



# Trend of Ratooning and Promotional Measures at Faran Sugar Mills Areas

*By*

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# Abstract

Trend of ratooning at Faran Sugar Mills (FSM) areas was extremely discouraging. It was observed that ratoon management was extremely poor which ultimately consequenced in reduction of yield and caused discouragement in keeping ratoon crop.

The main emphasis of this paper is to suggest the corrective measures to address the various problems, confronting ratoon management. Ratoon-ability is most economical and feasible trend if proper measures are taken with special emphasis on field management. Positive results obtained after use of stubble shaver – gap filling – Selection of suitable variety along with other field management activities. The field and laboratory analysis reflect encouraging trend in better yield and better sucrose recovery which is the dire need of the time and its adaptations will improve the economics of the growers.

# Objective

- To promote and increase Ratooning crop area with Quality yield.
- To Introduce latest Techniques of Ratoon Management Practice (LTRMP)

# Introduction

One of the major reason of the low yield is the poor Field Management (PFM) of ratoon crop. Ratoon crop keeping is an established practice in sugarcane cultivation. It ranges 30-50% of the total area in Pakistan.

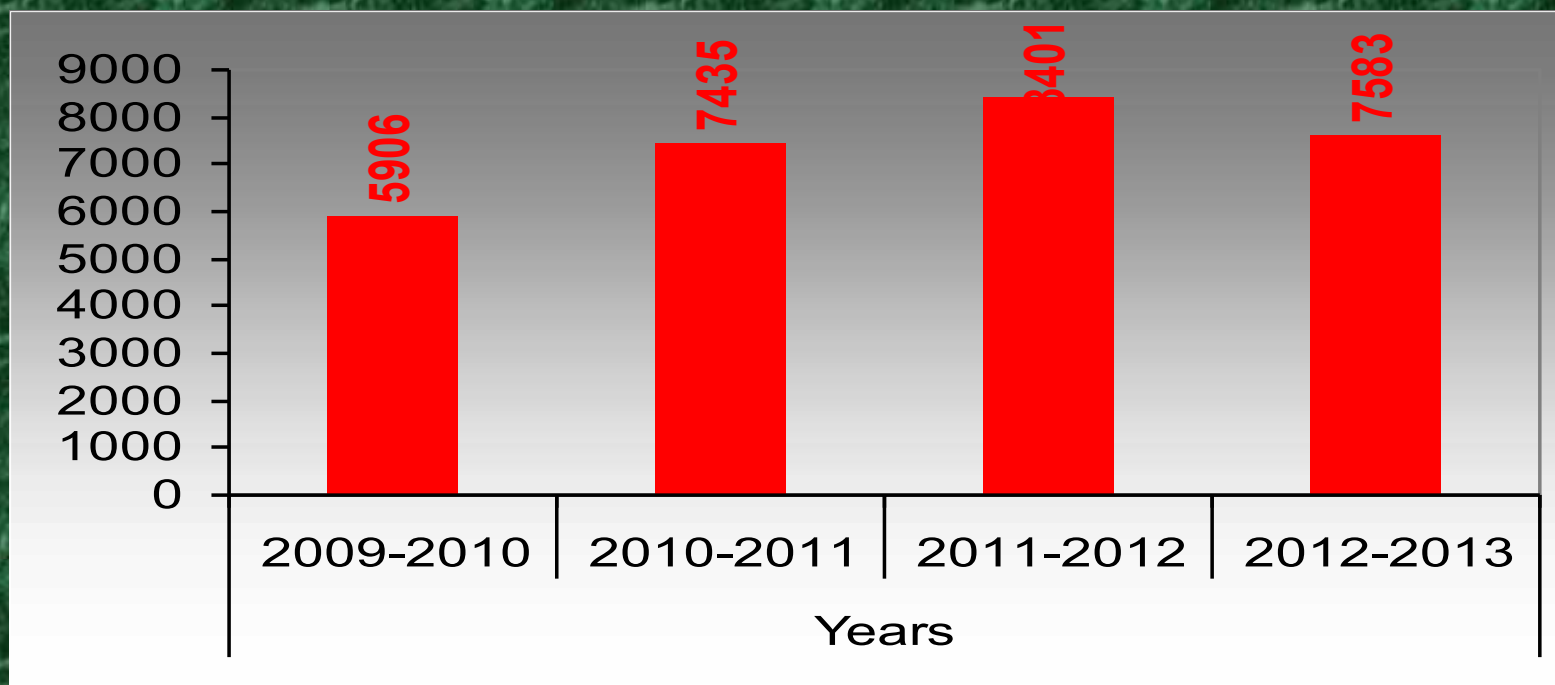
The Faran Sugar Mills (FSM) operational areas constitute 41 dehs, out of which 18 dehs are water stressed and under ground water of nine dehs is saline (sub standard quality), resulting in low yield per acre. The poor ratoon management with low yield increases cost per acre. keeping in view, FSM started cane Development programme in 2006-2007 with promotion of high yield / high sucrose contents varieties adopting latest ratoon management practices under Incentive Cultivation Practices (ICP). The main attention focused on improving quality yield levels of ratoon crop, so that growers can maximize their income from ratoon crop.



