POSSIBILITIES FOR EXPANSION OF ONION CULTIVATION IN THE NORTH & EAST OF SRI LANKA

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Ecology

Onions can be grown in a wide range of climatic conditions but they prefer a mild climate without excessive rainfall or great extremes of heat and cold. Cool conditions with an adequate moisture supply are most suitable for early growth, followed by warm drier conditions for maturation, harvesting and curing.

The production of bulbs is controlled by photoperiod and temperature. Very short photoperiods discourage bulbing. The critical day length varies from 11-16 hours, depending on the cultivar. Higher temperatures favor bulbing at the time of minimum photoperiod.

Grown on a wide variety of soils, onions do best on friable loams and alluviums. Free drainage and the presence of organic matter favors production. Sandy soils need high and frequent irrigation. In general therefore, sandy loam to clay loam soils are recommended for onion cultivation. The pH requirement is 5.8-8.0 with the optimum being 6.0-7.0.

Onion Production - Nationally and in the North & East

The North & East contributed 75 percent of the national annual production of red onions and more than 25 percent of big onions from 1982 to 1989 (Table 1).

Table 1. Total extent and production of red and big onions nationally and in the North & East.

	Extent ('000 ha)			Production ('000 mt)		
	Total	N & E	%	Total	N & E	%
Red onion						
Maha	5.74	3.32	58	55.23	41.28	75
Yala	5.46	3.85	71	59.34	45.54	77
Total	11.20	7.17	64	114.57	86.82	76
Big onion						
Maha	0.067	0.016	24.9	0.617	0.144	23.4
Yala	0.871	0.248	28.5	8.548	2.474	28.9
Total	0.938	0.264	28.2	9.165	2.168	28.6

Extents of Red and Big Onions in the North & East

Tables 2 and 3 show the planned distribution of red and big onion extents for 1988/89 in the North & East.

Table 2. The distribution of red onion extent planned for the eight districts of the North & East, 1988/89.

Districts	Season	Rainfed (ha)	Irrigated (ha)	Total (ha)	Year	%
Trincomalee	Maha	190	60	250		
	Yala	-	145	145	395	5.2
Mullaitivu	Maha	-	40	40		
	Yala	-	900	900	940	12.4
Mannar	Maha	-	15	15		
	Yala	-	30	30	45	0.6
Vavuniya	Maha	-	-	-		
	Yala	-	435	235	435	5.7
Kilinochchi	Maha	-	55	55		
	Yala	-	285	285	340	4.5
Jaffna[1]	Maha	400	2,030	2,430		
	Yala	-	2,020	2,020	4,450	58.0
Amparai	Maha	40	-	40	-	-
	Yala	-	35	35	75	1.0
Batticaloa[2]	Maha	280	220	500	-	-
	Yala	-	380	380	880	11.6
TOTAL	Maha	910	2,420	3,330	3,330	44.0
	Yala	-	4,230	4,230	4,230	56.0
	Year	910	6,650	7,560	7,560	100.0

[1] 125 ha and 645 ha of the extent in the Maha and Yala seasons, respectively, are planted in paddy lands

[2] Cultivation in Yala season is mainly in tank beds

Tables 3. The planned distribution of big onion extents (ha) for 1988/89 in the North & East.

Districts	Season	Rainfed	Irrigated	Total	Year	%
Trincomalee	Maha	–				
	Yala	–	6	6	6	2
Mullaitivu	Maha	–	–	–	–	–
	Yala	–	100	100	100	33
Mannar	Maha	–	–	–	–	–
	Yala	–	–	–	–	–
Vavuniya	Maha	–	–	–	–	–
	Yala	–	60	60	60	20
Kilinochchi	Maha	–	–	–	–	–
	Yala	–	45	45	45	15
Jaffna[1]	Maha	–	–	–	–	–
	Yala	–	90	90	90	30
TOTAL	Maha	–	–	–	–	–
	Yala	–	301	301	–	100
	Year	–	301	301	301	100

[1] Nearly all Yala cultivation is on paddy land following a rainfed Maha rice crop

Monthly Planting and Product Availability in the North & East

Table 4. The average extent planted (ha) and product available (mt) of red and big onion in the North & East, 1988.

