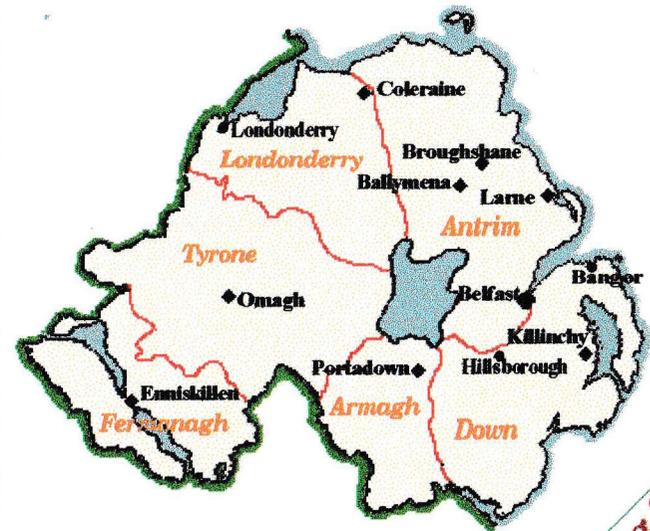


Newsletter
of the
Northern Ireland
Daffodil Group



Spring 99
Issue

Half yearly publication

**THE NORTHERN IRELAND DAFFODIL GROUP
NEWSLETTER**

VOL 5 NO. 4

Spring 99

OFFICERS OF THE GROUP

Chairman

N. WATSON, Ringhaddy Lodge, Killinchy, Co. Down. BT23 6TJ

Vice Chairman

G. WILSON, 5 Malory Pk., Lisburn, Co. Down. BT28 3XJ

Treasurer

J. CARLISLE, 22 Moira Drive, Bangor, Co. Down, BT20 4RN

Secretary

R. McCRAW, 77 Ballygowan Road, Hillsborough, Co. Down
BT26 6EQ - Telephone (01846) 682920

Committee

B. S. DUNCAN, Knowehead, 15 Ballynahatty Road, Omagh.

R. CURRY, 19 Beechdene Gardens, Lisburn, Co. Antrim.

J. SMYTH, 35 Tullyglush Rd., Banbridge, Co. Down.

D. TURBITT, 16 Swilly Rd., Portstewart, Co. Londonderry.

Co-opted members

JILL McIVOR, 'Larkhill', 98 Spa Rd., Ballynahinch, Co. Down.

M. KERR, 'Downfield', 223 Seven Mile Straight, Crumlin,
Co. Antrim

IAN SCROGGY, 42 Largy Rd., Carnlough, Ballymena,
Co. Antrim

Editorial Committee

W. J. E. DUKELOW, G. WILSON and M. KERR.

Auditor

SIR FRANK HARRISON, Ballydorn, Killinchy, Co. Down

CHAIRMAN'S REMARKS

My two years as your Chairman seem to have passed very quickly, and I would like to thank the members of the Group for putting me into this position for the period that included the World Tour.

From the reports we have had from many of our visitors, they seem to have thoroughly enjoyed the Northern Ireland part of their tour. I must reiterate the thanks of the Group to Sandy McCabe and Brian Duncan for the vast amount of work they put into the Tour and they are probably the major contributors to its success. There were of course many others who helped in various ways towards the success of the Tour. We must also acknowledge the generous contributions we received from many District and Borough Councils and particularly the Belfast City Council for the very fitting close to the Tour with the reception and banquet in the City Hall.

The Belfast Show, in the new venue at Malone House, turned out very well despite the vagaries of the earlier part of the season. The Daffodil Group stand at the Show was again a tribute to Nial Watson and his helpers and we thank them for all their effort. We must also remember those dedicated helpers who remain after the show closes, to empty vases and carefully pack them all away.

Maurice Kerr, keeps up the good work as Editor and producer of the Newsletter, and, together with Sam Dukelow and Sandy McCabe deserves our grateful thanks. We can all help by producing articles and useful items to assist them in their good

work.

Jack Carlisle does excellent work as our Treasurer and keeps our finances in good order. We thank him for this work.

The Committee meet on a regular basis to look after all the details required in the general running of the Group and we are all in debt to them.

I must say a very sincere word of thanks to our Secretary, Richard McCaw, for the general running of the Group and for accepting with good grace the apologies I put in over the past two years.

Thanks to Ballance House for use of the premises for our meetings.

Finally I hope that my successor in this post will enjoy his time as your Chairman.

M. Ward

SECRETARY'S REPORT

It is my pleasure to present my report to you the members of the N.I.D.G. It has been a very hard past year in more ways than one. The worst event that not only our group, but the whole of Ireland has had to come to terms with was the bomb which caused the horrendous deaths of Fred White and his son along with so many other people in Omagh on the 15th August 1998. Sympathy has arrived from all over the world and our sympathy goes to Edith and family. Our condolences also go to the families of two well known overseas members of our group Eric King and Frank Coles who also died during 1998. Frank was our contact with Australian Daffodil Society.

1998 will be remembered in many ways not least the weather. It has rained continually throughout the past twelve months or so it seems. At least this month, January, we can walk on the ground at times as it has been rock solid with frost.

Daffodil Shows continue to be the highlight of our year and this year was no exception especially when we had 107 visitors from all over the world. This had to be experienced to be believed. Every day was educational and fun packed for everyone. There has been many tour reports in our last Newsletter but notable for me was the dinner at Belfast City Hall hosted by the deputy Lord Mayor. This gave us all a chance to meet at the end of a very successful World Daffodil Tour of Ireland. The Judging of the World Tour Daffodil was also a memorable day listening to and watching daffodil experts do their 'thing'.

