Guyana Rice Development Board

Discussion on Imidacloprid (Pronto) *Residue Analysis for samples Examined by PTCCB*

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Introduction

- ✓ In Guyana, rice is grown twice per year (two cropping seasons) with more than 90,000 hectares being cultivated each time.
- ✓ The rice crop contributes significantly to agriculture GDP and livelihood for more that 12 percent of the Guyanese population.
- ✓ One of the major challenge of this industry is the damage caused by insect pests, especially the **'Paddy bug'** or **'Stink bug'** as commonly refer to by farmers.
- ✓ Because of this spraying of insecticides is one of the *main* method being utilized by farmers for the controlling of these insect pests.

Pesticide residue

- ✓Pesticide residues are the traces of pesticide compounds that remain *on* or *in* the *crop*, *water, soil and air* after the application.

- ✓Pesticide residues, if present in air, soil and water can pose a serious threat to *biological diversity* and *human health*.

- ✓In view of this and **NOW** with the EU rice market setting maximum residues limits (MRL) for various pesticides at different levels it become necessary for us to carried out studies on pesticide residue in rice.

RICE EXPORT BY TRADING BLOCS

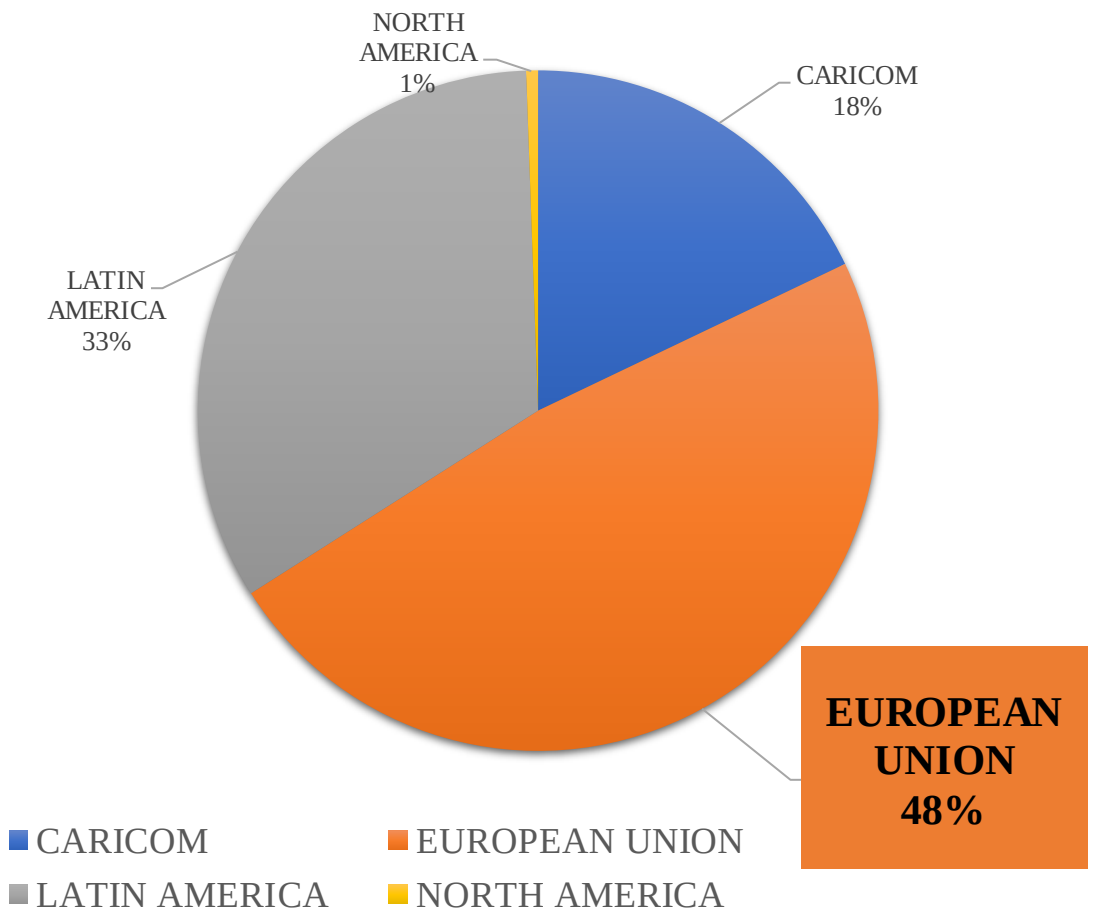

Fig. 1: Export by Trading Blocs 2021 (MT)

