Rapids in the early 1970s compared tall fescue with orchardgrass in a rotational grazing system. Yearling beef steers and heifers showed higher animal grazing days and beef produced per acre on tall fescue than orchardgrass pasture. This study, conducted for two years, gives an indication tall fescue may have the potential to be productive under intensive rotational grazing in Minnesota, but additional studies are needed.

Forage producers interested in growing tall fescue should make sure to purchase endophyte-free seed. An endophyte is a fungus that commonly infected tall fescue, resulting in an accumulation of toxic alkaloids known to cause a series of animal health disorders. Plant breeders have developed endophyte-free seed of many tall fescue varieties, which are available commercially (Table 3). Even though there is some concern that tall fescue may not be as productive in the absence of the endophyte, the loss in plant productivity is justified to promote animal health.

Table 3. Tall Fescue Seed Sources – Marketed Variety Noted with Each Entry

Marketer	Variety
Albert Lea Seedhouse – 507-373-3161 1414 West Main, P.O. Box 127, Albert Lea, MN 56007	Ky 31 Fawn
Barenbrug Midwest – 888-470-5569 or 319-472-5569 1506 W 3 rd St, Vinton, IA 52349	Barcel
Kaltenberg Seed Farms, Inc. 20155 Biscayne Ave W, Farmington MN 55024 - 612-463-8997 P.O. Box 278, Waunakee WI 53597 - 608-849-5021	Ky 31
Premium Seed Co., Inc. – 612-496-1783 7800 E State Hwy 101 Shakopee, MN 55379	Barcel Fawn Ky 31

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Happy Holidays



from the staff of the North Central Experiment Station !

Alumni News

Carmon Gregerson (Class of 1942) and his wife Benita were crowned the Blaine, Minnesota Senior King and Queen on July 6th. They also represent the Mary Ann Young Senior Center. Their reign runs from July '98 to July '99.

Congratulations Carmon and Benita on being recognized for your active involvement in the city where you live!



News from North Central

David L. Rabas, Head

As I write this article in early November we are anticipating the arrival of the first snowfall. By the time this issue of the *Quarterly* reaches our readers (some of whom will be basking in the southern suns) the ground will be white and another growing season will be over. The summer was warm and dry. May-October temperatures were above average. May and August and September temperatures were near records. A wet June was followed by a dry July, August and September. October precipitation was nearly two inches above average.

The total frost free period was 135 days from the last frost on May 10 to the first frost on September 22. Last season (1997) tied the record growing season of 142 days.

The dry weather in midsummer slowed pasture and hay growth, but warmer temperatures helped mature full season crops such as corn and tomatoes.

Congratulations to Kathy Haiby and Dr. Raymie Porter. Kathy recently completed five years as a Senior Research Plot Technician with the Aspen/Larch Genetics Co-op. The Aspen Larch project is funded by Co-op members and the College of Natural Resources. Raymie has completed ten years as a wild rice breeder on a project funded by USDA/ARS, the University of Minnesota, and the cultivated wild rice industry.

Our building project (additional office, conference and meeting room and restroom space which is accessible to physically challenged persons) is in the design stage and is moving toward letting bids in February or early March. We are pleased that it appears that the Itasca County Extension Office will be incorporated into an expanded building project. We look forward to working together with county extension educators to share facilities and expertise and to collaborate on research and education projects.



Kathy Haiby (l) & Howard Hoganson, Forester



Raymie Porter (l) & David Rabas, Station Head

We are working together with the county extension staff and Itasca County Board to help make this partnership happen. By the time you read this article we should also have changed the names of the experiment stations to Research and Education Centers. This new name will reflect added responsibilities and diversity of activities within the research, teaching and outreach mission of the University of Minnesota.

As we enter the second year of the three-year campaign to raise funds to support our horticulture research program, I want to thank those individuals, organizations, and firms who have made contributions to the **Horticulture Fund Campaign**. I appreciate the broad-based support funding home gardeners and the horticulture industry has given the fund.

If our readers have not had an opportunity to contribute to the **Horticulture Fund** or want more information about the fund, you may write to the North Central Experiment Station, 1861 East Hwy 169, Grand Rapids MN 55744 or call 218/327-4490. Checks should be made out to the NCES Research Fund-Horticulture Campaign.

Thanks to all our readers and friends for your expression of support for our station's research and education programs. May you and your family and friends have a happy holiday season and an enjoyable and rewarding new year!

* * * * *

If you know of others that might enjoy receiving our newsletter, please have them send their name and full mailing address to us --- we will be happy to add them to our mailing list!

Upcoming Events

Beef Cow-Calf Day - February 18, 1999
Newspaper articles and special mailings will announce the place, time, and program topics for this event.

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