Belfast Show was the show they all came to experience and they were not disappointed as they saw some very fine blooms on display. Although these were down in number quality was still high. I am pleased to say that one of our visitors presented an award for Best Exhibit in Show. As usual I have put together a small table of the entries so you may compare with last year. Overall Exhibits at the Show were down from 1079 in 97 to 957 in 1998,

Daffodil Exhibits 705 in 97 to 485 in 98,

Daffodil Open Section 213 in 97 to 140 in 98,

Daffodil Amateur Section 301 in 97 to 256 in 98,

Daffodil Novice section 191 in 97 to 89 in 98.

This is quite worrying but I know the weather was not suitable for growing Show blooms to put it mildly. Again let us encourage each other and more to exhibit at Belfast. The change of venue to Malone House was a success and with some fine tuning could be a very suitable venue for many years. Thousands of people visited the Park and many of these viewed the main show.

Changes of note to the Belfast schedule for 1999 will be the amalgamation of the Open and Amateur Single Bloom Sections. I am looking forward to that.

It is good to see that 21 visitors decided to join our group and this, along with 8 new local people have increased our membership. Two notes on Belfast Spring show, our educational stand was not a competitive stand this year but Nial and Sandra put on an exhibit which attracted many people to view and ask questions and of course buy some memorabilia to take home. The other point, is thanks again to all those who stayed behind and cleared up after the show.

Another show I must mention is our own Early Show. This was a great success at Colemans Nursery in Templepatrick. Some small changes will be made to improve it but our main aim will be to encourage visitors to the show to become more interested in our group and in daffodils.

Our Newsletter again has set a new record by producing a 64 page edition in the Autumn of 1998. This contained many reports from the visitors who were on the Tour. The Newsletter editorial team continues their fine work and our thanks go to Maurice, Sandy and Sam. Also at this point I must mention our Book Committee who burned the midnight oil on many occasions to publish a very excellent update of Daffodils in Ireland, copies of which are still available.

By now you will all have received notification of our programme for 1999, please keep this somewhere safe so you may refer to it. In February this year we invited Dr. Brandham of the R.H.S. to speak to us. We propose each year to invite specialist lecturers to address our group so I would appeal to members to encourage friends and associates to come along and support these meetings and in doing so encourage our committee to hold more similar meetings. Our past meetings have been well attended and we on the committee would welcome suggestions as to which subject you the members would like covered.

Although our committee does not meet often throughout the year they have been a strong steering influence on our many sub-committees, who have achieved many things this year. I know some committee members will be stepping down this year but I must mention Michael for helping me throughout his term of office and offer him best wishes and of course wish our new chairman good luck during his term in office.

An unusual meeting in its own sense was the meeting held by Hillsborough Horticultural Society on the anniversary of their 50th year founded on the 26th of November 1948. They invited many societies and groups to join them to listen to a lecture by Tom Ennis. I am glad to report that this was well supported and to thank our own members who attended.

It just remains for me to wish you all a very rewarding Daffodil Show Season.

R. McCaw

EDITOR'S COMMENTS

1998 was the year of the World Tour and what a year. The weather was very unkind with a very mild start to the year then a sudden very hard frost followed by cold biting winds and then the rain. Has it stopped yet? Planting time was wet and posed quite a

problem. My heavy clay soil never dried really well so it was hard work preparing the rigs which had to be done at the last minute in the one brief dry spell in September. Then the rain commenced once again with barely two dry days following one another up to Christmas. Frosts have been quite a regular occurrence so far this winter here on the Seven Mile Straight and the daffodils are just starting to nose through. Hopefully the coming season will be kinder in terms of weather at flowering time, unlike last year.

As editor the Newsletter and other tasks associated with the production of Daffodils in Ireland took up a considerable part of my spare time. The bumper autumn edition was a bit behind schedule and involved burning the midnight oil as I was preparing in school for an inspection while trying to produce it. Material for future editions is now at a low point and I would beg you the members whether local or foreign to put pen to paper and help build up a substantial resource for the editorial team to use in the future.

Deadlines are also important as the material for the Newsletter has to be typed; assembled in production format; proof read; corrected if needs be before being dispatched to Sam for photocopying and binding. This takes time usually four weeks at least. So please if you are submitting material for the Spring edition could I have material by the end of January and the end of August for the Autumn edition. Show reports for the provincial shows are a bit of a headache and it would be appreciated if the affiliated societies could send a brief report detailing major prize winners and blooms rather than have me sift through mountains of detailed class winners and read some reports being sent to other publications in order to produce our own reports.

Included in this edition you will find detailed results of the soil survey which was conducted among the members of the group, an article on show stewarding, building a pollen bank, the World Convention in 2000 and another part in the serialised thesis on daffodils in Scotland by a foreign student who wishes to remain anonymous.

M. Kerr

ANYONE CAN HAVE A POLLEN BANK

Dr. Frank Galyon
Knoxville, Tennessee.

I have been asked to write up my method of pollen storage, so here goes. I have found that sliding pill boxes are much handier to use than gelatin capsules. The ones that I use are manufactured by the North Coast Box and Container Corporation of Cleveland, Ohio. They come 72 per box and I use their #47 size. I obtain them from Darby Drug Co. Inc. of 100 Banks Ave., Rockville Centre N.Y. 11571, U.S.A. They cost approximately 20 ¢ per pill box or about \$14 for a box of 72. The boxes are white and easy to write on. I always use the pill boxes twice - once for pollen and later for seeds. The small pill boxes are well constructed and could be used over and over by subsequently gluing labels over the previous writing.