# Results and Discussion

The perusal of the data and graphs indicates that the ratoon crop area gradually increased. Within 3 years, an area of 2,495 acres increased by introducing latest Ratoon Management practices, and good ratooning ability varieties. Thatta-10 was found to be highest ratooning ability variety (3-4 Ratoons) with approx yield of 118.50 tons per hectare, highest yield being 137 tons per hectare in variety CPF-246. Analysis data shows that 0.49% recovery increased in ratoon crop as compared to autumn crop. Ratoon crop matures early (in 10-11 months). 3-4 tillers increased per Clump by utilizing Ratoon Stubble Shaver. Effective weed control by application of Trash mulching. Ratoon Stubble Shaver must be applied within 5 to 7 days of harvesting. The diesel consumed was 15.75 liters per hectare for operation of Stubble Shaver at a pace of 3.45 Hrs per hectare at an estimated diesel cost of Rs.1,685.25 per hectare. It is evident from the data that Ratoon crop entails saving cost up to 30-41% as compared to Autumn crop.

# Trend of Ratooning in FSM Area



- Figures show that Ratoon area increased gradually from season 2009-2010.
- Ratoon utilization of plant crop 50% in 2010-11, 52.63% in 2011-12 and 44.33% in 2012-13 (Due to heavy rains in 2011-12).
- Ratoon% total standing crop 28.5% in 2009-10, 31.8% in 2010-11, 32.9% in 2011-12 and 31% in 2012-13 (Despite heavy rains).
- Data shows that 2495 acres (33%) increased in 3 years.
- During season 2011-2012 heavy rains badly affected standing Autumn & Spring crop resulting in decreased area of Ratoon crop.
- Programme is being undertaken to increase ratoon area 10,000-11,000 acres in coming two years.

