

Webinar

on

Improved Agronomic Practices, Findings of Second Crop 2020 – An Analysis will commence at 10:00 am



Guyana Rice Development Board Extension Department





Bissessar Persaud Extension Manager Guyana Rice Development Board Improved Agronomic Practices: Findings of Second Crop 2020 - An Analysis

Presented on 23rd October 2020

- Overview of Agriculture Extension Services
- Need for extension services
- Objective and function of the Extension Department
- Transfer and adoption of technologies to farmers. (Findings of IAP 2nd crop 2020)
- Cost benefit analysis of technologies



• Provided significant public-good attributes (Willett and Zijp, 2009)

verview of Extension Services

- Stimulates desirable agricultural developments (Van der Ban and Hawkins, 2003)
- Bottom up approach and grass root level
- Client-oriented and digitalization of extension

Need for Extension

There is a gap between what is the actual situation and what ought to be the desirable situation.

This gap has to be narrowed down by the application of science and technology thus bringing appropriate changes in behavior and attitude.

Extension create the link between Researchers and farmers and provide feedback information.



- To disseminate research technology that is sustainable, economic and practical importance.
- Training of farmers and Extension officers to build capacity in identifying and finding solutions to rice-related problems.
- Monitoring field activities and undertake data collection which are used by the organization.

• These objectives are achieved through media such as: the Farmers' Field Schools, Field Visits, Field Days, Demonstrations and Farmers' Outreaches.

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National Average Yield



Fig 1: The National Average Yield (1999 – 2019)

Productivity



Fig 2: Five year averages from 2009 to 2013 and from 2014 to 2019



Fig 3: Adoption of varieties cultivated in Guyana by area

Adoption of Varieties by Farmers



Fig 3: Adoption of varieties cultivated in Guyana by number of farmers

Performance of Varieties



Fig 4: Average yield and potential yield of varieties – 2019



- Soil Management Through Soil Testing
- Recommended Plot Size
- Land Management
- Recommended Time of Sowing
- Seed Management

- Balance Nutrition
- Water Management
- Integrated Weed Management
- Integrated Insect Management
- Integrated Disease Management

Time of Sowing

• 1st Crop: Nov-Dec

Cultivation in Guyana

OVER AVEROMONME FASSUCES

- 2nd Crop: May-June
- Flower and grain filling during maximum sunlight

Seed Rate and Seed Treatment

- 100-120 lbs./acre
- Use high quality seed
- More productive tiller
- **Reduce chemical sprays**
- Presence of beneficial insects
- **Balance the ecosystem**

Balance Nutrition

- NPK fertilizer
- Micro nutrients
- Minimize pesticide application

Land preparation and land leveling

- Increase availability in nutrients and Better crop establishment
- increase grain yield and quality
- Reduce the amount of water and weeds

Integrated insect/pest, disease and weed Management

• Block planting

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- Spray based on thresholds
- Remove alternate hosts
- Encourage trap crop

Choice of variety and use of high quality seed

- Varieties adapt well to various areas and soil type
- Early vigor, delayed harvesting, tolerance to lodging
- Certified seed has 5% to 10% yield advantage
- Improve crop establishment, flowering, maturity



Soil	
Management	

- Through Soil testing
- Preserve micro organism
- Improved soil structure
- Improve soil nutrients

Plot size and water Management

- 1 to 10 acres mostly preferable
- Fields are easier to level
- Uniform crop establishment
- Efficient use of water and other inputs
- Increase grain yield

• Two plots were selected, one for the farmer's practice and the other for the Improved Agronomic Practice

Methodology - 28 Crop 2020

- 29 Extension Officers X 2 farmers = 58 plot demonstrations
- Quality seed paddy (GRDB Varieties) were used, Certified I or II
- Time of Sowing: Recommended sowing period.
- Final land preparation :NPK fertilizer were incorporate.
- Seed rate: 100 to 120 lbs/ac.
- Seed treatment: At incubation period.
- Weed control: 18 Days after sowing.
- 1st dose urea applied 15-21 Days after sowing
- 2nd dose urea + MOP applied 38 -45 Days after sowing