I gather the daffodil stamens I want to use as soon as the flower opens. By collecting them at the stage before the anthers have dehisced this prevents self pollination of the flower. It usually takes about a day at room temperature for the anthers to dehisce (burst open) their pollen grains. If I want to use the pollen right away I simply leave the pill boxes on my desk. I never leave the pollen at room temperature for more than seven days in order for it to remain viable.

Then I place the boxes containing pollen in small trays and put them in the freeze compartment of my frost free refrigerator. Unfortunately the handy trays that I use are no longer available. You will have to solve the problem of trays on your own. The freeze compartment of the refrigerator is obviously below 32°F. The company that I called said that a properly working freezer usually registers between -10°F and -18°F. Once the pollen has been placed in the freezer, it can be left in there indefinitely. I do not use any desiccant with the pollens. Whenever a box of pollen is removed from the freezer for the purpose of pollinating a flower, I always return the pollen to the freezer as soon as possible after using it.

There are certainly advantages in having a freezer full of useful pollens. One advantage is having pollens from early flowers viable for use on later cultivars. Conversely it is advantageous to have pollens from later cultivars stored over the winter to use on early cultivars next season. There is always the possibility of having stored pollen in the freezer from a cultivar that might be lost for whatever reason. Occasionally there might be a time that a cultivar failed to flower; yet you might have its pollen stored in the freezer. Generally I keep stored pollens for only three years. I have many times successfully pollinated flowers with three year old pollen and obtained seeds from the cross. Of course I feel it is only prudent to use fresh pollen if available. Likewise I would prefer to use one year old pollen in preference to two year old pollen etc.

NORTHERN IRELAND DAFFODIL GROUP

Summary of income and expenditure for the year ending

31st December 1998

INCOME		EXPENDITURE	
Balance brought forward	£4910.95	Magazine	£306.37
Interest Received	£1793.94	Secretarial Expenses	£110.12
Subscriptions	£723.00	Meetings	£267.00
Dinner	£620.00	Show Expenses	£308.20
Fund Raising	£6507.94	Trophies less sales	£279.56
Sale of bulbs, pins, books, shirts, ballot, advertising and donations.			
World Tour		Bank Charges	£31.95
Shortfall on receipts. £7065.17			
Sponsorship including value of hospitality	£3434.83	Balance carried forward	£16588.46
provided by Government, Councils, Growers etc.			
	£10500.00		
	£17990.66		£17990.66

A. J. Carlisle
Honorary Treasurer

N.I.D.G. Fertiliser Survey

Moore Chestnutt

This survey, carried out in the 1997/98 season, aimed to gather information on fertiliser practices adopted by members of the group. Eleven survey forms were returned and individual results are given. Some comments on the use of fertiliser are also included. No attempt was made to collect information on the use of trace elements; only Nitrogen, Phosphate and Potash were considered. As far as possible figures relate to the year of planting

Soil type and drainage

Survey results

<i>Form</i>	<i>Soil type</i>	<i>Drainage problems</i>
1.	Medium	None
2.	Medium	None
3.	Heavy	None
4.	Light	None
5.	Heavy	Ponding
6.	Medium	None
7.	Heavy	Ponding
8.	Medium	None
9.	Medium	None
10.	Heavy	Ponding
11.	Heavy	Run Off

Comment

Drainage problems were reported on most heavy soils but there was evidence that appropriate precautions such as liberal use of organic matter and good drainage practice were being adopted.

Soil reaction and liming

Survey results

Form	pH (if known)	Year Limed	Type of Lime	Oz/sq. yd GL equivalent
1	6.5	95	GL+MC	15+4
2.		regular		
3.	alkaline			
4.	acid			
5.	5.6		HL	1
6.		pre 80	GL	2
7.	6.0	93	GL	15
8.	6.2	78	HL	20
9.	5.5	97	HL	8
10.	6.5			
11.		96	MC	8

GL = Ground Limestone HL = Hydrated Lime MC = Mushroom Compost

Comment

One ounce of Hydrated Lime is equivalent to 1.3 ounces of Ground Limestone. The recommended optimum pH for daffodils is between 6 and 6.5. A dressing of 12 ounces per square yard of Ground Limestone will raise pH of heavy soil from 5 to 6.5. Smaller dressings will be adequate for lighter soils. Frequent heavy dressings of mushroom compost could raise pH too high.

Nutrients supplied by organic matter and fertiliser

Organic matter (eg. Garden compost. Mushroom compost and Farm-yard manure) serves two functions :-

- (1) It improves soil structure and
- (2) It adds to the supply of soil nutrients.

Survey data were used to calculate the annual amounts of Nitrogen, Phosphate and Potash supplied by organic matter and fertiliser. To facilitate comparison all rates of dressing have been converted to '**Ounces per square yard of a 10% chemical fertiliser**'. For example a dressing of 1 ounce per square yard of Sulphate of Potash (50%K₂O) is equal to 5 ounces of a 10% K₂O fertiliser.

Nitrogen

Survey results

Form	Previous crop	Application expressed as		
		Oz/sq. yd of 10% Nitrogen fertiliser		
		Compost/FYM	Fertiliser	Total
1.		5	1	6
2.	Grazed Grass			
3.	Grass	2	3	5
4.		7	8	15
5.	Manured		2	2
6.			2	2
7.	Manured	8	2	10
8.		2	1	3
9.		5	2	7
10.	Manured	11		11
11.		8	3	11

Comment

The average rate of application was 6.5 Oz/sq. yd., two thirds of this coming from organic matter.

Plants derive their nitrogen from several sources. The most important are:-

1. Soil Organic Matter. Most of our soils contain between 5% and 15% organic matter derived mainly from plant roots and plant residues as well as residues from earlier dressings of compost. This will gradually break down releasing the equivalent of between 0.5 and 2.5 ounces/ square yard of 10% Nitrogen fertiliser over a season.

