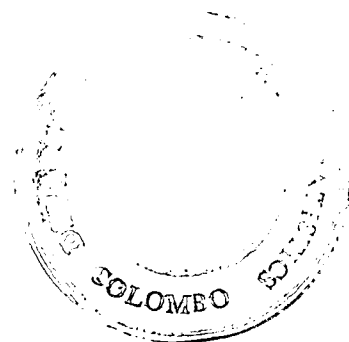


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*Alternative Methods in Estimating
Average yield of Potato
And
Some Practical Difficulties*

BY

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Ministry of Finance and Planning*

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Preface.

The decline of the extent and production of potato during the last two years has become a serious issue among politicians and planners who are concerned about the agricultural sector. As a result of the introduction of new economic allied import policies, this has become a burning issue among growers engaged in potato cultivation in NuwaraEliya and Badulla districts. They often claim that their economy has adversely affected due to imports. In order to find a solution to this problem the policy makers have been requesting reliable estimates on local production of potato prior to the harvest. If they have such information they can decide when to import and the required quantities without penalizing the farmers as well as consumers.

On the other hand the Department of Agriculture has been implementing various type of extension programs to improve the productivity by introducing new technologies and management practices. They need the accurate data on yield even by respective farms, in order to evaluate the effectiveness of their efforts. Having recognized the data needs the Department of Census and Statistics has initiated some statistical programs to cater to their needs.

It has also been identified the information gaps, limitations and obstacles affecting the provisions of such information quickly and accurately. Therefore, the measures are to be taken to improve the methodologies as to produce quick and fairly accurate estimates.

In this connection Mr. A.M.U. Dissanayake, Deputy Director in-charge of Agriculture and Environment statistics Division of the Department has expressed some useful views in this paper in estimating the average yield of potato. Mr. Dissanayake's contribution in this regard is commendable. There has not been any studies in methodological aspects carried out so far in Sri Lanka for this crop at-least for references purposes. While congratulating him for his efforts I would like to thank all other officials who have contributed in various capacities to make this study a success.

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04 January 1999.*

Acknowledgement

This output would have not been materialized if many individuals had not rendered their unstinted cooperation to me. As it is not possible to mention all of them, I wish to note some of them who have contributed from the beginning to the conclusion of this study. Mr. J.M. Wijekoon, Statistical officer in-charge of Statistics Branch, District Secretariat, Badulla at the request divisional authorities of the Department of Agriculture (DA) to develop a methodology to estimate the average yield of potato has sought my assistance. This encouragement of Mr. Wijekoon and his active role to conduct the study with the generous support of Range Statistical Investigators in Badulla district and the assistance given by Agriculture Instructors in Badulla district lead by Ms. Lalitha Edirisinghe Assistant Director of Agriculture, Welimada range and Mr. Nimal Bandara, Deputy Director of the DA is greatly appreciated.

Also I hereby recognize the valuable assistance rendered by Ms. D.D.M.V. Perera, Statistician of the Agriculture and Environment Statistics Division throughout this study by actively engaged in drafting of the questionnaire and related activities.

Statistical Investigators namely Ms.P.H.Walpita and Mr. S. Theivaseelan were responsible for the supply of additional statistical data and graphs required to prepare this paper. The assistance given by Statistical Investigators viz. Mrs. M. A. P. Wickrama (Welimada), Mr. R. M. Gunapala (Uva Paranagama), Mr. K. U. B. Marambe (Bandarawela), Mr. K. Marasinghe (Haliela), Mr. W. A. D. S. U. Weerapperuma (Haputale) and Agricultural Instructors namely Mrs. W. M. Malanie Bisomenike (Ambagasdowa), Mr. M. B. Keerthisinghe (Uva Paranagama) in conducting the sample experiments is greatly appreciated. I should thank Mr. A..J. Satharasinge and Mr. J. Dodangoda, Statisticians for the nice design of cover page and correction of manuscript of this paper.

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A.M.U. Dissanayake

1. Introduction:

The importance of "Potato" (known by the botanical name "Solonum Tuberosum") as one of the tuber crops in the Sri Lankans' food basket is being increased day by day. This crop is grown as a high value cash crop in the districts of Nuwara Eliya, Badulla and Jaffna. Specially the places like Keppitipola, and Boralanda, (Welimada D.S) Medawela and Uduhawara (Uva Paranagama D.S) Etampitiya (Haliela D.S) in the district of Badulla and places like Seethaeliya and Meepilimana (Nuwara Eliya D.S) Kudaoya (Kotmale D.S) Ragala (Walapane D.S) in the district of Nuwara Eliya, are very popular for potato cultivation.