Month	Red onion		Big onion	
	Average extent	Product available	Average extent	Product available
Jan.	1,640	580	–	–
Feb.	150	5,295	–	–
Mar.	40	12,155	–	–
Apr.	550	18,870	30	–
May	1,442	1,660	75	–
June	1,476	460	151	–
July	618	6,120	45	–
Aug.	27	16,078	–	305
Sep.	–	16,460	–	7,610
Oct.	52	6,890	–	1,535
Nov.	475	300	–	455
Dec.	1,090	–	–	–
Total	7,560	84,868	301	3,055

Table 5. Monthly availability of red and big onions nationally and from North & East, 1988.

Month	Red onion			Big onion		
	Total product available (mt)	Contribution of the North & East (mt)	%	Total product available (mt)	Contribution of the North & East (mt)	%
Jan.	1,000	580	58.0	-	-	-
Feb.	10,000	5,295	53.0	-	-	-
Mar.	19,000	12,155	64.0	-	-	-
Apr.	29,000	18,870	65.0	-	-	-
May	2,000	1,660	83.0	-	-	-
June	1,000	460	46.0	-	-	-
July	9,000	6,120	68.0	-	-	-
Aug.	25,000	16,078	64.3	998	305	30.5
Sep.	25,000	16,460	65.8	2,495	761	30.5
Oct.	8,000	6,890	86.0	4,490	1,533	30.7
Nov.	900	300	33.3	1,497	457	30.5
Dec.	-	-	-	-	-	-
TOTAL	129,000	84,868	65.3	9,980	3,056	30.6

Note: The 1988 contribution of the North & East declined due to the unstable situation in the region but is expected to return to the pre-1988 position in the near future.

Overall Product Availability and Demand

The country is approaching self sufficiency in red onions while big onions are imported to meet the deficit.

The Cooperative Wholesale Establishment is responsible for importing and distributing big onions (Table 6).

Table 6. The quantity and value of big onions imported, 1987-1989.

Year	Quantity imported (mt)	Value (Rs '000,000)
1987	239,275	379.4
1988	34,642	359.6
1989[1]	21,278	247.6

[1] January-September

The total supply of onions in the country during 1987 (the latest year for which production data is available) was approximately as follows:

Local production

Red onion	112,600 mt
Big onion	4,000 mt

Imports

Big onion	24,000 mt
Total	140,600 mt

The total supply included the quantity of red onions used as planting material. This amounted to 27,500 mt (11,002 ha at a planting rate of approximately 2.5 mt/ha) or 24 percent of the total supply.

Demand estimates based on consumption parameters such as income elasticity are necessarily less than estimates based on nutritional requirements. The base line survey on cultivation of subsidiary food crops carried out by the Division of Agricultural Economics and Projects (DAEP), under the Diversified Agriculture Research project (DARP) has indicated adequate expansion potential for onion in the country.

The demand and supply balance of onions based on a medium level of population growth, as worked out under the above survey, indicates that the percentage difference between expected supply and expected demand will be + 24 and + 30 for 1990 and 1992 respectively (unpublished data).

Strategies to Meet Expected Demand and Ensure Year Round Supplies

The following strategies are recommended to meet expected demand:

a) Expand the area under cultivation by extending cultivation to non-traditional soil types.

b) Plant on drained soils of the coastal belt during the off-season.

c) Recommend red onion varieties which have different times of planting.

d) Provide storage facilities to absorb surplus production during the harvest peak.

e) Provide support prices for off-season production.

f) Arrange for reliable markets at reasonable prices.

g) Provide farmers with assistance to sink open or tube wells for lift irrigation and to purchase simple power irrigation pumps, sprayers etc.

h) Include onions in the agricultural insurance scheme.

i) Provide cultivation loans under the agricultural credit scheme.

j) Expand research on production of true seed of big onion.

k) Conduct research on methods and means of cheap-farm storage

The Potential to Expand Acreage and Production in the North & East

There is ample opportunity to expand onion cultivation in traditional areas and to extend it to new areas and soil types, especially along the coastal belt.

Recent experience has shown that:

a) Excessively drained soils of the coastal belts are suitable for red onion production during September-December if organic matter is added.

b) Big onions can be grown successfully from dry sets during Maha, particularly in the coastal belts, if they are planted by late November or early December.

