Daniels® Professional Plant Food

10-4-3

Pansy Study

In Co-operation With

- Blossom and Bloom
- Hanson Farms
- J & J Greenhouses
- Mobley Plant Farm
- Blue Moon Farms
- Dr. Bill McElhannon
- Progress Grower Supply

In the fall of 2000, with the assistance of 4 excellent Georgia growers, Progress Grower Supply evaluated the performance of pansies fertilized with Daniels 104-3 fertilizer. Daniels is a liquid fertilizer formulated from oil seed extract base. Grower trials through out the U.S. have demonstrated that Daniels is an excellent fertilizer, but most of the available information is in the form of documentary statements. The objective of the Fall 2000 trials was to evaluate the performance of this fertilizer in a number of production environments and to have media, tissue and plant growth comparisons performed by an independent evaluator. In this case, analysis and evaluations were performed by Micro-Macro Analytical Laboratory in Athens Ga.

Pansies were grown at 4 locations. Two locations were in the metropolitan Atlanta area, one was in N. Central Georgia and the other was in S.E. Georgia. The 4 growers that participated in this trial were excellent pansy growers and the Daniels 10-4-3 was compared to their standard fertility programs. Nitrogen supplied from the Daniels fertilizer was approximately equal the N supplied in the growers standard fertility program. Growers at the various trial locations grew different pansy varieties and bad different planting schedules, but within each location, pansies used for the fertilizer comparison were planted at approximately the same time.

Results and Discussion

Plant Growth:

Table 1: Fresh weights of pansies grown at 4 Georgia production locations. Growers standard fertility program v. Daniels 10-4-3. With both fertilizers, Nitrogen rates were approximately the same.

Variety	Fertilizer	Fresh Weight	% increase

		(grams/plant)	
Crystal Bowl Yellow	Total Grow 20-0-15 Daniels 10-4-3	8.5 10.5	+19.04 %
Dark Eyed Lemon	Excel 15-2-20 Daniels 10-3-4	2.6 3.1	+16.12%
Delta Yellow	Excel 15-2-20 Daniels 10-3-4	6.1 8.1	+24.60
Majestic Mixed	Excel 15-2-10 Daniels 10-3-4	5.83 6.60	+11.66

Table 1 presents the fresh weights of pansies obtained from the 4 trial locations. Within each location pansies were planted on approximately the same date, but between locations pansies were planted on different dates and sampled at different stages of development. In every trial, fertilization with the Daniels 104-3 produced larger plants with greater fresh weight than the pansies fertilized with the grower's standard fertilizer. Increases in fresh weight varied from 11.66% with the Majestic Giants to 24.60% with the Delta Yellow variety. Consistently, all pansy varieties tested, at all locations, were more compact, with less internode elongation and more axillary breaks than that observed with the growers standard fertilizer. The photograph on the title page of this report is representative of the pansy response the fertilization with Daniels fertilizer. Complete photo documentation is also provided at the end of this report.

Media and Tissue analysis:

Saturated media extract (SME) analysis of pansy media obtained from the various trial locations is reported in Table 2. The saturated media extract procedure is a method that measures the soluble nutrients that are immediately available to plants. With few exceptions, nutrient levels did not vary greatly between treatments. However, the slight differences that were observed did result in consistently lower ECs (soluble salts) with the Daniels treatment. This may have been due to the increased plant growth observed with Daniels fertilization or the nutrients provided by Daniels may have been in an organic form that is not detected by soluble salts measurements. Growers should be advised that media EC values may be lower than that observed with conventional inorganic fertilizers when plants are fertilized with similar rates of Daniels. Location #4 (Table 2) is a good example, EC values with Daniels fertilization was 1.3 where as fertilization with similar N rates of Excel 15-2-20 was 2.1. Similar observations have been made with other trials evaluating Daniels fertilizer and growers probably should not attempt to obtain high EC's values when fertilizing with Daniels. Common sense should be used here, if a grower is obtaining excellent growth when using Daniels fertilizer, the grower should not be overly concerned if BC values are lower than that observed with similar rates of inorganic fertilizers. In this trial, there were no consistent differences in media pH when plants were fertilizer with the growers standard fertilizer or Daniels.