The cost of production survey conducted by the Department of Agriculture 1996/97 Maha season reveals that the gross profit excluding

imputed cost, a farmer can obtain by cultivating an acre of potato is about Rs. 20,000.00 in Badulla and the corresponding figure for Nuwara-eliya is about Rs.46,000.00.

Prior to the internal conflict, the farmers in Jaffna district had cultivated potato intensively. However, the cultivation of potato in Jaffna district has been adversely effected due to the prolong internal conflict and it is understood that the cultivation has not yet become normal. During the year 1977 the total extent cultivated in Badulla, Nuwara-eliya and Jaffna districts was reported as 3,000 hectares out of which about 16 percent reported in Jaffna district. In 1987 the corresponding percentage for Jaffna district was less than 1 percent out of the total extent of about 7,000 hectares in those districts.



Table 1. Cost of cultivation and income of potato per acre (1996/97 Maha)

<i>District</i>	<i>Gross Income Rs.</i>	<i>Gross Expenditure Rs.</i>	<i>Gross Profit Rs.</i>
<i>Badulla</i>	<i>94,800.00</i>	<i>73,949.00</i>	<i>20,851.00</i>
<i>Nuwaraeliya</i>	<i>165,760.00</i>	<i>119,801.00</i>	<i>45,959.00</i>

*Source: Cost of Cultivation of Agricultural Crops – 1996/97 Maha –
Dept. of Agriculture*

2. Background of the study

Timely and accurate estimate on the local production of potato has become very important as to maintain a reasonable price level in the domestic market, in one way to protect the consumers and on the other to protect farmers enable them to receive a reasonable income for their produce. This is very important as to decide when to import the potato avoiding adverse effect on the local producers. Therefore, to make available timely and accurate estimate on the domestic production is the responsibility of Department of Census & Statistics (DCS) being the main data producer for the government. So, it has been becoming a growing importance and a great challenge to DCS to produce required information and be an active

member of the agricultural development process.

Unlike in the past, the present scenario is to provide data prior to the harvesting in a form of a forecast rather than just supply of time-lag data. At the time of harvest or subsequently the information on the production of potato was made available by DCS till 1996. Recognizing the importance of the data need the agriculture and Environment Statistics division of DCS has drawn up a program to make available a forecast on the extent and production of potato prior to few months of the actual harvest. This procedure of dissemination has been integrated to the current statistical system.

However, such procedure also involved some limitations, because these information are being made on the average yield estimates based on the crop outlook on the growth judge by the farmers.

Basically, there are two approaches to estimate the average yield and production of crops.

1. Objective
2. Subjective

Both these procedures are carried drawbacks as well as advantages.

If the estimates are made through objective approach, it needs to adopt a method to report the actual output by conducting the actual experiment in the field. It means that it needs trained enumerators physically to measure the area and output. Therefore, it becomes costly as well as time consuming. But the most advantage is that the ability to determine the accuracy of the results. Estimates based on objective measurements are generally accepted as far superior than the other methods.

However, if it is to apply the subjective procedure, it is possible directly to interview the farmers and record whatever the average yields reported by them, so that the procedure itself is very simple, less-expensive, and less time consuming. But the accuracy of the data is

questionable. Which means that the response of the farmers tends to be either over estimate or under estimate.

Therefore, the selection of the better estimation procedure is to be decided considering the following criterions.

- (a). Accuracy
- (b). Time
- (c). Cost
- (d). Availability of resources
(personnel and equipment)
- (e). Practicability
- (f). Use

However, there is no universally accepted system to recommend which procedure is to apply. The choice depends upon the environment where we are working.

(3). Objectives:

The main objective of this exercise is to evolve a suitable methodology to estimate on the average yield per hectare of potato and the production.

However, in the pilot study that was programmed was not expected to define hard and fast rules and describe all steps exactly to be followed as there was no survey ever been conducted in this nature for references. As such, it was expected to keep the exercise more flexible way and to find out a better system subject to be revised during the field experiments. Therefore it was planned to test procedures in multiple ways in the field before the final decisions are made.

The steps that to be further considered were as follows.

- (1). Number of experiments that are to be conducted in a parcel.*
- (2). Number of plants/bushes that are to be uprooted/harvested.*
- (3). The size of the plot to be demarcated on the ground in order to estimate the number of plants grown in a hectare/acre.*
- (4). Procedure of numbering the plants in the selected bed/liyadda.*
- (5). Procedure of numbering beds/liyadda for the selection of beds/liyadda.*

In order to evolve a methodology to estimate the average yield per acre, an attempt was made in Badulla district during Yala 1998 by conducting a few objective type experiments. Those were carried out in sample plots with the active Cooperation of field Statistical Investigating Officers (SII), District Statistical Officer (DSO) of DCS and Agricultural Instructors (AII) and Deputy Director, Department of Agriculture in Badulla District.