• 58 farmers cultivated 1-6 acres and sown within the recommended sowing period

Varieties and Quality of Seed Sown



Fig 5: Varieties of seed sown by farmers

Fig 6: Class of seed sown by farmers

Yield difference of

5.2 bags/acre







Fig 8: Effect of increase seed rate on Lodging

Fig 7: Number of farmers who used various seed rates





Figure 9: Number of farmers who applied the various basal fertilizers





Figure 10: Number of farmers who applied the various top dressings

Average yield of improved agronomic practice vs. farmer practice



Figure 11: Average yield of improved agronomic practice vs. farmer's practice

Table 1: Details of demonstration plot of a farmer in Region 4 – Farmers Practice vs. Improved Agronomic Practice

Agronomic Practice	Farmer Practice	Improved Agronomic Practice
Area	2 Acres	2 Acres
Variety	GRDB 15	GRDB 15
Date of Planting	6 th June, 2020	6 th June, 2020
Seeding Rate	140lbs/ac	110 lbs/ac
Seed Treatment	Fipronil@1.98mls/1kg	<u>Fipronil@1.98mls/1kg</u>
Basal Fertilizer	NII	TSP @ 110lbs @ Final Land Prep
Weed Control	Nomina @ 25g/ac 17DAS	Nomina @ 25 g/ac 17DAS
Micro Nutrient		Boron 1/2pt/ac (2splits 18 and 34 DAS)
Insecticides	Pronto 15g/ac @ 37; 65; 86 DAS	Pronto 15g/ac @ 37; 65; 86 DAS
Urea Fertilizer (1 st Dose)	TSP @ 110 lbs + Urea @ 55 lbs @ 18 DAS	Urea @ 110 lbs/ac @ 18 DAS
(2 nd Dose)	Urea - 110 lbs @ 34 DAS	Urea @ 110 lbs / acre @ 34 DAS
(3 rd Dose)	Urea – 55 lbs @ 45 DAS	MOP- 55lbs/ac @ 45 DAS
Actual Yield	46 bags/acre	52 bags/acre
Yield Difference		6 Bags

Table 2: Comparison of parameters evaluated for the Region 4 farmer – Farmer'sPractice vs. Improved Agronomic Practice

Parameters	Farmer's Practice	Improved Agronomic Practice
Average Plant Height (cm)	112	108
Average Tillers / Plant	2-4	4-6
Plant Density at 18 DAS (No. of plant /ft ²)	20-27	15-20
No. of Panicles/ft ²	40-108	60-120
Average No. of filled grains	189	213
Average No. of unfilled grains	9	6
Yield (bags / acre)	46	52

- Germination rate was above 90%
- Seed Paddy was free from other weed seeds etc.

Table 3: Cost Benefit Analysis for IAP vs. FP

Particulars	Details	Farmer Practice	Improved Agronomic Practice	Difference
Yield	165 lbs/bag	46	52	6
Income	\$3,000/bag	\$138,000	\$156,000	\$18,000
Normal Expenses	For Normal Farmers' Practice	\$78,579	\$78,579	
Additional Expenses for Improve Agronomic Practice	½ MOP ½ pt. Boron Labor cost	0	\$7600	
Savings from Improved Agronomic Practice	30 lbs Seed Paddy		\$840	
Actual Additional Expenses	Additional Expenses - Savings	0	\$6,760	
Total Expenses	Normal Expenses + Additional Expenses	\$78,579	\$85,339	\$6,760
Profit	Income - Total Expenses	\$59,421	\$70,661	\$11,240

Cost Benefit Analysis

One pack Pronto: 500g= \$4,000 @ \$8/g.

Farmer's Method: 50g/ac X \$8= \$400 + \$400/blower(X1)= \$640/ac



Parameters	Farmer's Method	Recommended Method
Plot Size	20 acres	20 acres
Cost for one spray	\$ 16,000	\$19,200
Number of spray	6 sprays @ 16,000 = 96,000	3 Sprays @ 19,200 = 76,800
Damage at Mill	7%	4.5%

Farmer saved \$ 19,200







Ministry of Agriculture Complex, Guysuco Compound, LBI, East Coast Demerara.

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