# Field Observation Data

| Date     | Variety   | Autumn (2010-2011) |       |       |       |       | Ratoon (2011-2012) |       |       |       |       |
|----------|-----------|--------------------|-------|-------|-------|-------|--------------------|-------|-------|-------|-------|
|          |           | Juice %            | Brix  | Pol % | Pty   | Rec:% | Juice %            | Brix  | Pol % | Pty   | Rec:% |
| 21-09-10 | CPF-237   | 62.40              | 19.01 | 15.20 | 79.96 | 9.28  | 62.80              | 19.86 | 15.38 | 77.44 | 9.91  |
| 21-09-10 | CPF-237   | 60.40              | 18.61 | 14.35 | 77.11 | 8.47  | 61.80              | 20.12 | 15.12 | 78.15 | 9.41  |
| 21-09-10 | CPF-237   | 64.00              | 17.99 | 13.73 | 76.32 | 8.03  | 68.40              | 18.00 | 13.90 | 74.73 | 8.86  |
| 22-09-10 | CPF-237   | 60.10              | 18.61 | 14.50 | 77.92 | 8.65  | 66.80              | 17.74 | 13.42 | 75.65 | 10.96 |
| 04-11-10 | SPF-234   | 59.60              | 18.39 | 14.40 | 78.30 | 9.16  | 62.00              | 18.92 | 14.60 | 77.17 | 10.33 |
| 02-11-10 | Thatta-10 | 61.00              | 18.42 | 14.21 | 77.14 | 9.02  | 62.00              | 18.46 | 13.94 | 75.51 | 8.93  |
| 04-11-10 | SPF-234   | 54.40              | 17.86 | 13.80 | 77.27 | 9.39  | 62.00              | 18.00 | 13.82 | 76.78 | 9.79  |
| 02-11-10 | SPF-234   | 64.20              | 18.69 | 14.81 | 79.24 | 9.82  | 60.00              | 19.94 | 15.92 | 79.34 | 10.33 |
| 08-11-10 | CPF-237   | 60.00              | 18.12 | 14.25 | 78.64 | 9.13  | 57.20              | 19.54 | 15.00 | 76.77 | 9.20  |
| 08-11-10 | CPF-237   | 61.00              | 19.82 | 15.99 | 80.68 | 10.54 | 56.80              | 19.14 | 14.76 | 77.12 | 9.25  |
| 08-11-10 | CPF-237   | 63.20              | 18.02 | 14.01 | 77.75 | 9.08  | 58.80              | 18.54 | 14.10 | 78.05 | 9.69  |

# Field Observation Data (Continued)

| Date     | Variety   | Autumn (2010-2011) |       |       |       |       | Ratoon (2011-2012) |       |       |       |       |
|----------|-----------|--------------------|-------|-------|-------|-------|--------------------|-------|-------|-------|-------|
|          |           | Juice %            | Brix  | Pol % | Pty   | Rec:% | Juice %            | Brix  | Pol % | Pty   | Rec:% |
| 18-11-10 | SPF-234   | 61.20              | 17.12 | 13.23 | 77.28 | 8.42  | 62.00              | 19.54 | 15.04 | 76.97 | 9.59  |
| 13-11-10 | Thatta-10 | 62.40              | 17.84 | 13.91 | 77.97 | 8.99  | 60.60              | 19.72 | 15.48 | 78.50 | 9.94  |
| 13-11-10 | Thatta-10 | 54.00              | 18.92 | 14.90 | 78.75 | 9.08  | 62.20              | 20.00 | 15.38 | 78.90 | 9.81  |
| 22-11-10 | SPF-234   | 64.20              | 15.28 | 11.37 | 75.82 | 8.38  | 60.40              | 19.00 | 14.90 | 76.42 | 10.56 |
| 22-11-10 | CPF-237   | 58.80              | 20.20 | 16.42 | 81.29 | 10.06 | 64.00              | 18.80 | 15.74 | 78.49 | 9.25  |
| 01-12-10 | CPF-237   | 60.00              | 19.54 | 15.46 | 79.12 | 9.95  | 54.20              | 19.60 | 15.77 | 77.01 | 9.67  |
| 03-12-10 | Thatta-10 | 56.40              | 20.00 | 16.28 | 81.40 | 10.02 | 52.00              | 20.10 | 16.18 | 80.50 | 9.83  |
| 10-01-10 | Thatta-10 | 57.00              | 20.12 | 15.86 | 78.83 | 9.94  | 61.40              | 19.06 | 15.16 | 79.54 | 9.90  |
| 10-01-10 | CPF-237   | 60.00              | 19.72 | 15.70 | 79.61 | 10.16 | 61.60              | 19.96 | 15.75 | 78.91 | 10.23 |
| Average  |           | 60.22              | 18.61 | 14.62 | 78.52 | 9.28  | 60.85              | 19.20 | 14.97 | 77.60 | 9.77  |