Unlike the other crops in the field of Agriculture in Sri Lanka, potato being a tuber crop has somewhat easier procedure to adopt in the "crop cutting" methodology.

However, the adoption of this so-called "crop cutting procedures" and producing of accurate estimates are very much easier, if the following conditions are satisfied.

- 1. Farmer/Enumerator able to determine the exact physical area planted/cultivated.*
- 2. Landscape of the parcel/farm is flat*
- 3. Plants are cultivated in the farm systematically.*
- 4. Single variety of seed is used in the farm.*

In practice especially in Badulla and Nuwara Eliya districts, the above hypothetical situation doesn't exit. It has been observed that the following situation against these conditions.

(a). Extent of parcels (farm).

Parcels are not cadastraly surveyed, even if the total physical area could be determined, the actual area cultivated is different from the total.

(b). Topography or landscape in the farm

Especially in the case of shape of lands (parcels) in Badulla & Nuwara Eliya districts are irregular and the topography is widely varied on the ground in a farm. Potatoes are cultivated in both dry and wet form of terrace lands. As such the beds that are being used to cultivate potatoes also seems to be irregular shape.

(c). Cultivation practices.

This is varied from farmer to farmer. For instance in the plots that were demarcated with the size of 2.5 x 2.5 meters, the number of plants observed were in the range of 40 – 60. Also the breadth of the ridges also varied from parcel to parcel.

(d). Variety of seed

It was found in one parcel a portion of land cultivated with one variety of seeds while in another portion was grown another variety.

So one could imagine that the problem when all the above conditions are mixed up in one farm. However only favorable situation is that the Potato crop is destroyed in the first harvest.

(4). Methodology

The enumerators (Range SII) lead by District Statistical officer (DSO) was trained in a workshop to carry out the sample experiments followed by and a field demonstration. This workshop was arranged on 12th September 1998 in Agricultural Training Institute at Bindunuwewa, Bandarawela. A questionnaire was designed to obtain information required for four methods simultaneously. (Specimen attached).

Note: In all steps for the selection of the sample plots and sample plants were done using simple random sampling technique (s.r.s).



Method 1.

** Estimate based on the yield of 9 sample plants identified in three sampling plots and the number of plants counted in two sampling plots.*

** Size of sample plot (2.5 x 2.5 meters)*

Required information (variables)

- (a) Total yield of uprooted plants (y).*
- (b) Number of uprooted plants (n).*
- (c) Number of plants in two sampling plots B.*
- (d) Inflation factor (inf.)*

(Reciprocal of the fraction of experimental plot in terms of hectare) for eg. If two plots of size 2.5 X 2.5 is harvested the fraction is 1/800. Then inf. is 800.

Average Yield kgs. Per hectare

$$\bar{y} = (y/n) (B \times \text{inf.})$$

Experience:

Number of plants grown from place to place are widely varied as a result of the variation of planting practice that was found even within a bed. Therefore, if plants are cultivated systematically with keeping equal distances from one plant to another, this method is more practical and suitable. Otherwise a greater implication has on the factor B given in the formula.

Method 2.

** Estimate based on the harvest of two experimental plot of size 2.5 x 2.5 meters.*

Required information

- (a) Total yield of plants with in the experimental plots (Y)*
- (b) Inflation factor (inf.)*

Average yield kgs. per hectare.

$$\bar{y} = (Y \times \text{inf.})$$

$$\bar{y} = Y \times 800$$

Experience:

This is one of the most simple methods that any one could apply if he decides the size of the plot and aware of the fraction i.e. inflation factor. One practical difficulty was demarcating of rectangular plots with in small terrace beds/liyaddas in parcels. Also this method carries all other drawbacks involve in the application of crop cutting procedures in the plots such as proper demarcation, exact measurements, sorting of the exact number of plants to be inside the plot, etc. The reluctance of farmers for uprooting a large number of plants by enumerators would be an another problem.

Method 3.

** Estimate based on the yield of sample plants and number of plants per hectare on the basis of farmer's response on "extent under potato cultivation".*

Required information

- (a) Total yield of uprooted sample plants (y)
- (b) Number of uprooted plants (n)
- (c) Total number of plants in the parcel (N)
- (d) Total potato area of the parcel in sq.: meters (A)
- (e) Number of sq. meters per hectare

Average yield kgs. per hectare

$$(\bar{y}) = (y/n) \times (N/A) \times 10000$$

Experience:

The reliability of the estimator is greatly depend on the quality of the parameters such as total number of plants (N) and cultivated area under potato (A) responded by the farmer. Here the experience is such that the farmer is able to exactly response to the number of plants that he planted in his farm but not to the actual area under cultivation.

