

CHANGING PATTERNS IN THE PADDY CULTIVATION IN SRI LANKA

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INTRODUCTION

Sri Lanka is a predominantly an agrarian country, with paddy as the main crop cultivated. Paddy is a crop that is heavily depended on rainfall. Any excess or deficit of rainfall can completely destroy the paddy harvest. From the ancient times Sri Lanka is famous for the high paddy production and the recent governments of Sri Lanka always took measures to improve the paddy production in the country, to meet the needs of the growing population (Yoshino *et al.*, 1984).

According to Prof Thambyahpillay, “agriculture in the Indian areas is a gamble in the monsoon”; time and again, the monsoon has ‘failed’ either to appear on time or to produce the rainfall amount that is expected of it. It has been tradition to assign specific dates for the onset and withdrawal of the rains, and the early or the late onset as well as early or late departures of rains would ruin the crops. Paddy is cultivated by irrigation and rain; in the western and southwestern part of the island paddy is cultivated by rain, and in the Dry zone paddy is cultivated by irrigation. The rain based agriculture in the western and southwestern parts of the country is heavily dependent on the South West Monsoon rains (Kankanam *et al.*, 2007).

According to statistics, approximately 800,000 farmers and their families depend directly on paddy, which is grown on 30% of total land area. The total area paddy, cultivated in the two agricultural seasons of Yala (March-September) and Maha (October- February), exceeded 852,000 ha in 2002. The major part of the rice produced (70%) is derived from small paddy holdings below 1.0 ha in extent. As many as 314,000 farmers are tenant cultivators; nearly these tenants grow paddy on holdings less than 0.4ha in extent. Unfortunately third of the countries land area in the dry and intermediate zone; this is where paddy is highly concentrated. Collectively these two zones account for 72% of the total paddy production in the country (De Silva, C. S. *et al.*, 2004)

The Wet zone includes three quarter of the cultivable land most of the potentially productive land is in the Dry zone. The Governments pursue policy developments in the Dry zone and has promoted several development schemes. The diversion of the waters of the Mahaweli river to irrigate the Dry zone is the far the most ambitious project undertaken to redevelop the Dry zone. This project encompasses nearly 40 %

of the total land area in the country. One of the basic aims of the project is to maximization of agricultural production which has become a necessity on account of the growing population in the country and the strain on foreign exchange (Mendis, M.W.J.G, 1973).

The Dry zone of Sri Lanka is considered the granary of the nation, paddy produced in this region is of utmost important as it supplies the food demand of the growing population. After the Independence the Mahaweli Project was introduced in 1977 to cultivate paddy in the Dry zone. Changing rainfall pattern in Sri Lanka have prompted later paddy planting by farmers and affected the country's overall rice yield. Significant amount of the rainfall to the upper watershed area of the Mahaweli has been reduced during past hundred years by 39.12 % and the rainfall pattern is in declining trend (Shantha, W. W. A *et al.*, 2004).

CHANGING PATTERNS IN THE PADDY CULTIVATION

During the last few decades the paddy production has been destroyed either by sever rainfall or due the lack of rain on time. However, variable rainfalls over the past two decades have pushed farmers to wait until the rains arrive. According to Dr. B. Poonyawardena, head of the Agro- climatology Division; the Maha growing season usually starts from October to March harvest, but now the farmer would wait for the rains to arrive before starting cultivation in their paddy fields (<http://www.irinnews.org/Report.aspx?ReportId=77549>, 1/4/2008, 11.37am), and Maha crop generally harvested in February and traditionally a dry month is now falling to mid- March. There has been number of changes in the harvesting pattern due to changing rains over the years. According to Mr. Nalin Munasinghe, Programme Associated at the Food and Agricultural Organization in Colombo; the planting delays in October may be an indication that the farmers have already begun adjusting to the variation in the rainfall. They may not have the scientific knowledge, but they feel the practical change .