2. Fixation. All soils have a population of bacteria which change Nitrogen in the atmosphere into a form which plants can use. Somewhere between 0.2 and 0.5 ounce / square yard of 10% Nitrogen fertiliser should come from this source each year.

3. Compost / FYM

4. Chemical fertiliser. Annual applications of Nitrogen to arable agricultural crops are generally between 2 and 7 ounces/ square yard of 10% fertiliser

While Nitrogen in the form of Ammonia is held in the soil it is readily changed into the Nitrate form as the soil warms up. If not absorbed by growing plant roots Nitrate will fairly quickly be leached from the soil. Most of the conventional fertilisers contain Nitrate Nitrogen and so they are best applied at a time when roots are growing as then they readily absorb Nitrogen.

Phosphate and Potash

Survey results

Form	Phosphate			Potash		
	Application expressed as Oz/sq. yd of 10% Phosphate fertiliser .			Application expressed as Oz/sq. yd of 10% Potash fertiliser.		
	Compost or FYM	Fertiliser	Total	Compost or FYM	Fertiliser	Total
1.	2	2	4	3	4	7
2.						
3.	3	10	13	2	42	44
4.	4	16	20	12	16	28
5.		3	3		13	13
6.		2	2		14	14
7.	3	2	5	4	14	18
8.	1	2	3	4	7	11
9.	4	4	8	12	5	17
10.	6		6	18		18
11.	3	8	11	3	6	9

Comment

Average annual application of Phosphate was 7oz/sq. yd and that

of Potash was 16 oz/sq. yd. In both cases about one third of this came from compost and Farmyard Manure and two thirds from fertiliser. Soil analyses are often used as a measure of Phosphate and Potash needs.

Recommended application rates for bulb production

Phosphate	
Soil Phosphorus Index	Recommended application rate Oz 10% Phosphate/sq. yd
0	3.6
1	3
2	2
3	1.4
4+	0
Potash	
Soil Potassium Index	Recommended application rate Oz 10% Potash/sq. yd
0	7.3
1	5.9
2	4
3	2.9
4+	0

As the soil index is likely to be above 1 in both cases the rates of application used by most group members are considerably higher than recommended rates for bulb production. There are few reports of adverse effects from excessive use of Phosphate and Potash but excess Potash can cause Magnesium deficiency.

Phosphate and Potash are held in the soil much more strongly than Nitrate Nitrogen. Phosphate in particular can build up in the soil to such levels that further additions may be unnecessary for several years. Potash reserves can also build up with heavy use of Potash fertiliser and will leach slowly from the soil.

Timing of chemical fertiliser application

Survey results

Form	Months in which Nitrogen(N) Phosphate(P) and Potash(K) were applied											
	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June	July	Aug.
1.			PK			NPK						
2.												
3.						NPK					K	
4.	NPK											
5.					K	K				NPK		
6.		K			NPK							
7.						NPK	K					
8.					NPK	K						
9.					NPK	NPK	K					
10.												
11.	NPK								NPK			

Comment

It is widely accepted that with many horticultural crops a high Nitrogen fertiliser is required for early growth of leaf and plant structure, while later for flower and fruit production a higher Potash content is called for.

Daffodil roots appear to grow downwards from the base of the bulb and hence make limited use of the top few inches of soil. In order that Potash gets to the root feeding zone it may need to be worked in at the time of planting or surface applied early in spring and hoed well down the soil profile.

Programme of Events

May 30th	Barbecue - Rowallane.
August 22nd	Lily Show at J. McAuslands, with Plant Bring and Buy.
September 26th	Disease Control.
October 24th	Bulb Chipping - Derrick Turbitt. Bulb Auction.
November 28th	The X Files- R. Curry and G. Wilson

SHOW STEWARDING

Richard McCaw

Since becoming interested in daffodils I believe my sharpest learning curve, in connection with Exhibiting and Judging Daffodils, was obtained during my stints of stewarding at Spring Shows.

Flower Shows require a lot of preparation and many people working behind the scenes to run a successful event. Show committee, judges, show secretary, chief show steward, numerous stewards, exhibitors and by no means least the public. It is 'Stewarding' I wish to look at in this article. If you explore the word 'Steward' it means warden, administrator, nursemaid and attendant among others.

If I write of my own experiences as a Steward and Judge at Daffodil Shows it may help encourage others to become one or other. As I said earlier, I have learnt a lot from following Daffodil Judges round exhibition tables but they must be given respect and room. Usually there are two Judges to a section and as they move from class to class their Stewards follow doing their own thing. In most shows space is limited and class space can be at a premium especially in single bloom classes, 24 inches (60cms) or less, and if Stewards try to write up the class next to the one being judged it can become very 'friendly' but very restricting.

Let us look at some of the tasks Stewards are asked to perform. Mainly these take place from the end of staging, through judging and finishes when the public are allowed in, except for the Chief Steward who is also responsible for setting up and space allowance among other things. Stewards should be ready to meet their Judges at the start of judging, this usually is after coffee. They proceed to the sections they have been allocated. I have heard it said to Judges "We will follow you", this is not good. Most Judges will be strangers to the hall and it is good to have

confident Stewards leading the way. Usually the first class in a section is the most important and Judges will often take considerable time to come to a decision. Stewards may best spend this time looking along the exhibits in their section, checking that all entry cards are placed face down. Prior to judging stewards should have checked that exhibits are not too crowded that the exhibits are in their right classes, especially in the Novice classes. I suppose the true letter of the law says exhibits can not be moved, but I feel it is much more important that beginners are encouraged and if in doubt talk it over with the Judges. Administration is extremely important, accurate results must be kept. As the Judges pass along the classes, Stewards should record first, second and third before sticking the appropriate label on, then turn all entry cards face up. Stewards should point note any contenders for Best Blooms, or divisional awards etc which apply in their section before helping all the Judges on the final round of the main awards. Overall points are usually counted by Show secretary and team so clear records are essential. How frustrating if an exhibitor lost out on an overall award because a third place was recorded instead of a second. If all has gone well judging should be completed in plenty of time so preparations can be made to allow the public in.