Method 4.

** Estimate based on the yield of sample plants and number of plants per hectare on the basis of enumerator's estimate on "extent under potato cultivation".*

Required information:

- (a). Total yield of uprooted sample plants (y)
- (b). Number of uprooted plants (n)
- (c). Total number of plants in the parcel (N)
- (d). Estimated potato cultivated area of the parcel in sq.: meters \hat{A}
- (e). Number of sq. meters per hectare. (10,000 square meters equivalent to one hectare).

Average yield kgs. per hectare

$$(\bar{y}) = (y/n) \times (N/\hat{A}) \times 10,000$$

Where \hat{A} is the estimated total area under potato in square meters. It should be estimated by the enumerator as follows.

$$\hat{A} = ((N)/(40 \times R)) \times 10,000$$

Where 40 is the recommended amount of seed per hectare i.e. 40 cwt. or 2,000. Kgs.

Where R is the number of plants per cwt. (50 Kgs) obtained by the farmer. This figure is varied between 900 – 1,200 plants per cwt..

Then the Simplified formulas are given viz.

(a). Average yield kgs. per hectare

$$(\bar{Y}) = (y/n) \times N/\hat{A}$$

(b). Average yield kgs. per hectare

$$(\bar{Y}) = (y/n) \times (40 \times R)$$

Experience:

By definition it looks that the methodology is somewhat complicated but the result obtained through this procedure is found to be more accurate compared to other methods explained in this paper. The average number of seeds or bushes that can be expected for one cwt. (50 kgs.) is 900. However, in practice the farmers used to select bigger seeds and cut each of them in to two pieces whereby they can obtain up to maximum of about 1,200 seeds from one cwt. Therefore, the use of estimator for \hat{A} is more appropriate.

The sensitive parameters that have implications on the accuracy of the estimator are the average yield per plant and the average number of plants grown per hectare according to the cultural practices of the potato growers. By selecting three sets, each set containing three bushes in three different locations selected randomly was found to be more appropriate and also practical in the pilot exercise.

However, to estimate the number of plants per hectare or actual potato cultivated area was not an easy and simple task. These were tested under the following conditions.

- (a). Number of plants observed in the demarcated sample plots.
- (b). Number of plants cultivated by the farmer.
- (c). Response obtained from the farmer on the area under potato cultivated by him.
- (d). Estimated area cultivated on the basis of recommended seed rates per hectare and actual number of seeds obtained by the farmer.

Out of the above conditions the estimator through (d) seems to be more accurate than other methods considering the responses that were obtained in the pilot study.

(5). Yield Rate

The general practice among farmers to express the expected or actual production obtained is in-terms of a rate. Which means that the total production of the parcel against the amount of seed used. In-order to cross check the average yield estimated by different methods explained here, the rate could be calculated viz.

Yield Rate

$$(R) = (\bar{y}/40) \times (2.204/112)$$

(6). Discussion:

Some of the reasons that hindered to make available required data in time and accurately is the difficulties of estimating of crop variables due to the complicated nature of growing patterns, practices, not conditional to seasons, etc. As it is noted earlier only advantage of potato crop for application of crop-cutting procedure is that the potato plant yields only once and destroyed it at the first harvest.

An application of each method explained in this paper may have advantages and disadvantages in terms of cost, accuracy and feasibility. Therefore, the selection of a suitable method depends upon the above criterion.

For instance the application of method 2 is not feasible in the field as the farmers are reluctant to allow uprooting of plants in a large area. On the other hand to do so the enumerator has to seek assistance of a labor. Therefore, the method seems to be time consuming and expensive.

Also, the estimated number of plants for an acre/hectare on the basis of method 1 would be highly exaggerated as the observation plot usually tends to be net area which excludes bounds. For instance the recommended number of plants per hectare is about 40,000 according to the Department of Agriculture whereas in the observation plot (2.5 x 2.5 Sq m) the average number of plants observed were about 48. On this basis the estimated number of plants per hectare would be around 75,000. This is why the estimated average yield through method 1 gives higher estimates compare to method 3,4 and actual estimate. The similar implications are seen in the estimates through method 2 also, as the produce of the observation plot is related with the concept of net area. By this we can conclude that estimates of method 1 and 2 are inefficient in estimating the average yield of potatoes.

On the other hand the accuracy of each method could be maintained by designing a better sampling procedure and increasing the size of the samples. However, the challenge of a survey statistician is to reduce the precision

by designing or developing a methodology that is suitable to work under the actual environment but not in the "hypothetical" or "controlled" atmosphere in a laboratory.