(<http://www.irinnews.org/Report.aspx?ReportId=77549> , 1/4/2008, 11.37am)

SHIFTING PATTERN OF THE STARTING DAYS OF YALA/MAHA

The climatic variations across Sri Lanka denote that there is a need to study the spatial variation impacts of climate change, on the paddy cultivation. Traditionally the Yala season is cultivated from March to September (First Inter- Monsoon) and Maha Season from early October to February (South West Monsoon). However, during the last few years there has been a shift in the time period of the two cultivation seasons. There is no written evidence on the first and last date of the harvesting as the paddy is grown according to the preference of the farmer, and it differs from one paddy land to another. In reservoirs that issue water for paddy lands a crop calendar is carried out, this records the first and last day of water issue, the amount of water issued and the cropping extent of the two seasons for each year. For this study crop calendars were selected from 16 reservoirs that come under the Mahaweli Authority. From the crop calendars the shifts in the starting date of the Yala/ Maha Season is analysed for the study period of 1983-2008 and its influence on the total no of days of a cultivated season. The analysis is only carried out for the data taken from the crop calendar, other factors that affect paddy cultivation are not taken into consideration in this analysis.

Yala Maha seasons are been cultivated for centuries in Sri Lanka, this is a unique pattern to the island. Farmers for centuries have relied on the rainfall but during the

last few decades the traditional pattern of the Yala Maha Seasons has varied with the rainfall pattern. From the crop calendar the first days of the water issue; which is considered the first day of the growing season is analyzed to examine any shift in the harvesting pattern. Form the 16 reservoirs examined a marked shift in the starting day during the last 25 years is clearly evident.

Below is a crop data table take from the Mahaweli Authority, it consist of data of Parakrama Samudrya from year 1983- 2007.

Table 01

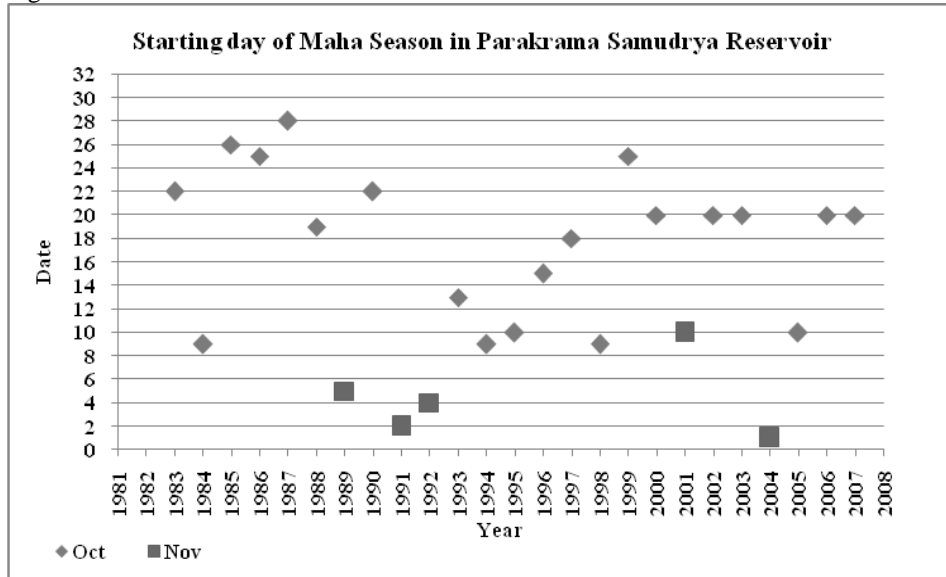
CROP DATA						
SCHEME		PARAKRAMA SAMUDRAYA				
Total extent (ha) 10,360						
Year	Water Issues (mcm)		First & Last Date of Water Issue			
	Maha	Yala	Maha		Yala	
1983	54.7	159.6	22-Oct	26-Feb	2-Apr	20-Aug
1984	132.4	175.6	9-Oct	11-Mar	20-Apr	30-Sep
1985	121.6	165.9	26-Oct	27-Mar	10-Apr	29-Sep
1986	136.6	153.7	25-Oct	28-Mar	10-Apr	2-Sep
1987	129.5	149.4	28-Oct	11-Mar	22-Apr	25-Aug
1988	138.5	131.0	19-Oct	29-Mar	20-Apr	12-Sep
1989	135.8	162.3	5-Nov	18-Mar	12-Apr	25-Aug
1990	101.6	166.7	22-Oct	22-Mar	19-Apr	30-Aug
1991	156.5	130.7	2-Nov	28-Mar	20-Apr	30-Aug
1992	129.6	149.6	4-Nov	28-Mar	19-Apr	27-Aug
1993	71.6	170.6	13-Oct	30-Mar	1-Apr	31-Aug
1994	134.1	180.8	9-Oct	25-Mar	1-Apr	5-Sep
1995	146.9	154.0	10-Oct	24-Mar	25-Mar	16-Aug
1996	144.8	157.9	15-Oct	22-Mar	25-Apr	3-Sep
1997	109.9	156.2	18-Oct	20-Mar	15-Apr	29-Aug
1998	115.1	187.6	9-Oct	18-Feb	23-Mar	6-Sep
1999	112.9	158.8	25-Oct	25-Mar	5-Apr	1-Sep
2000	114.9	160.7	20-Oct	20-Mar	20-Apr	9-Sep
2001	133.4	162.2	10-Nov	15-Mar	20-Apr	31-Aug
2002	117.2	163.4	20-Oct	31-Mar	2-Apr	6-Sep
2003	132.6	147.8	20-Oct	8-Mar	20-Apr	15-Aug
2004	107.5	161.3	1-Nov	10-Mar	1-Apr	20-Aug
2005	122.8	173.5	10-Oct	3-Mar	10-Apr	31-Aug
2006	146.0	151.0	20-Oct	22-Mar	20-Apr	6-Sep
2007	109.6	151.7	20-Oct	1-Mar	20-Apr	15-Sep