At most shows it is the Chief Show Stewards unenviable task to find stewards to help. I feel this is a very good place to learn about daffodils as you have the opportunity to listen and see the judges at work. In fact, I have known some people who prefer to steward and gain experience rather than judge.

Although this article is connected with Daffodils, the guidelines laid down here could be applied to all forms of exhibits at any local show.



Class 38 12 Vases, 3 stems of each, 12 varieties any Division.

Winner *S. McCabe*

Ethos, Serena Beach, Halstock, Soprano,
Gay Kybo, Sdg. S3, Serena Lodge, Goldfinger,
Jacobin, Terracotta, Triple Crown, Kebaya.



Class 39 American Raised - 5 varieties,

Winner *R. McCaw*

Presidential Pink, Berceuse, White Tie
Mission Bells, Lyre Bird.

Second *J. Smyth*

Silken Sails, Presidential Pink, Pipe Stone,
Eclat, Stratosphere.



N.I.D.G. Early Show 1998
7 Bloom Winner *R. McCaw*
Tyrone Gold.



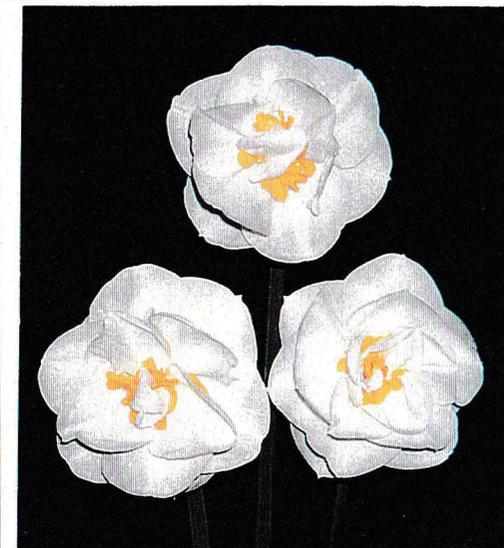
CHAMPIONSHIP of IRELAND Winner 1998

B. S. Duncan

Chobe River, Dr. Hugh, State Express, June Lake
Crimson Chalice, Garden News, Nether Barr, Goldfinger,
Ethos, Soprano, Jake, Savoir Faire.



Best Seedling Open
Belfast 1998.
Kate Reade 1.19.78. Div.9



Omagh Show 1998
B.S. Duncan's Serena Beach
in winning Royal Mail Class

**"START YOUR PLANNING
FOR WORLD CONVENTION 2000"**

Bob Spotts

Portland, Oregon USA will be the site of the WORLD DAFFODIL CONVENTION on the weekend of March 31st -April 2nd, 2000. The Convention will be preceded by a two weekends of daffodil shows and festivals in California and a ten-day bus tour of the sights and scenery between San Francisco and Portland.

At the Convention, you'll walk the fields of Grant Mitsch Daffodils; visit Corbett, the little town made famous by the daffodils of Murray Evans; and enjoy the garden of Steve and Heather Vinisky with its 5000 cultivars and thousands of emerging seedlings. Not all will be outdoors. The World Daffodil Show should exceed 3000 blooms. Daffodil experts, educators, and humorists from across the world will entertain you. You'll learn the differences in judging daffodils in Australia, New Zealand, UK, and USA. You'll hear about growing and maintaining the historic daffodil cultivars. You'll see slides of the beauties currently in hybridizers' pipelines. You'll learn more about the species growing in Spain, Portugal, and North Africa.

Perhaps best of all, you'll make new daffodil friends and put faces to those names you know.

There will be a more detailed article on the Convention in a future issue. In the meantime, for information on the Convention Tours, contact Gene Cameron (PO Box 789, Newburg OR 97132; e-mail GodsAwesomeAcres@compuserve.com) . For information on the Convention itself or the preceding daffodil shows in California, contact Bob Spotts (409 Hazelnut Drive, Oakley CA 94561-2403; e-mail rspotts@netvista.net) .

DETECTION OF THE STEM AND BULB NEMATODE

Trevor J. G. Martin

Applied Plant Science Division, Department of Agriculture for Northern Ireland, Newforge Lane, Belfast BT9 5PX

As the stem and bulb nematode (*Ditylenchus dipsaci*) is one of the most important eelworm pests of daffodils, it is useful to recognise its presence before too much damage is incurred by the crop.

The nematode can be found on the foliage, in the bulb, and in the soil. Generally large infections of the pest lead to symptoms on the plant such as small swellings on the leaf, which in turn lead to distortion and discolouration. In the bulb, brown rings may be observed if the scales are damaged by the pest, and, if the infestation is severe enough, the baseplate may be left in the soil when the bulb is harvested.

There are many occasions however, when the pest may be present and the grower will not see any symptoms on the crop. Alternatively if a new planting area were to be chosen, the grower should check the soil for its presence, as *D. dipsaci* can survive on some weed hosts.

The method (Whitehead's Tray Technique) used for detection of nematodes in both soil and plant material is the same and the materials required to perform this task are very simple (diagram d).