Sample Results

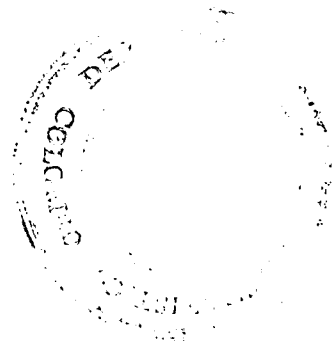
Sample No.	Yield of Sample Plants grams			Total Yield grams	Average Yields grams	Total No of Plants	Area Square metres	Number of plants in the sample plot		Total	Yield of two plots Kgs	Seed Rate	Estimated Area Sq metres	Estimated yield by Methods Kg per Hectare				\bar{Y}
	y1	y2	y3	y	(y/n)	N	(A)	b1	b2	B	Y	R	A	M1	M2	M3	M4	
1	650	740	670	2060	228.9	6000	1518	52	41	93	21.3	1000	1500	17029	17040	9047	9156	
2	590	890	1050	2530	281.1	9000	2530	48	52	100	24.7	900	2500	22489	19760	10000	10120	
3	1010	540	1040	2590	287.8	11400	3036	47	52	99	23.7	950	3000	22792	18960	10806	10936	

11

Comparison of Estimated Average yield per hectare on the basis of actual yield obtained by farmer against alternative methods

Actual Yield Kgs	Estimated Average Yield Kg per Hectare		Estimated yield by Methods Kg per Hectare			
	on the basis of A	on the basis of \bar{A}	M1	M2	M3	M4
1212.5	7987	8083	17029	17040	9047	9156
2175.0	8597	8700	22489	19760	10000	10120
3187.5	10499	10625	22792	18960	10806	10936

* Actual Yield - Total actual yield of the parcel obtained by the farmer



**Estimating of Average yield of Potatoes
Badulla District – 1998 Yala**

(1) D.S. Division :-

--	--

(2) G.N. Division

--	--	--

(3) Name of the farmer , Address :-

(4) Type of land: 1. – Highland / 2. –Wetland (Paddy land)

--

(5) Total area of the Parcel

(6) Potato cultivated area in the parcel

A	R	P

6a. Area in Square meters

--

'A'

Conversion table to estimate (A)

1 perch = 25.3 square meters

1 rood = 1,012 square meters

1 acre = 4,048 square meters

1 hectare = 10,000 square meters

(7) Number of plants in the parcel

--	--	--	--

'N'

7.a. Seed rate (Number of seed in 1 cwt. obtained by farmer)

--	--	--

'R'

(8) Number of Beds

--	--	--

(9) Three selected Random Numbers to identify the Beds

RandomNo.

No. of plants

(10) Three selected random numbers for uprooting

(1)			
(2)			
(3)			

One set should contain three plants. Selected number should be in the middle. If a corner number selected, uproot another two bushes on the left or right side

(11) Yield (Kgs.) of uprooted plants

Set # 1

Set # 2

Set # 3

Total

Kgs.		grams	

'y'

(12) No. of plants within the plot of 2.5 X 2.5 meter block

'b1'			
'b2'			
Total number of plants in both blocks			

'B'

(13) Total yield of Block 1 (2.5 X 2.5 meters)

Total yield of Block 2 (2.5 X 2.5 meters)

Total Yield in both blocks

Kg		grams	

'Y'

Name of the Enumerator:

Address:

Date of Harvest:

Signature:

METHOD 1

(14) Average yield (Kgs.) / Hectare
 Estimated Average yield per hectare (Kgs.)
 $(y/9) * B * 800$

Where
 y = Total yield of uprooted plants
 n = Number of uprooted plants
 B = Total number of plants in both 2.5 X 2.5 meters blocks

14.a Average yield per hectare M 1 Kgs.

y 'B'
 n 9 x x 800

METHOD 2

(15)
 Estimated Average yield per Hectare (Kgs.) Y X 800 'Y' X 800

15.a Average yield per hectare M 2 Kgs.

METHOD 3

(16) Method # 3; Average yield (Kgs.) / Hectare
 Estimated Average yield per hectare (Kgs.)
 $(y/9) * (N/A) * 10,000$

Where
 y = Total yield of uprooted plants
 n = Number of uprooted plants
 N = Number of plants in the parcel
 A = Area under potato in the parcel

16.a Average yield per hectare M 3 Kgs.

y 'N'
 n 9 x 'A' x 10,000

METHOD 4

(17) Method # 4; Average yield (Kgs.) / Hectare
 Estimated Average yield per hectare (Kgs.)
 $(y/9) * (N/\hat{A}) * 10,000$

Where
 y = Total yield of uprooted plants
 n = Number of uprooted plants
 N = Number of plants in the parcel
 \hat{A} = Estimated area under potato in the parcel
 $\hat{A} = ((N)/(40 \times R)) \times 10,000$