Source: Mahaweli Authority, 2008

In Figure 01 the starting days of Yala/ Maha seasons in the Parakrama Samudraya show evident of shifts in both periods, Parakrama Samudraya which has been there for centuries is of great importance. During the Maha season the starting day has

shifted to the end of October. During some years the days have shifted as far as November. During the last decade the starting date is recorded in the late October or early November. From the Figure 2 the beginning of Yala season has clearly shifted till April. Within the 25 year study period the Yala season has started in March only during two years, in all the other years the Yala season has started in April.

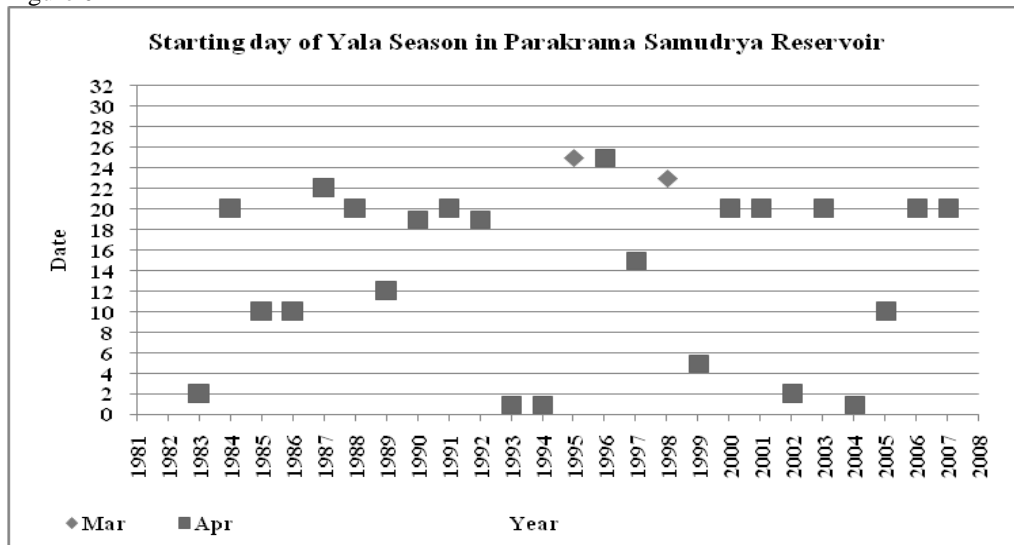
Figure 01



Source; Analysed by the author (2009)