EXTRACTION

1.a: Take a representative soil sample from the area to be tested (100gm per 5m² approx. 4oz.), many small sub-samples making the main sample being preferred.

b: The bulb, stem and leaf material of the plants should be finely chopped before proceeding with extraction at 3.

2. Sieve soil to remove stones, plant material etc. and break down any large lumps.
3. Obtain a medium sized tray, approximately 45cm x 30cm, and a mesh bottomed container 'such as a wire letter tray or flour sieve.
4. Place the container in the tray and cover the bottom of it with a single layer of tissue paper.
5. Spread the sample in a thin layer over the tissue paper ensuring the sample does not spill over the edges of the paper (diagram d).
6. Pour water slowly down the lip of the tray until the sample becomes moist and leave for 24 - 48 hours. (NB. Do not move the tray once the water has been added)
7. When the extraction time has elapsed remove the inner container gently, allowing the water to drain from the sample into the tray.
8. The water in the tray can then be drained off into a beaker or measuring jug and allowed to settle for about 4 hours.
9. After settling, the top of the liquid may be drawn off and discarded, leaving about 50ml (approx. 2fl oz.) of the water nematode suspension.

IDENTIFICATION

A microscope with minimum magnification of x80 and a glass counting dish or petri dish is required.

Mix the water nematode suspension thoroughly and pour just enough into a glass counting dish to cover the bottom. Place the dish on the microscope stage and focus to the bottom of the aqueous layer where the nematodes can be found.

There will possibly be three main types of nematode present in the sample,

1. bacteria feeding nematodes
2. predatory nematodes

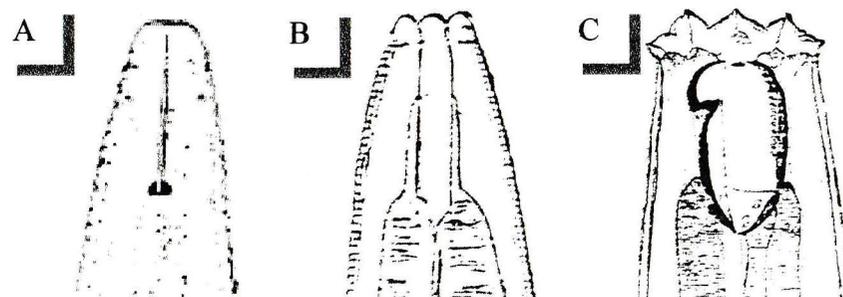
3. plant parasitic nematodes (including *Ditylenchus dipsaci*)

These three families can be differentiated by their mouth parts, their mode of movement, and relative size.

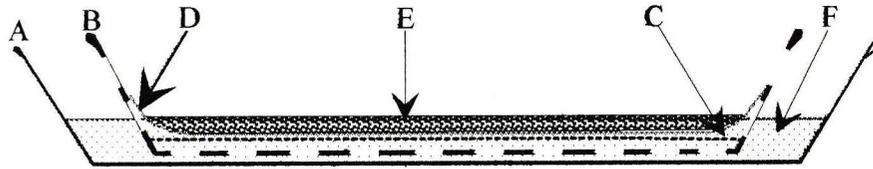
The bacteria feeders are the smallest of the three and are stylised by their rapid thrashing movement left and right in search of food and have a head region similar to that in diagram b.

The predatory nematodes are generally the largest and their activity is typified by sluggish, languorous movements. The mouth is a large cavity like feature in the head region (diagram c.) and this distinguishes them from the plant parasitic nematodes which have a spear like organ called a stylet, terminating in knobs (diagram a.) It is this that pierces the outer layers of the plant and acts like a syringe needle drawing the sap through it. Their relative rate of movement is between that of the bacterial and predatory nematodes.

Identification of nematodes to a stage further than this would require magnification of up to 400 and experienced operators.



If anyone is concerned that they may have a problem, a sample may be sent to the Department of Agriculture via the Horticulture Inspectors or directly to either Dr. S. J. Turner or Mr. T. Martin at Newforge Lane, Belfast BT9 5PX



- A, tray or dish about 45 x 30cm. B, wire letter tray or sieve.
 C, coarse mesh plastic supporting gauze (optional).
 D, Filter tissue or cotton cloth. E, thin layer of soil or chopped
 tissue. F, sufficient water to wet but not flood the sample.

Those Stem and Bulb Nematodes - Again!

Dan McCormick

In the Spring 1997 issue of the *Newsletter*, Alan Bell and Stephen Jess from DANI's Applied Plant Sciences Division described briefly the activities of *Ditylenchus dipsaci*. What the nematodes lack in size, they make up for in numbers and endurance.

Did you see?

Have you seen any signs of them this season? The adults are small thread-like transparent worms which grow to 1.2 millimetres so you don't see individuals without a microscope.

Inspection of leaves and stems

Indications of the ravages of Stem and Bulb nematodes are best detected just after flowering. The nematodes are much more easily detected in foliage than in bulbs. Have you been looking for spickels? They are small local swellings, pale yellow in colour, which contain small breeding colonies on leaves and stems. Just in

case you are feeling satisfied that your stocks are clear, I quote 'the absence of symptoms especially in one-year-down bulbs cannot be taken as a sure sign that a stock is nematode-free'.

Inspection of bulbs

Let's look at bulbs now. Are they all turgid, white, lustrous (pearly) and firm right up to the neck? Yes. Good! Those which are not are suspect carriers of infestation. Heavily infested bulbs are often killed and become completely rotten. Thousands of pre-adult larvae which may form glistening off-white masses, visible on close inspection may sometimes be found oozing out of the base of a rotten narcissus bulb; very bad news for a breeder even if a neighbour has just called with a bulb to enquire Suspect bulbs can easily be cut across to check for discoloured scale tissue or at a more advanced stage 'the brown ring effect'.

