

CULTIVATION TRIALS OF TULIPS AND DAFFODILS IN PESHAWAR

by

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Summary. Two thousand bulbs each of tulips (7 varieties) and daffodils (5 varieties) were imported from Holland planted at Peshawar in December, 1976. The objective was to study their performance of sprouting, growth and multiplication. All varieties sprouted and flowered well but susceptibility to damage by nematodes varied. The quality and durability of blooms was good in all varieties except one variety of daffodil. Varieties resistant to nematode attack differed in their multiplication rates.

Introduction. Bulbs of the following varieties of tulips and daffodils were received from Timmers and Leyer of Heemstede, Holland on 9-12-1976:

Name	Number	Description of flower
<i>Tulips</i>		
Blue Parrot	242	Dark blue with fringed perianth
Cordell hull	249	White with red stripes and veins
General Eisenhower	500	Red
Sweet Harmony	243	Lemon yellow
Aureola	249	Red, edged with yellow
Oxford	249	Deep red
Glacier	243	White
Dreamboat	12	Leaves spotted with purple
Margaret Herbst	12	Leaves spotted with purple
<i>Daffodils</i>		
Dutch Master	565	Perianth and trumpet yellow
King Alfred	453	Perianth and trumpet yellow
Mount Hood	360	Perianth and trumpet white
Ice Follies	311	Perianth white, cup broad and pale yellow turning to white
Queen of Bicolors	325	Perianth white, trumpet yellow
Total	4013	

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These bulbs were planted at the Pakistan Forest Institute Peshawar. The area lies in sub-tropical high lands semi-arid zone, with rainfall and temperature averages for the past ten years as follows:

Month	Evaporation (mm)	Rainfall (mm)	Number of rainy days	Temperature °C	
				Mean Max.	Mean Min.
January	50	15	3	17.3	2.3
February	62	47	6	18.2	4.7
March	109	72	7	23.6	9.6
April	209	41	5	39.6	14.6
May	257	25	4	34.5	19.2
June	308	14	1	39.4	24.0
July	261	28	4	36.9	25.5
August	200	74	5	34.6	25.1
September	171	24	3	33.4	20.8
October	127	8	2	30.1	13.2
November	73	15	1	24.7	6.5
December	43	14	3	19.5	3.1
Total:	1870	377	44		

Soil. The soil of the area is alluvial and clay loam in texture and organic matter and nitrogen are deficient. Although total iron content is 82.6 m.e./100gm of soil, its availability is restricted by the high, (30%) free calcium carbonate. Free calcium carbonate has also led to formation of hard pan at varying depths which combined with heavy texture restricts deep root penetration.

Planting. Planting of bulbs was started on the 10th and was completed on the 17th of December, 1976. Bulbs during this period were kept in an unheated room at 10°C to 12.8°. Bulbs were planted in 20cm diameter pots, wooden crates and beds. Potting mixture used for pots and crates consisted of two parts garden soil, one part river sand and one part compost. No fertilizer was added to the potting mixture. Compost was added to the soil in beds at one site, and super phosphate at 9.76kg/100m² and K₂SO₄ at 2.44 kg/100m² was dug into a depth of 203 to 254 cm at the other.

Bulbs were planted over about a 0.5 to 1.0 cm of river sand with their tips 2.5 to 3.8 cm below soil surface. Three tulip bulbs, and one daffodil bulb was planted in each pot. Eight daffodil bulbs were planted in each crate. Only one tulip i.e. Dreamboat was planted in a crate; all twelve bulbs were planted in a single crate. Spacing in beds was 17.8 × 17.8 cm. Details of planting are given below:

Variety	Pots	Crates	Beds	Total
<i>Number of Tulips planted</i>				
Blue Parrot	203	—	39	242
Cordell Hull	219	—	28	247
General Eisenhower	438	—	62	500
Sweet Harmony	198	—	45	243
Oxford	198	—	51	249
Aureola	210	—	39	249
Glacier	204	—	39	243
Dreamboat	—	12	—	12
Margaret Herbst	6	—	6	12
<i>Number of Daffodils planted</i>				
Dutch Master	132	120	310	562
King Alfred	161	48	244	453
Mount Hood	60	56	244	360
Ice Follies	11	50	250	311
Queen of Bicolors	25	56	244	325
Total:	2065	342	1601	4008

*5 bulbs were received crushed in transit.

Irrigation. Pots, crates and beds were irrigated with a rose can when Soil surface appeared dry. No rain was received in December while a total of 51 mm of rain was received in January. February was dry (10mm rain). March was completely dry. 62mm and 25mm rain was received in April and May respectively.

Temperatures at soil surface fell below freezing point for nineteen nights in December, sixteen nights in January and eight nights in February. Lowest minimum of -7°C was reached for four nights in January. Highest air temperature during the growing season was 35.5°C on 2nd April and 35.0°C on 28th April.

Manuring. A 0.64cm top dressing of farmyard manure was given in the third week of January.

Sprouting. Bulbs started sprouting after nearly four weeks of planting in sunny beds and six weeks in beds in shade. Similarly bulbs planted in pots and crates sprouted about two weeks later than those in sunny beds, even when they were placed in a sunny position.

Tulip Oxford and daffodils Mount Hood and Queen of Bicolors were late to sprout, they came up in first week of February, last of all came General Eisenhower in mid-February.