Note; the extent of the area cultivated during the study period is constant.

Figure 02



Source; Analysed by the author (2009)

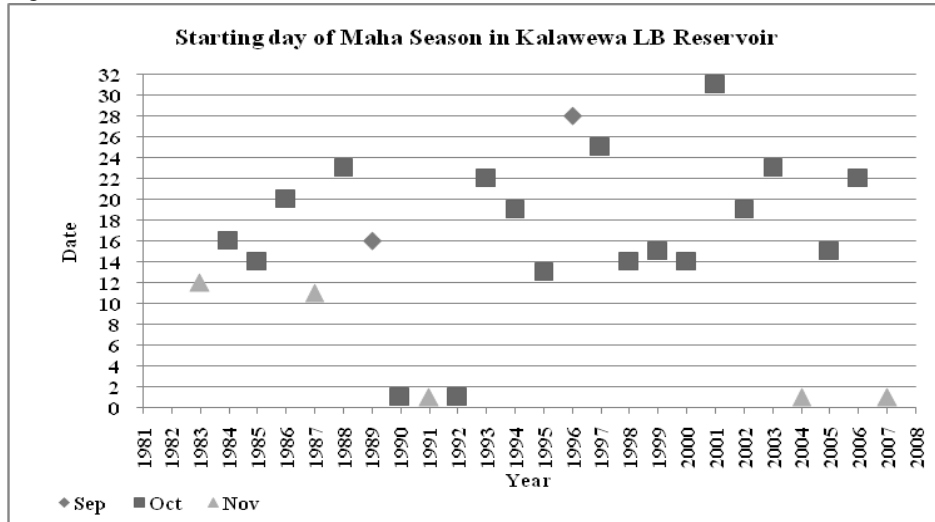
Note; the extent of the area cultivated during the study period is constant.

From Figure 03 it is clear that the shift in the growing seasons in Kalawewa show more evidence of variation than in Parakrama Samudrya. The starting day of Maha has shifted to November. Also in some years the Maha has started in September but during the last 15 years the starting day has shifted to late October or early November,

This shift in the starting days of the seasons is more pronounced in the Yala season in most of the reservoirs. In Kalawewa reservoir the beginning of the Yala season shows

marked variations. Figure 04 depict season has shifted from March to April, May and even as far as June in some years. In the first few years the shift is recorded in late April and early May but towards the 1990's the starting day has shifted to late May. From year 2000 onwards the days has shifted till April and in year 2002 in has started in the month of March.