Routine control

Hot water treatment is a well-established method of control of nematodes and some other pests which affect narcissi. For stem nematode control just soak the bulbs for three hours in water at 44.4°C or 112°F during the period between lifting and planting. Simple? Of course not!

To minimise the risk of damage and maximise the effectiveness of treatment, special attention should be paid to the stage of development of the bulbs when treated. The order in which different varieties come into flower does not indicate the order in which they should be hot-water-treated. It is suggested that late poeticus types should be treated first followed by short cup, large cup and trumpet varieties in that order.

Warm storage of bulbs at 30°C for a week prior to hot water treatment generally reduces consequent damage to foliage and flowers the following season. This pre-warming increases the

resistance of the nematodes to the treatment but conversely hot-water-treatment at higher temperatures, 46.7°C or 116°F, may be safely used.

Such precision! Just how amateur small scale bulb growers achieve effective results must be of interest to all readers of the *Newsletter*. The Editorial committee would appreciate some notes from readers who practise hot-water-treatment for publication in the next issue; not only on the treatment but also on the equipment which is used or adapted and how temperature control and circulation may be achieved.

NARCISSUS FLOWER BULBS - Final Part

Student Thesis

Chipping

This is a method derived from twin-scaling, but is less critical (Rees, 1992) and is suitable in an on farm situation (MAFF/ADAS, 1985). Instead of the large amount of small bulbils from twin-scaling, chipping and its 8 bulb segments produce new bulbs, which would regain flowering size in two to three years. Bulbs (10 to 12 cm grade) are cleaned free of dry scales, cut into eight or sixteen segments each with a piece of basal plate. After fungal dip the chips can be either direct planted into soil or be incubated. Direct planting should be done in June or July, at a depth of 7.5 to 10 cm (MAFF/ADAS, 1985). For incubation the chips are cut between June and October, are placed in damp vermiculite in plastic bags or trays and are incubated at 20°C for 12 weeks (MAFF/ADAS, 1985). After incubation the chips are planted in the fields. Machines are developed for the chipping, but hand cutting is still commercially used (Lovelidge, 1987).

Micro propagation

Micro propagation is a method of multiplying plants *in vitro*. The work has to be done under laboratory sterile conditions with a high capital input in equipment and running costs. However the costs are balanced by the high rates of multiplication (Rees, 1992). The meristem is isolated from the bulb and placed in culture to grow a lot of undifferentiated tissue, that can later be divided and allowed to form small bulbs. The cultures are grown under controlled temperature and light conditions, and nutrition, hormones and growth factors are added to the substrate (Rees, 1992).

When coming from the laboratory in early spring, February, the plants are grown under cover for a few months and then in the summer treated as any small young bulbs thereafter (Jefferson-Brown, 1991).

Production today

Since the mid 1970s, with its low returns in bulb production, the industry today has undergone marked changes putting it in a much stronger position today (Briggs, 1991). The reason is increased sales of dry bulbs in the retail trade, a strong export market both for dry bulbs and bulb flowers, a much wider range of cultivars and the better ability to improve and maintain quality and health required by the market (Briggs, 1991).

The garden market for bulbs has increased over the last ten years. Also amenity plantings have gained a big interest, publicity founded plantings of daffodils occur in many cities. Exporting has increased over the last years and the major change is in the more specialised varieties, particularly the Cyclamineus group (due to Tete-a-Tete) and the split corona group (with its new cultivars). For export high health stocks and freedom from potato cyst nematode are essential factors. Some countries require field soil testing with total freedom from this pest, while other countries particularly EU countries, only require that the pest is not present

in consignments.

The UK bulb industry continues to keep high interest in the production aspects; health of bulb stock, choice of suitable soils, harvesting-, drying- and storage-facilities and major pest and disease control. The 1990 bulb production in the UK covered 4088 ha with a value of 42mio sfr (AIPH, 1993).

The main production areas in the UK are;

South West England, where growers have increased the range of cultivars for early and late flowering and dry bulb sales.

Eastern England, where bulb production linked to glasshouse flower forcing has reduced as dry bulb sales, pre-packing, export and home sales are now dominant trading activities.

Scotland, where the small area in Eastern Scotland is probably the least affected by serious pests and diseases and income is generated from a combination of late flowers and dry bulb sales (Briggs, 1991).

Narcissus production in Scotland

The production of virus-tested narcissus bulbs in Scotland is supposed to aim to evaluate the benefits of freedom from virus and to assess the practicability of maintaining the health of virus tested narcissus stocks during field propagation. In 1979 the multiplication of virus-free narcissus started and by 1985 bulbs were ready for commercial production.

Virus free mother plants are first obtained by selection, meristem-tip culture and twin-scale method. The bulbils produced are multiplied in vector-proof houses by two cycles of twin-scaling, producing bulbs each year for field production. Nematode vectors are eliminated by using either soil-less compost or soil fumigation with methyl bromide. Aphid vectors are kept away by using a gauze cover of a mesh size which will exclude even wingless aphids. In the field protection from nematode spread viruses is limited by choosing land north of the River Tay, where the nematode vector isn't present for arabis mosaic and strawberry

latent ringspot viruses. To avoid other nematode vectors the soil is first tested for presence of vector nematodes. Soil with the lowest nematode vector count is selected and is fumigated with dichloropropane. To avoid aphid spread viruses, sites with no previous narcissus crop and a 500 metre distance from non-virus tested stocks of narcissus is selected (Mowat et al., 1986).

Trials indicate that virus tested stocks give higher yields and a greater proportion of the premium, larger sized bulbs than commercial stocks (Mowat et al., 1986).