# *Analysis data Shows*

0.49 % Recovery increased in Ratoon Crop

0.76 Brix % increased in Ratoon Crop

0.66 Juice % increased in Ratoon Crop

0.48 Pol% increased in Ratoon Crop

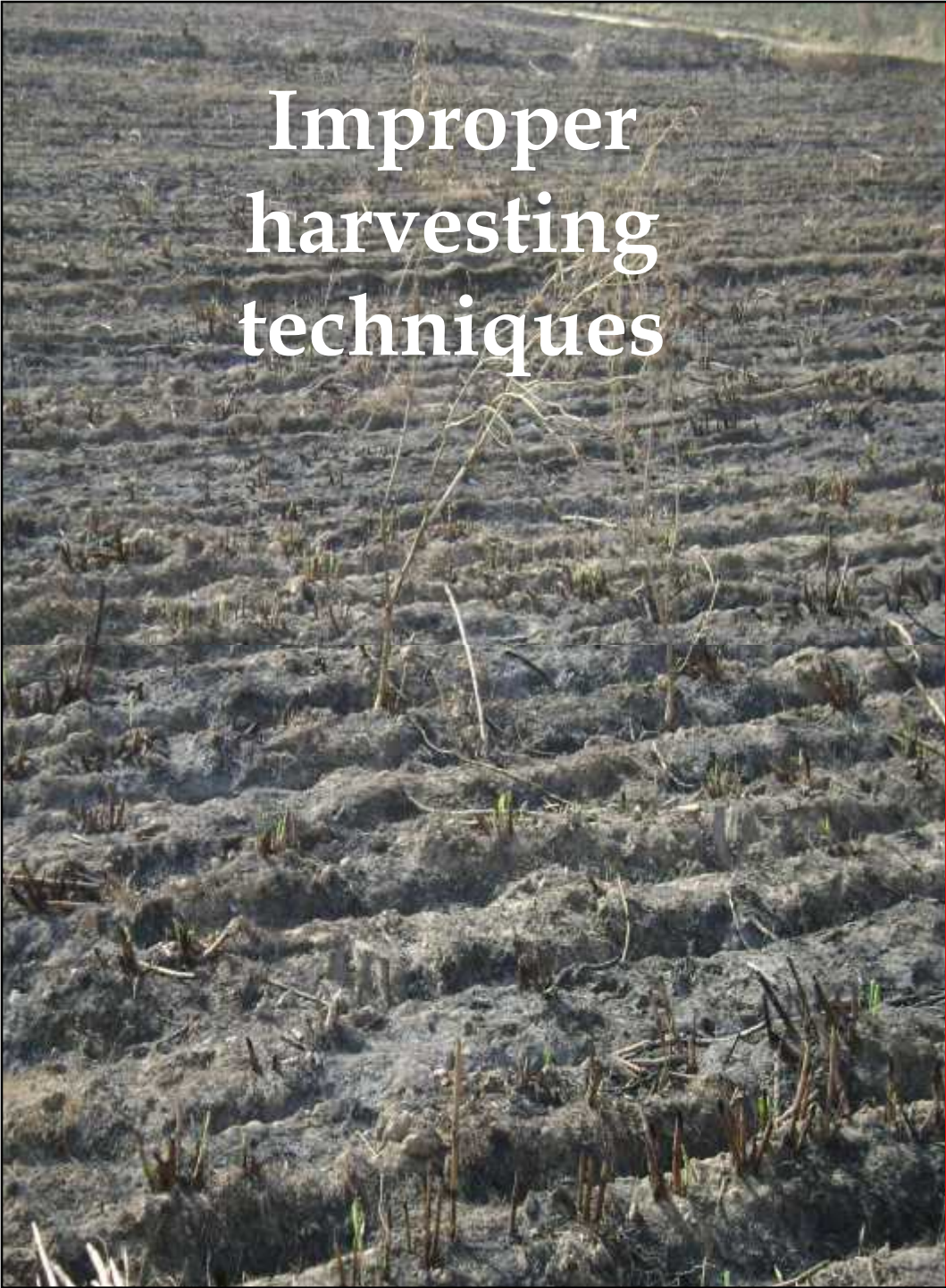
0.73% Purity increased in Autumn Crop