17.a Average yield per hectare M 4 Kgs.

y 'N'
 n 9 x 'A' x 10,000

18 Estimated Yield Rate
 (M=M1,M2,M3 or M4)

M x $\frac{2.204}{112}$

19 Yield rate Obtained/ Expected by farmer

631-5
 15323

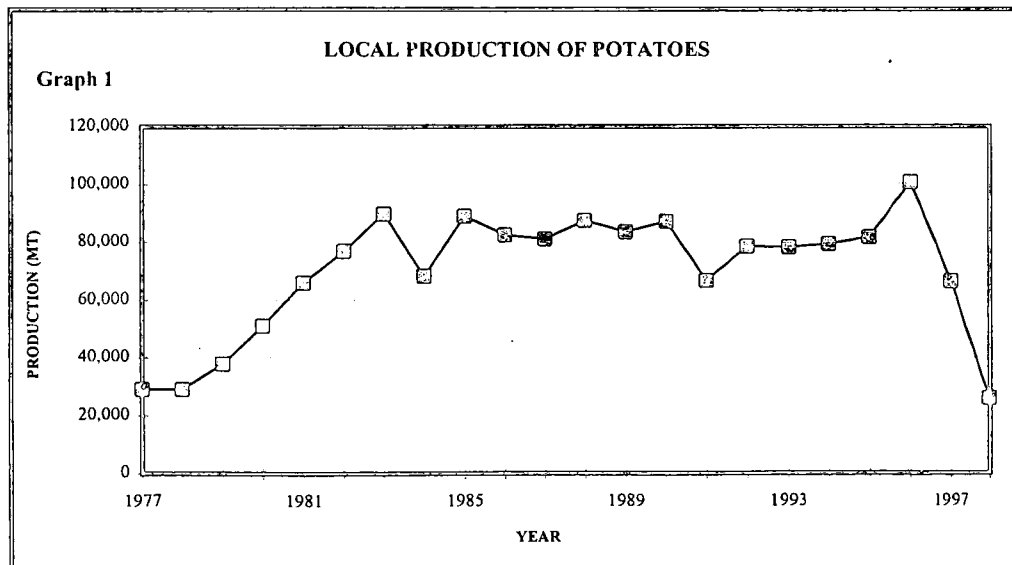
Annex

Table 1:- EXTENT, LOCAL PRODUCTION & IMPORTS OF POTATOES

Year	Extent (Hec.)	Local Production (MT)	Imports (MT)	Year	Extent (Hec.)	Local Production (MT)	Imports (MT)
1977	3,110	29,100	140	1988	7,250	87,500	20
1978	2,860	29,100	1,290	1989	7,010	83,500	501
1979	4,100	37,900	7,610	1990	7,890	87,200	40
1980	4,530	51,100	11,400	1991	6,380	66,700	-
1981	5,320	66,000	1,000	1992	7,140	78,500	-
1982	6,170	76,900	-	1993	6,980	78,200	-
1983	6,810	89,800	880	1994	7,210	79,380	7,849
1984	5,960	68,300	220	1995	7,430	81,650	11,967
1985	7,120	89,000	-	1996	7,930	100,760	25,740
1986	7,300	82,500	20	1997	6,470	66,490	108,375
1987	6,950	81,100	2	1998	2,255	25,900	115,612