Flowering. Flowering took place normally. It initiated earlier in daffodils than tulips. The earliest variety was Dutch Master which started blooming on 7th of February, it was followed by King Alfred after about ten days. Other three varieties came into flower on the 20th of February. Flowering in pots, crates, sunny beds and shaded beds followed the same sequence as in sprouting. Average height of flower stalk in the earlier two varieties namely, Dutch Master and King Alfred was 46 cm while it was 38 cm in the other varieties. Last daffodil buds opened towards the end of the third week of March. These were on plants in cool beds and crates and pots in shade.

Bulbs of varieties Ice Follies and Queen of Bicolors were single nosed, i.e., with one mature growing point. They produced, therefore, the same number of flowers as the bulbs planted. Other varieties had many two or three nosed bulbs and they yielded a larger number of flowers.

In tulips Aureola was the earliest variety which started flowering on the 3rd of March, it was followed by Sweet Harmony on the 6th, Glacier on the 10th and others in the later part of the second week of March. Blue Parrot had the longest flowering period, its last flowers withered on the 15th of April (in shade).

Average full length of flower stalk was 41 cm in Glacier, Blue Parrot, Sweet Harmony and Cordell Hull while it was about 25 cm in Aureola, General Eisenhower and Oxford. Dreamboat and Margaret Herbst had very short stalks 8 to 10 cm.

Flower quality. Daffodil Queen of Bicolors produced flowers rather inferior to its advertised description. Perianth lobes did not overlap properly, shade of colour was not really striking, flowers were less robust, and faded earlier than other daffodils. Other varieties came true to description. The white varieties were more substantial and more durable than the yellow ones.

Flowers of all tulip varieties developed according to description. All varieties had tall stalks and flowers opened above leaves except Aureola and Oxford, buds of which had a tendency to open while still below leaf tips. Flowers of these two varieties, however, rose higher later on. Colours of all tulips were quite sun-resistant while Blue parrot, Glacier and Sweet Harmony had the most durable flowers which stayed for about eight days.

Post flowering observations. In the first week of April some plants of both the species started yellowing. On being dug up for examination the bulbs were found infested with nematodes. The damaged bulbs were dug out, the soil was hoed up and Terracur and Temik Aldicarb pesticides were applied at the rate of 11.0 kg/hectare.

Lifting and storage. The earliest bulbs to ripen were those of tulips Glacier, Sweet Harmony and Aureola which ripened in the last week of April and were lifted on 30th of April. The last of all bulbs to ripen was Blue Parrot which were lifted in the second week of May. Daffodils had a longer growing season and they ripened in the second half of May, the last being Mount Hood.

The number of bulbs planted and lifted and those damaged are given below:

Variety	Number of Bulbs Planted	Number Lifted		Small Size	Total	Damaged by nematodes
		Full Size	Medium Size			

Tulips

Blue Parrot	242	135	117	550	802	6
Cordell Hull	249	30	—	—	30	230
General Eisenhower	500	198	268	106	572	15
Sweet Harmony	243	90	59	244	393	—
Oxford	249	235	26	74	335	—
Aureola	249	150	181	356	687	10
Glacier	243	203	74	177	454	5
Dreamboat	12	—	—	—	12	—
Margaret Herbst	12	—	4	—	4	8
Total:	1999	1041	729	1507	3289	274

Variety	Number of Bulbs Planted	Number Lifted		Small Size	Total	Damaged by nematodes
		Full Size	Medium Size			

Daffodils

Dutch Master	565	270	—	242	512	106
King Alfred	453	18	6	5	29	404
Mount Hood	360	336	—	74	410	—
Ice Follies	311	288	—	42	330	—
Queen of Bicolors	325	171	—	24	192	133
Total:	2014	1083	6	387	1473	643

Results. Ice Follies and Mount Hood performed the best at Peshawar. They remained unaffected by pests and diseases and increased in number. Although Ice Follies has not increased very much considering the number of bulbs the condition has improved considerably as the bulbs obtained are many nosed with a number of attached bulblets while only single nosed single bulbs were planted. King Alfred and Queen of Bicolors could not take well at Peshawar while Dutch Master can be planted in future if pesticides are applied at planting time.

In Tulips Cordell Hull is definitely unsuited for Peshawar as it was almost wiped out. Sweet Harmony and Aureola remained unaffected while other tulips were damaged only to a small extent. These varieties multiplied while Dreamboat and Margaret Herbst proved to be indifferent.

Relative resistance to pests, among varieties of tulips and daffodils, was clearly indicated in a small experiment. In this experiment bulbs of these flowers were planted in uniformly prepared beds. The tulip bed was planted with three bulbs of each variety while five bulbs of each variety of daffodils were planted in another bed. Irrigation weeding and hoeing were carried out uniformly in both the beds. Sprouting and flowering was normal in both cases. After flowering, however, different varieties performed differently. Consistent with observations at other sites it was the tulip Cordell Hull which was damaged while King Alfred and Queen of Bicolors were the daffodils which were badly damaged.

Month	Temperature		Rainfall (mm)	No. of rainy days	Snowfall (cm)	No. of snowy days	Mean relative humidity (%)
	Max. (°C)	Min. (°C)					
August 1976	32.1	11.2	3.33	3	—	—	31.7
September	27.3	7.9	14.70	9	—	—	30.0
October	21.4	3.2	0.51	1	—	—	25.0
November	12.2	-3.2	—	—	—	—	22.0
December	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
January 1977	6.3	-9.2	—	—	93	8	24.0
February	11.0	-4.2	—	—	—	—	25.0
March	13.2	1.0	1.53	3	—	—	27.0
April	18.0	4.2	12.70	8	—	—	32.0

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