If the proper conditions for enhanced farmer response are provided the following additional extents could be brought into production by 1992:

a) Red onion

- in coastal belts: 1000 ha in both Maha and Yala
- on tank beds: 250 ha in Yala season

b) Big onion

- in paddy fields: 250 ha in Yala season
- area to be brought under production of dry sets in Yala season for planting in late Maha season: 250 ha
- extent cultivated with dry sets in late Maha season: 100 ha

It is likely that additional acreage in the traditional highland allotments of the major red onion producing districts (Jaffna, Mulaitivu and Vavuniya) could be brought under cultivation during the regular planting seasons. Such an increase would also include acreage resulting from increased cropping intensity - some farmers are already growing three crops a year, particularly in the Jaffna District. Such increases would certainly be influenced by adequate prices for onions. A conservative estimate of increased onion extent in this context would be 400 ha by 1992. Thus, the total additional crop extent envisaged in the North & East by 1992 would be 3000 ha annually (2650 ha of red onion, 350 ha of big onion), increasing production by approximately 30,000 mt.

At this juncture, I would like to focus attention on a recent decision by the Northern Region Technical Working Group to determine the characteristics of red onion varieties being cultivated in the North and to initiate research on the relationship between time of planting and variety in order to determine the best combination for optimum yield. Accordingly, the Deputy Director (Research) of the Northern Region has authorized the screening of varieties at the agricultural research stations at Thinnevely and Jaffna and time of planting trials at the Kilinochchi RARC.

Four varieties of red onion are being cultivated in the North:

a) Jaffna local: 60-65 days crop
b) Vallarai 60: - do -
c) Vethalam: 70-80 days crop
d) Vallarai 90: 80-90 days crop

Time of planting trials have been conducted on these four varieties for one year, beginning May 1988. Observations recorded at the Kilinochchi RARC indicate that there is a definite linkage between yield and date of planting. The best yields were obtained with the following planting times:

a) Jaffna local - February, May, August (15-16 mt/ha)
b) Vallarai 60 - February to August (15-20 mt/ha)
c) Vallarai 90 - August (42 mt/ha)
- February to July (20-29 mt/ha)

September to December plantings produced low yields, although Vallarai 90 yielded 8-10 mt/ha. November plantings resulted in the lowest yields (<3 mt/ha) for all four varieties.

After optimum planting times are determined, a system of seed bulb production will have to be undertaken to meet seed requirements for specified dates of planting.

Similar trials should be conducted on the islands off Jaffna Peninsula, the sandy loam belts of Nilaveli in the Trincomalee District, and the regosol belts of the eastern coasts of Jaffna and Batticaloa Districts.

At the instigation of the Northern Regional Technical Working Group, studies have been initiated on the potential for Yala production of dry sets of various cultivars. The objective is to cultivate big onions during the off-season (late Maha), particularly in the islands and coastal areas.

A start has already been made in the Jaffna District where big onion is cultivated from dry sets during late Maha in the regosol belt of the eastern coast. Planting is done in late November/early December to coincide with the period when red onion performs poorly. The Extension Division began a demonstration program during Maha 1989/90.

Large-scale cultivation of big onion on raised beds is planned for late Maha using true seed and prophylactic measures against possible incidence of purple blotch. Production of true seed from dry sets planted during November/December shows promise in the Jaffna District. Seedlings grown from true seed produced by farmers in the

Navaly, Manipay and Ampan areas have been used to establish large-scale Yala crops in paddy fields. Research on production of true seed of big onion will reduce imports and result in extensive savings in foreign exchange.

Summary

1. There is significant potential for expansion of both red and big onion in the traditional areas of the North as well as in new areas of the North & East.

2. The major agro-ecological parameters (soil type, rainfall distribution, temperature and photoperiod) do not limit successful expansion of red and big onion cultivation in this region.

3. Successful expansion of these crops in the North & East to meet an estimated increase in production of 30,000 mt by 1992 depends largely on the steps taken by state and provincial administrations, especially in regard to points d) to k) in the section on Strategies to Meet Expected Demand (page 42).

4. The baseline survey conducted by the DAEP/DARP provides ample evidence of the potential for adequate investment on the aspects referred to in #3 above.

5. Let us all strive to attain self sufficiency in both red and big onion by 1992 and at the same time enhance the lot of Sri Lanka's onion growers.

Literature Consulted

1. Purseglove, J.W. Tropical Crops - Monocrops.

2. Associated Agricultural Publication Development Foundation. Onion production in India.

3. Bansil, P.C. Ceylon Agriculture - A Perspective.

4. Baseline survey on SFC cultivation in Sri Lanka - DAEP/DARP, Department of Agriculture, Peradeniya

5. Agrarian Research and Training Institute. Food commodities bulletin. Colombo.

6. Data from Deputy Director (Research), RARC, Kilinochchi (Unpublished)

7. Padmanathan, S.T. 1984. Red onion production - marketing problems and performance in Sri Lanka.