Source - Department of Census and Statistics

Department of Customs



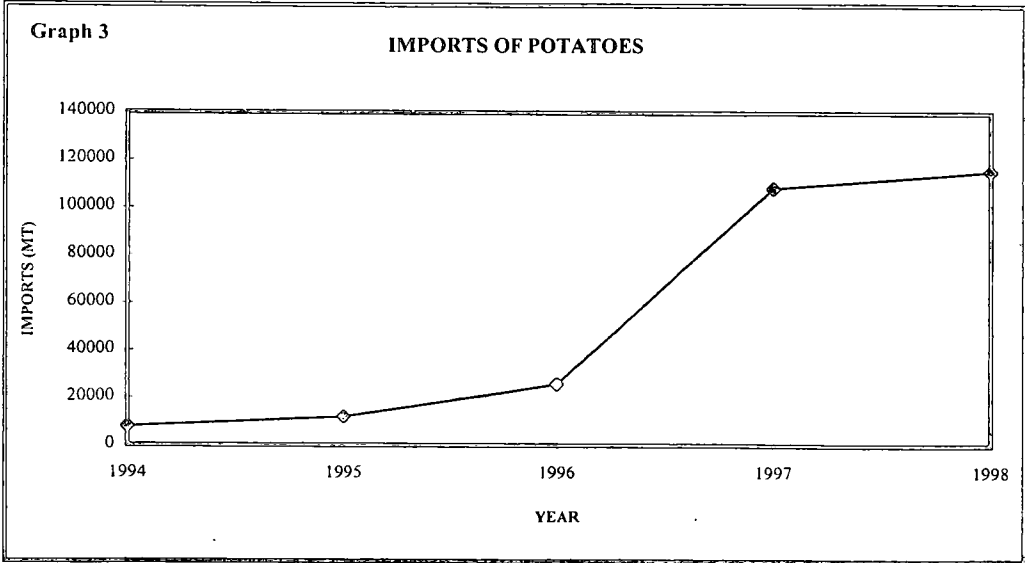
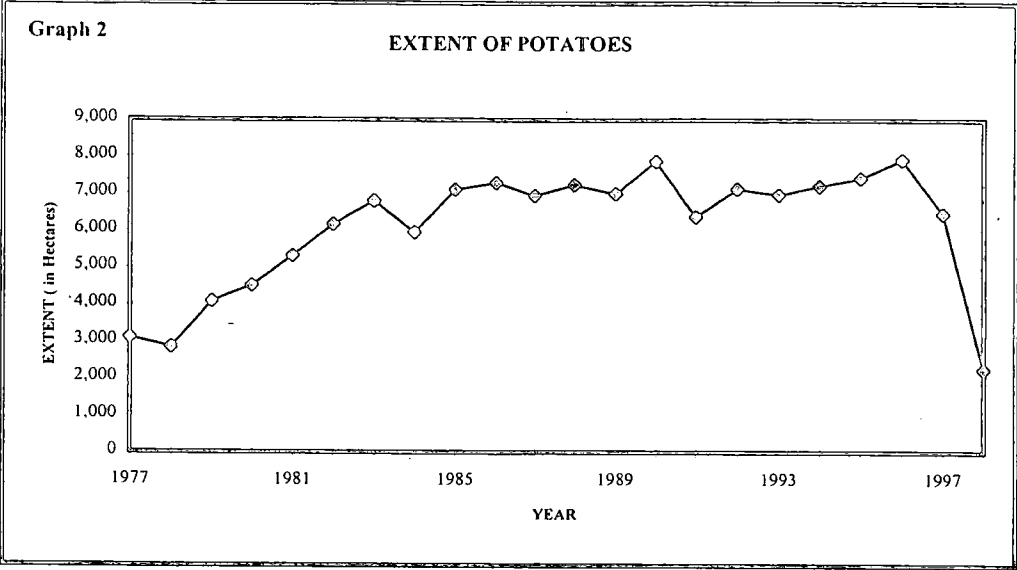


TABLE 2:- PRODUCTION, IMPORTS AND AVAILABILITY OF POTATOES

Year	Local Production (MT)	Imports (MT)	Local Production as a % of Total Availability	Total Availability (MT)	Per Capita Availability (Kg/Year)
1977	29,100	140	99.52	29,240	1.36
1978	29,100	1,290	95.76	30,390	1.45
1979	37,900	7,610	83.28	45,510	2.15
1980	51,100	11,400	81.76	62,500	3.08
1981	66,000	1,000	98.51	67,000	3.18
1982	76,900	-	100.00	76,900	3.59
1983	89,800	880	99.03	90,680	4.24
1984	68,300	220	99.68	68,520	3.04
1985	89,000	-	100.00	89,000	3.98
1986	82,500	20	99.98	82,520	3.52
1987	81,100	2	100.00	81,102	3.45
1988	87,500	20	99.98	87,520	3.71
1989	83,500	501	99.40	84,001	3.50
1990	87,200	40	99.95	87,240	4.44
1991	66,700	-	100.00	66,700	2.60
1992	78,500	-	100.00	78,500	3.08
1993	78,200	-	100.00	78,200	3.05
1994	79,380	7,849	91.00	87,229	3.59
1995	81,650	11,957	87.23	93,607	3.83
1996	100,760	25,740	79.65	126,500	5.35
1997	66,490	108,375	38.02	174,865	7.79
1998	25,900	115,612	18.30	141,512	6.56