With the exception of Iron, tissue analysis of pansies (Table 3) fertilized with the grower's standard fertilizer or Daniels 10-4-3 were quite similar. This is surprising because a substantial growth response was observed with the Daniels fertilizer treatments. Increased Iron content of plant tissue has also been reported in turf fertilized with Daniels. The substantial differences in plant growth were probably not due to the increased Iron alone. Pansy plants from all treatments contained sufficient levels of Iron and the shorter intcrnodcs and increased axillary breaks observed with pansies receiving Daniels can not be completely explained by the increased Iron content of plant tissue.

In addition to mineral nutrients, seed endosperm contains many complex organic compounds that are beneficial to the plant growth. In this authors opinion, the organic fraction (Oilseed extract) of the Daniels fertilizer was a significant contributor to the outstanding quality of the pansy plants fertilized with Daniels. Results provided in tables Tables 2 and 3 indicate that the pansy plants absorbed similar levels of nutrients when fertilized with a 10-4-3, 15-0-20 or 15-2-10. The dense, compact growth of the pansies fertilized with the Daniels, however, may have been due to a mild growth regulator effect due to some unknown chemical in the Oilseed extract.

Conclusions:

Pansies fertilized with Daniels fertilizer were superior to all of the inorganic fertilizers tested. At all trial locations, pansies were larger, more compact, contained more axillary breaks and were of better quality than plants grown with conventional fertility.

Table 2: Mineral nutrient analysis of pansy media obtained from 4 different growing locations. The growers standard fertility program compared to Daniel's 104-3 fertilizer.

Location	#1		#2		#3		#4	
	Total Grow	Daniels	Excel	Daniels	Excel	Daniels	Excel	Daniels
	20-0-15	10-4-3	15-2-20	10-4-03	15-2-20	10-4-03	15-2-20	10-4-03
Nutrient				ppm				
Nitrate	54	57	45	30	22	16	175	104
Ammonium	12	12	5	6	3	2	23	16
Phosphorus	2	1	3	2	2	4	14	6
Potassium	48	30	43	33	27	10	47	71
Calcium	35	24	34	30	11	9	186	118
Magnenium	35	20	34	28	9	7	123	79
Iron	0.37	0.16	0.18	0.17	0.02	0.15	0.39	0.16
Manganese	0.19	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Boron	0.03	0.02	0.06	0.05	0.05	0.03	0.1	0.11
Copper	0.07	0.05	0.04	0.03	0.01	0.03	0.01	0.04
Zinc	0.59	0.28	0.29	0.27	0.11	0.17	0.03	0.17
Molybdenum	0.01	0.01	0.03	0.01	0.01	0.01	0.01	0.01
Sodium	30	22	35	28	13	13	49	66
Aluminum	0.01	0.02	0.24	0.2	0.06	0.02	0.35	0.24
pH	6.2	6.2	6	5.9	6.4	6.2	5.7	5.3
EC (dS/m)	0.8	0.5	0.7	. 0.6	0.3	0.2	2.1	1.3

Table 3: Tissue nutrient levels of pansies grown at 4 different production operations. Growers standard fertility program compared to Daniel's 10-4-3. Nitrogen rates were approximately the same.

Location	#1		#2		#3		#4	
Variety	C.B. Yellow		Dark Eyed Lemon		Delta-Yellow		Majestic mixed	
Fertilizer	Total Grow	Daniels	Excel	Daniels	Excel	Daniels	Excel	Daniels
	20-0-15	10-4-3	15-2-20	10-4-3	15-2-20	10-4-3	15-2-20	10-4-3
	percent							
N	5.12	4.96	5.84	5.26	4.85	4.93	5.37	5.48
P	0.54	0.66	0.71	0.64	0.68	0.76	0.96	1.1
K	4.6	5.98	6.74	5.97	4.58	3.4	5.52	3.4
Ca	0.52	0.6	0.79	0.8	1.02	0.81	1.22	1.69
Mg	0.44	0.53	*0.59*	0.65	0.71	0.64	0.81	1.15
S	0.23	0.24	0.24	0.31	0.24	0.24	0.22	0.35
	ppm							
Fe	122	237	123	150	184	217	265	317

Mn	80	69	56	31	160	91	429	406
B	19	21	20	23	19	21	24	31
Cu	10	8	8	7	14	15	12	12
Zn	68	74	95	91	62	49	113	156
Mo	0.81	0.17	1	2	5	0.5	0.7	0.3
Na	4.7	480	497	426	574	521	1992	2088
Al	83	44	203	146	564	616	143	156

References:

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