# *Causes of Low Ratoon Yield:*

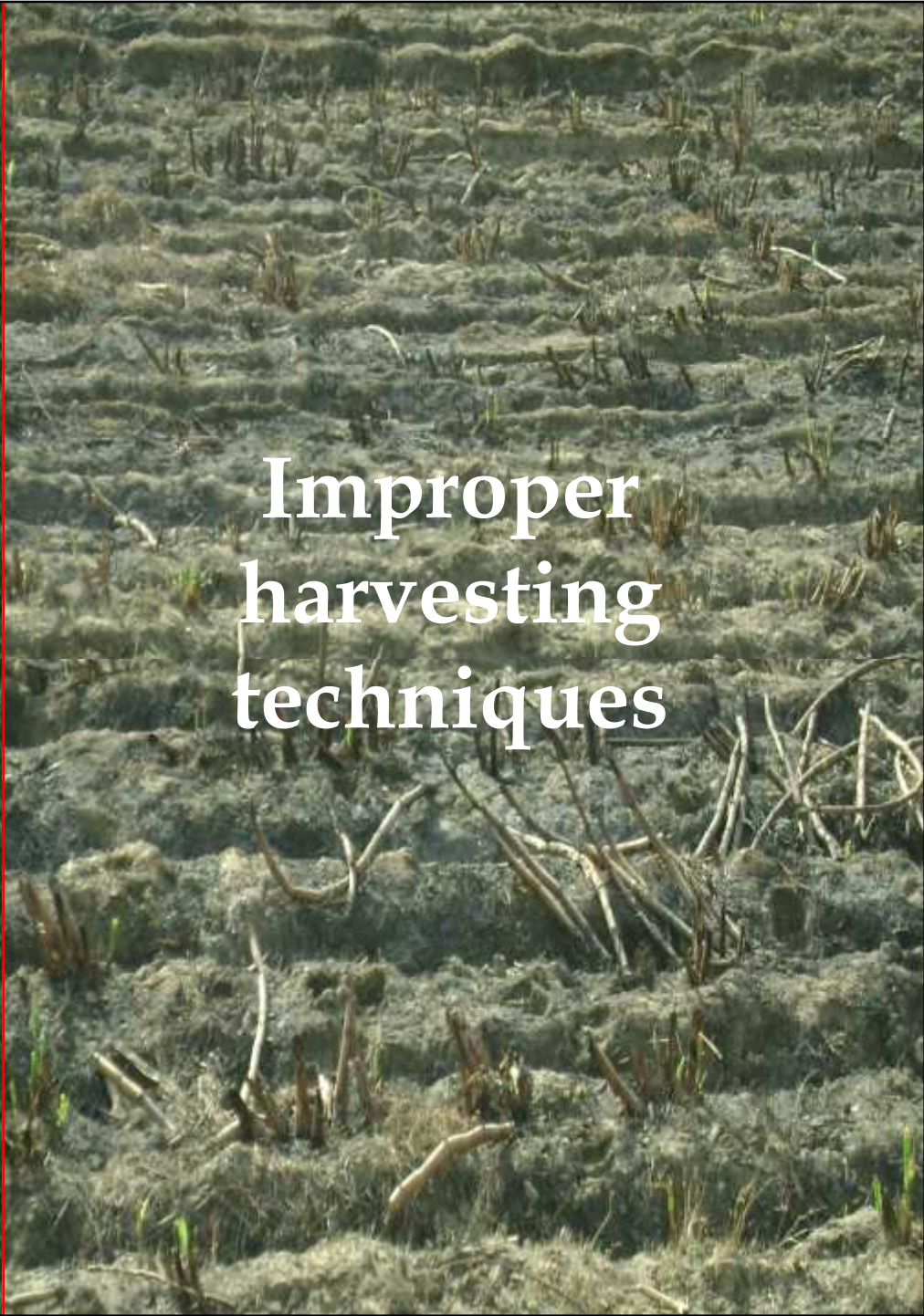
- Poor ratooning varieties.
- Poor Ratoon Management Practices
- Gaps and poor plant population.
- Low nutritional application
- Weeds, pests and diseases infestation.
- Improper harvesting time & techniques