Source - Department of Census and Statistics, Department of Customs

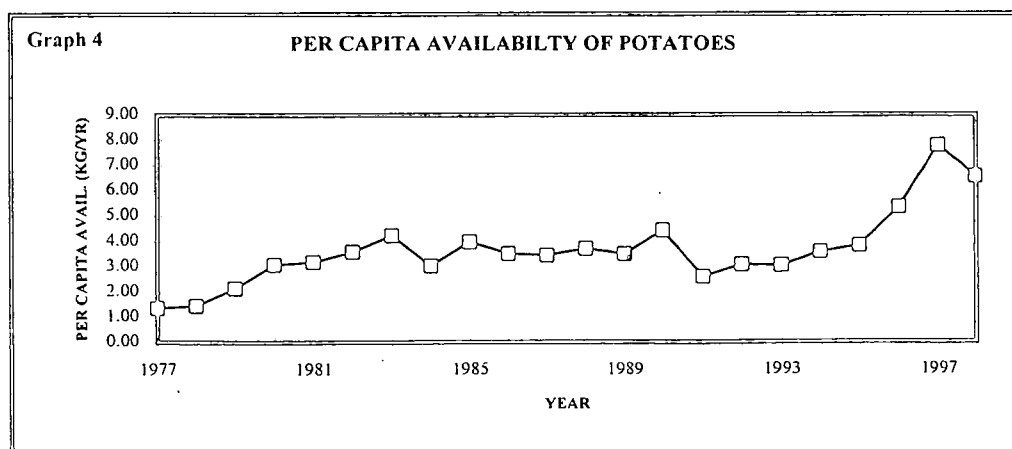
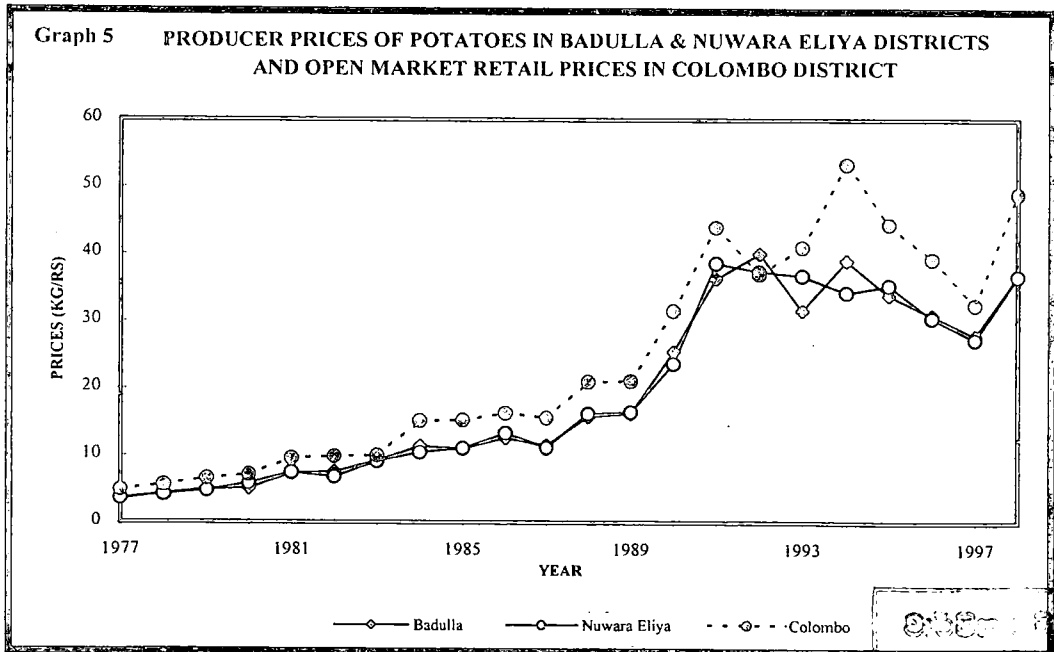


TABLE 3:- PRODUCER PRICES AND OPEN MARKET RETAIL PRICES OF POTATOES

Year	Producer Prices		Open Market Retail Prices Colombo Dist. (Rs/Kg)	Year	Producer Prices		Open Market Retail Prices Colombo Dist. (Rs/Kg)
	Badulla District (Rs/Kg)	Nuwara Eliya District (Rs/Kg)			Badulla District (Rs/Kg)	Nuwara Eliya District (Rs/Kg)	
1977	3.53	3.68	4.91	1988	15.79	16.21	20.99
1978	4.28	4.20	5.61	1989	16.30	16.52	21.13
1979	4.95	4.77	6.58	1990	25.50	23.70	31.54
1980	5.05	5.83	7.13	1991	36.34	38.63	44.00
1981	7.33	7.48	9.58	1992	40.08	37.46	37.07
1982	7.58	6.80	9.83	1993	31.61	36.76	41.00
1983	9.25	9.13	10.00	1994	39.00	34.27	53.39
1984	11.36	10.46	15.14	1995	33.87	35.34	44.42
1985	11.04	11.11	15.26	1996	30.89	30.51	39.25
1986	12.60	13.31	16.33	1997	27.88	27.31	32.43
1987	11.48	11.19	15.61	1998	36.76	36.68	48.98

Source :- Department of Census and Statistics



COLOMBO

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