Discussion and Conclusion

For a Swedish student studying this subject the question is would bulb production in Sweden be possible? Sweden imports a lot of flower bulbs, both for garden use and for forcing. Today we have no production at all in the country, but in the old days production of flower bulbs was done. If Sweden should start bulb production it would have to cope with low price material coming from Holland. To be able to cope with this the Scottish virus-free production seems to be the best way of starting up a good and well working production. At home we have got a lot of sandy suitable land and our climate in the south of Sweden is similar to that in Scotland, but dryer. The high technology needed is present both among growers themselves and can be supported from research institutions. As we haven't had any production of bulbs for years the soil may be quite clean from narcissus virus and the pests.

But to make it an interesting crop for farmers and to supply all information needed, a production system closely connected to a university and with governmental economic support is needed.

It seems like a *far-off* dream to start bulb production in Sweden, but when we join the EU a lot of farm land will be taken away from agricultural use and need a new crop. Maybe narcissus production could be an answer!

References

- AIPH (1983). Yearbook of the International Horticultural Statistics. *International Association of Horticultural Producers. Den Haag.*
- Briggs, J. (1991). Forces at work in the bulb world. *Grower*, 14/2: 21-24.
- Horticultural Research International (1993). *HRI Bulb Group*
: *Review of Narcissus R and D.*
- Jefferson-Brown, M. (1991). *Narcissus*. B. T. Batsford Ltd, London.
- Linfield, C. (1987). Permutations to distance basal rot. *Grower*, 27/8 : 23-25
- Lovelidge, B. (1987). From cereals to daffodils. *Grower*, 2/7:12-13.
- MAFF/ADAS (1980). *Stem nematode on narcissus*. Leaflet 460.
- MAFF/ADAS (1981). *Narcissus flies*. Leaflet 183.
- MAFF/ADAS (1985). *Narcissus propagation by chipping*. Leaflet 929.
- Mowat, W.P., Dixon, G.R. and Fordyce, W. (1986).
Symposium on healthy planting material. BCPC Mono, No.33.
- Phillips, S. (1988). A close look at virus. *Grower*, 4/8: 28-29.
- Rees, A. R. (1992). *Ornamental Bulbs, Corms and Tubers*.
Redwood Press Ltd., Melksham. CAB International.
- Sutton, M. and Wilson, F. (1987). Doubling up on daffodils.
Horticulture Week, 7/8:17-18.

The Royal Horticultural Society (1989).

The International Daffodil Checklist,
RHS, London.

Tompsett, A. (1990). Lifting to a deadline. *Grower*, 1/3: 26-27.

Tones, S. (1990). A pest with resistance. *Grower*, 1/3: 28.

This concludes the series of articles which made up the thesis of the third year Swedish student for a B.Sc. Horticulture. The thesis was quite wide ranging and may help to provoke you to give the editorial team your thoughts on some of the aspects covered.

Editor.

JOIN A DAFFODIL SOCIETY

The names and of addresses of Subscription Secretaries are :-

- 1. Northern Ireland Daffodil Group** - Richard McCaw,
77 Ballygowan Road, Hillsborough, Co. Down, N. Ireland
BT26 6EQ.
- 2. The Daffodil Society** - Mrs. J. Petherbridge,
"The Meadows", Puxton, Nr. Weston Super Mare BS24 6TF.
- 3. The American Daffodil Society** - Naomi Ligget,
4126 Winfield Rd. Columbus, Ohio, 43220-4606, U.S.A.

Show Dates 1999

- March 28th . **N.I.D.G. Early Show** - Colemans Garden Centre
2pm. - contact Richard McCaw, 01846 682920.
- April 3rd. **Coleraine** - contact Derrick Turbitt,
01265 833963
- April 10th . **Enniskillen** - contact Brian Donaldson,
01365 341640
- Hillsborough** - contact Hilary Glenn,
01846 699859
- Londonderry** - contact Seamus McCauley,
01504 266869
- April 17/18th **Belfast Flower Show** - Malone House,
contact Richard McCaw, 01846 682920.
- April 24th **Ballymena** - contact Pam Reade,
01266 861030
- May 1st. **Omagh** - contact Noel Thompson,
01662 252553
- May 9th. **N.I.D.G. Late Show** at Brian Duncan Daffodils
contact Richard McCaw, 01846 682920.

Republic of Ireland

- contact Michael Ward, 00353 12 853103

- March 27th. **R.H.S.I. Dublin**
April 10th . **South County Dublin**

R.H.S. London

- contact R.H.S. Vincent Square, 0171 630 7422

- March 16/17th. **Early Daffodil Competition**
April 13/14th. **London Daffodil Show**
April 27/28th **Late Daffodil & Tulip Competition**

BALLYDORN BULB FARM

**Killinchy - Newtownards - Co. Down
Northern Ireland**

Offers new and recent award - winning
introductions and selected seedling stocks

*All cultivars of proven vigour, substance and
purity of colour.*

THE BALLANCE HOUSE



Ideal location for an outing
HISTORIC HOUSE / MUSEUM /
GUIDED TOURS / CRAFT / GIFTSHOP /
TEABARN: *servicing a variety of
traditional and homebaked produce.*

GROUP BOOKINGS WELCOME

GROUP RATES AVAILABLE

OPEN: APRIL - END SEPTEMBER TUESDAY - FRIDAY 11AM - 5PM

SATURDAY & PUBLIC HOLIDAYS 2 - 5PM

OTHER TIMES BY ARRANGEMENT

118A LISBURN ROAD, GLENNAVY, CO. ANTRIM BT29 4NY

TELEPHONE : 01846 648492

HERITAGE TOURIST ATTRACTION OF THE YEAR 1997