**Gaps, weeds and poor plant  
population.**





Improper  
harvesting  
techniques



Improper  
harvesting  
techniques

# Poor Sprouting



# Potential of different Varieties and their Ratoon-ability in FSM area

| <u>Variety</u> | <u>Ratooning</u> | <u>Yield Potential (t / hac:)</u> |
|----------------|------------------|-----------------------------------|
| ●Thatta-10     | 3-4 Ratooning    | 118.50                            |
| ●CPF-237       | 1-2 Ratooning    | 128.50                            |
| ●CPF-246       | 1-2 //           | 137.32                            |
| ●SPF-234       | 1 //             | 109.68                            |
| ●HOTH-127      | 1-2 //           | 123.50                            |
| ●HOTH-300      | 1-2 //           | 118.56                            |
| ●SPSG-26       | Poor Ratooning   | 49.50                             |
| ●BF-129        | //               | 54.34                             |

# Observations

- High ratooning ability variety Thatta-10, with low water requirement.
- Increased Production of CPF-237 variety in 1st year than the 2nd year ratoon.
- CPF-246, newly introduced variety, having good ratoon ability in 2nd year ratoon crop than 1st year ratoon.
- The cane thickness of SPF-234 & CPF-246 in Ratoon crop is better than the plant crop.
- If cane harvested close to the ground level, nos: of tillers increased in Ratoon crop than the plant crop.
- SPSG-26 & BF-129 are poor ratooning varieties.

# *Ratoon Management:*

For high benefits of ratooning, the expenses at land preparation, seed cost and planting expenses are eliminated and utilizing stubble shaver, trash mulching – good irrigation practices with proper field management practices. The sugar recovery in ratoon crop is also encouraging. It matures earlier than the plant crop. Management of the field operations after harvest of plant crop may be completed, within 10 days to obtain better established and uniformed sprouting of shoots as enumerated below:-.

- To apply stubble shaver.
- To apply Trash between the rows.
- The gap in the ratoon crop must be filled within 20 days after use of stubble shaver.
- Application of organic manures (Press mud / Bio Compost) & phosphate fertilizers recommended as a basal doze.

# Demo: Plot of Ratoon Stubble Shaver



A photograph of a lush green ratoon crop field. A narrow dirt path runs through the center of the field, flanked by tall, dense grass-like plants. The plants have long, narrow leaves and are growing in rows.

*Ratoon Crop  
(Variety CPF-246)*

A photograph of a 6th year ratoon crop field. The plants are very dense and tall, with long, narrow leaves. The field is filled with the crop, and the background shows a clear blue sky with some clouds.

*6<sup>th</sup> year Ratoon Crop  
(Variety Thatta-10 at  
FSM Farm)*

# Faran Farmer's Field Day



A photograph showing two farmers in a lush green field of ratoon crops. The farmer on the left, wearing a white shirt and light-colored dhoti, is bent over, applying a large, round, brownish-yellow mound of bio-compost to the base of a plant. The farmer on the right, wearing a light-colored shirt and dark pants, is also bent over, working in the field. The field is filled with tall, green, leafy plants growing in rows. In the background, there is a brick wall with white sections, trees, and a utility pole under a clear sky.

*Application of Bio  
Compost in Ratoon Crop*

# *Production cost comparison between Autumn and Ratoon Crop / acre*

| <u>Autumn Crop</u>                        |                      | <u>Ratoon Crop</u>        |
|-------------------------------------------|----------------------|---------------------------|
| <u>Field Operations</u>                   | <u>Amount</u>        | <u>Amount</u>             |
| ● Land preparation                        | Rs.15,300.00         | -                         |
| ● Seed 110 mds @ Rs.225/- per md          | Rs.24,750.00         | -                         |
| ● Plantation charges @Rs.1,800/- per acre | Rs. 1,800.00         | -                         |
| ● Ratoon Stubble Shaver Application       | -                    | Rs. 725.00                |
| ● Other Field Operations (common)         | <u>Rs. 58,850.00</u> | <u>Rs.58,850.00</u>       |
| ● Total                                   | Rs.100,700.00        | Rs.59,575.00<br>(+41,125) |

Resultant Ratoon crop saving approximately 41% production cost

# *Importance of Ratoon Crop:*

- Ratoon crop contribution ranges about 30% to 50% of the total sugarcane acreage in Pakistan.
- Saving in initial cost.
- Generally 1-3 ratoons are economically viable (30%-50% cost saving).
- Saves time, quickly establishes, matures early (in 10-11 months) and nos: of irrigations
- Early start of growth and rapid sprouting of seed with early cane stalk formation.