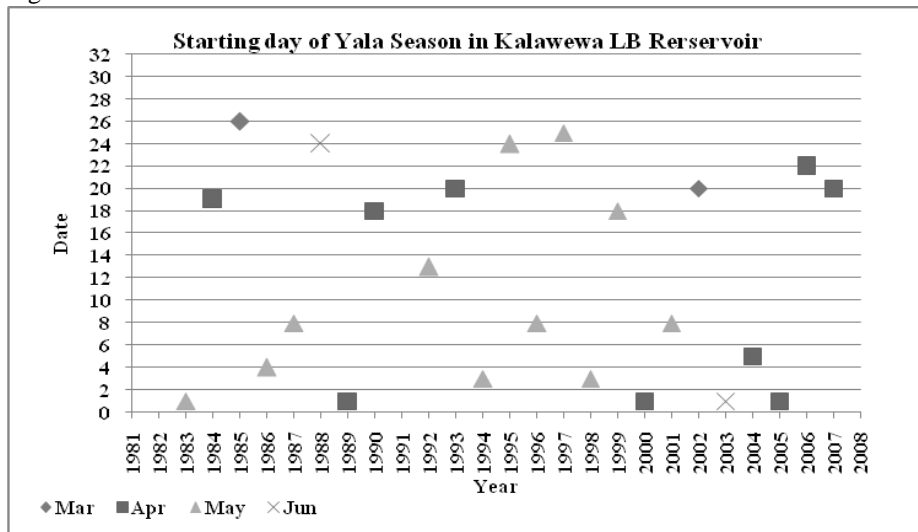
Figure 03



Source; Analysed by the author (2009)

Note; the extent of the area cultivated during the study period is constant.

Figure 04



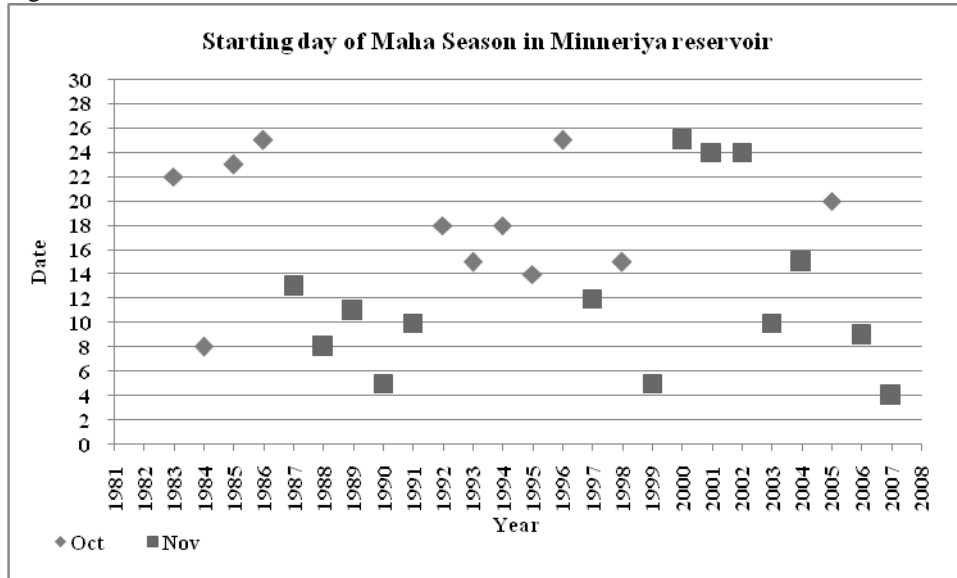
Source; Analysed by the author (2009)

Note; the extent of the area cultivated during the study period is constant.

In the Minneriya reservoir the Maha season has begun in the month of November. Figure 05 graphically exhibit the pattern in the start of the Maha season. During the last decade the Yala season has clearly started in November and in some years in late November. And from the 25 years that is taken into analysis more than half, records the starting days in November. Even in years the Maha season has started in the month of March, it has started in late March. During Yala season the starting day is

still recorded mostly in the month late April. During this period it has not started in March, in some years the starting day has shifted as late as May.