# Practices For Good Ratoon Cultivation

## ● Stubble Shaving:-

- Timely stubble shaving is the main ratoon cane management operation.
- The sprouted bud from the roots above ground level dries up in due course of time for want of support, nutrients and water from the soil in absence of Stubble Shaver application.
- Sugarcane should be harvested close to the ground level.
- For proper sprouting of ratoons crop, stubble needs to shave at ground level, which promotes sprouting from deeper soil layers.
- Destruction of borers larvae.
- The fuel (diesel) consumption is around 15.75 liters per hectare for operation of Stubble Shaver at a pace of 3.45 Hrs per hectare at an estimated diesel cost of Rs.1,685.25 per hectare.

# RATOON STUBBLE SHAVER



# RATOON STUBBLE SHAVER IN FIELD



# Practices For Good Ratoon Cultivation (Continued)

## ● Trash Mulching:-

- Effective weed control in ratoon crops which minimizes herbicide inputs.
- Lower irrigation requirement for optimum yield.
- Significant reduction of soil erosion because the soil is not disturbed and is protected by the trash blanket.
- Long term nutritional and soil physical benefits from trash retention and associated biological activity.
- Smoke-less environment for a clean, green image of the sugar industry.

# TRASH MULCHING



## Spraying Spent Wash on Trashes

## TRASH MULCHING

TRASH  
MULCHING  
VARIETY: THATTI-10  
RATOON CROP  
30-03-2012  
FARAN SUGAR MILLS

## Comparison of Trash Blanket and Burning

| Treatment                    | Cane Yield (t / ha) |
|------------------------------|---------------------|
| Trash lined in alternate row | 88.7                |
| Trash lined in every row     | 90.1                |
| Trash blanket (Spreading)    | 95.1                |
| Trash burning                | 83.9                |

Source:- Macintyre etal 1996

## *Field Operation of the Ratoon Crop:*

- 08-10 tons / acre Bio Compost application be applied.
- Hoeing and weeding on 30th day , 60th day and 90th day
- Top dressing on 30th day, 60th day, 90th & 120th day of Ratoon curing
- Earthing up on 90th and 150th day
- Harvesting as per varietal maturity.
- Bio cards should be applied periodically (Autumn crop from February & Spring crop from May)

# Conclusion and Recommendation

The success of ratoon crop depends upon Field management practices (FMP), physical condition of the cane whorl (after harvest), the health of the soil and growth of the ratoon plant. Many factors influence ratoon growth which include the effect of the preceding harvest operation, soil moisture, variety, nutrient availability, weed competition, Pest and disease.

- The practice of burning trash blanket to be avoided.
- Irrigation should be applied through “Furrow irrigation” system.
- Integrated weed Management (IWM) should be applied for effective weed control in pro environmental condition.
- The gap areas should be filled with in 20 days of the harvesting.
- Ratoon Stubble Shaver (RSS) be applied with in 5 days of the harvesting.
- Good yield from ratoon crop can be obtained by Latest Technique of Ratoon Management Practices (LTRMP).
- The application of above factors combined together will ensure to give Good Cane & Sugar Production.

# Acknowledgment

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## Reference

- Anon – (2002) harvesting with best practices BSES limited, Indooroopilly and SRDC Brisbanc.
- K.B Mallik, Ratoon Management, PSST work shop of Agriculture 2009.
- Verma, R.S (2002) sugarcane Ratoon Management, International Book Distributing Co. Charbagh, Lucknow.
- International sugar journal 2011, vol 113 (Dev: of sustainable farming system for sugarcane)

*THANKS*