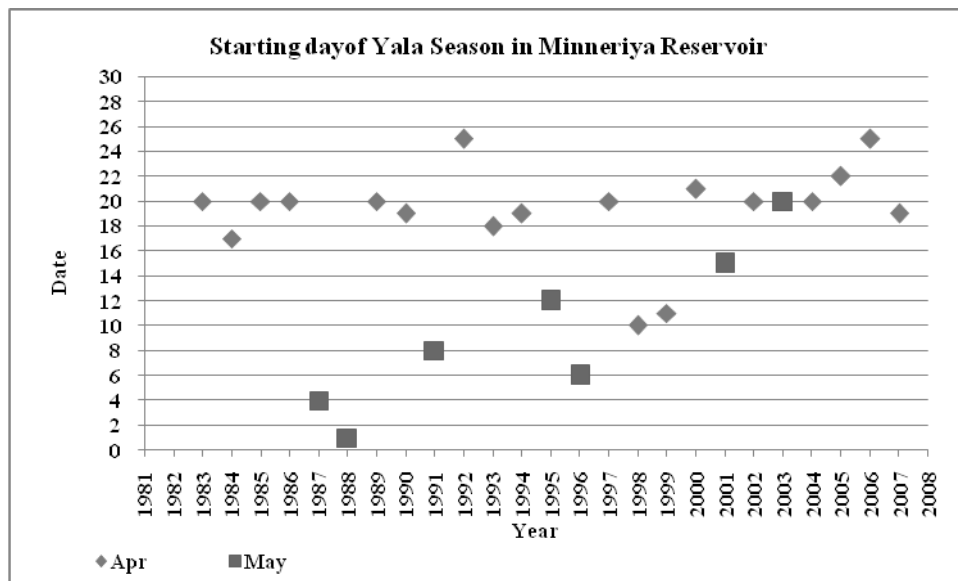
Figure 05



Source; Analysed by the author (2009)

Note; the extent of the area cultivated during the study period is constant.

Figure 6



Source; Analysed by the author (2009)

Note; the extent of the area cultivated during the study period is constant.

CONCLUSION

By using the crop calendars the impact of the rainfall variations have on the paddy cultivation was examined. It was evident that the Yala Maha seasons too have shifted in their time periods, that is the beginning days of the Yala Maha have gone back during the last 25 years from the traditional time periods. The traditional time periods of Yala is from March but now it has moved to April and even as late as May in many

reservoirs. Especially in the Kalawewa LB reservoir the Yala starting days show extreme case of changing to April, mostly to May and even June during some years. The Maha season usually begins in the early October, now demonstrate shifts to late October and even to November.

This clearly shows that there is a shift in the rainfall pattern in Sri Lanka in a periodically, as the Maha & Yala depend on the rainfall periods. The paddy cultivation in Sri Lanka is still a play of the rains that can prosper or get destroyed by it.

REFERENCES

Mendis M.W.J.G, 1973. The Planning Implications of the Mahaweli Development Project in Sri Lanka. Lake House Investment Limited Publications, Colombo 02. Sri Lanka.

De Silva. C.S & E.K. Weatherhead. 2004, *Spatial Impacts of Climate Change on Irrigation Nneed for Maha Season Paddy Cultivation in Sri Lanka*. Proceeding of the Third National on Geo-Informatics, Geo-informatics for Environmental Conservation & Management. August 25, 2004, B.M.I.C.H. Colombo, Sri Lanka

Kankanam. B.N.U.S. B.V.R.Punyawardana & Ranjith Premalal De Silva (2007). *Recent Variability of Southwest Monsoonal Rainfall over Sri Lanka*. Symposium Proceeding of the Water Professionals Day, October 01, 2007. Water Resource Research in Sri Lanka. B.M.I.C.H., Colombo, Sri Lanka.

Thambaiyapillay, G, 1954 (Jan). Ceylon & the World Climatic Mosaic, University of Ceylon Review, Volume XIII, Ceylon.

Masatoshi M. Yoshino & Ramasamy Suppiah, 1984. *Rainfall & Paddy Production in Sri Lanka*, page 9-20. <http://rms1.agsearch.agropedia.affrc.go.jp/contents/JASI/pdf/society/29-1789.pdf>. November 27, 2008. 11.20a.m (25 Oct 2008, 10. 35 am)

Shnatha, W.W.A. and Jayasundra J.M.S.B, 2002. *Study on Changes of Rainfall in the Mahaweli Watersheds in Sri Lanka, Due to Climate Changes and development a Correction Model for Global Warming*. <http://www.irinnews.org/Report.aspx?ReportId=77549> (25 Oct 2008, 9.24 am)