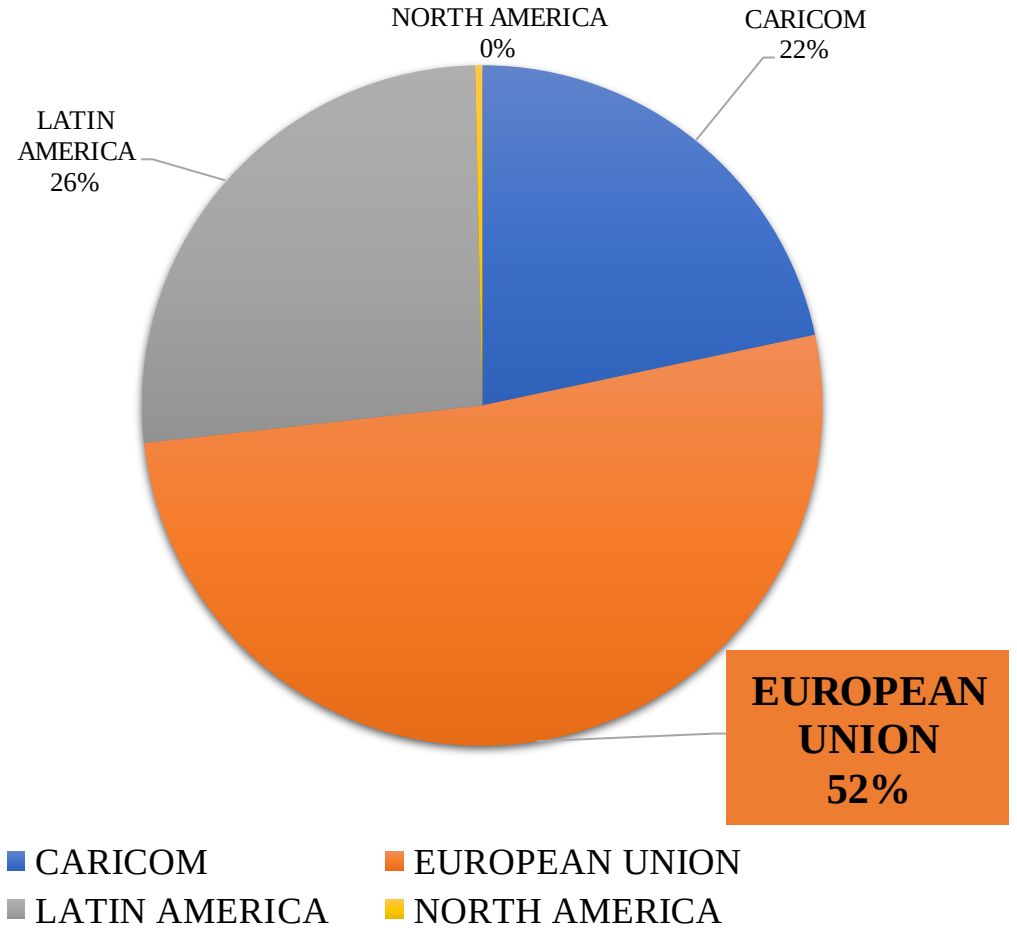

Fig. 2: Export by Trading Blocs 2022 Jan-May (MT)

Target pesticide: *Imidacloprid* (Pronto)

- ✓ ***Imidacloprid* (Pronto)** - is a systemic insecticide, which means that it is taken up by plants and spreads throughout the plant's stems, leaves, fruit, and flowers.

- ✓ The metabolism of imidacloprid residues in plants was investigated in fruit crops, root crops, leafy crops, cereals, pulses and oilseeds following foliar application (Germany, 2005).

- ✓ Similarly, this study examined the insecticide *Imidacloprid* when applied at different stage of the rice crop, at different rates and different frequency.

Overview of trial:

Season: Spring crop 2022

Location: Entomology department experimental site, BRRS.

Target insecticide: *Imidacloprid* (Pronto)

Rates of Pronto: Four [*0- control, 30g pronto, 60g pronto, 100g pronto***]**

Treatments	**Number of times applied**
• **T1**-Milk/Dough	**-x1**
• **T2**-Senescence	**-x1**
• **T3**-Milk/Dough (5 days after milk) + senescence	**-x2**
• **T4**-Milk/Dough & 3 days interval to Harvesting	**-x12**
• **T5**- Control (Water only)	

Results

T1- Milk/dough stage

Sample	Concentration Detected (Mg/Kg)
T1-30g	0.0575
T1-60g	0.124
T1-100g	0.0518

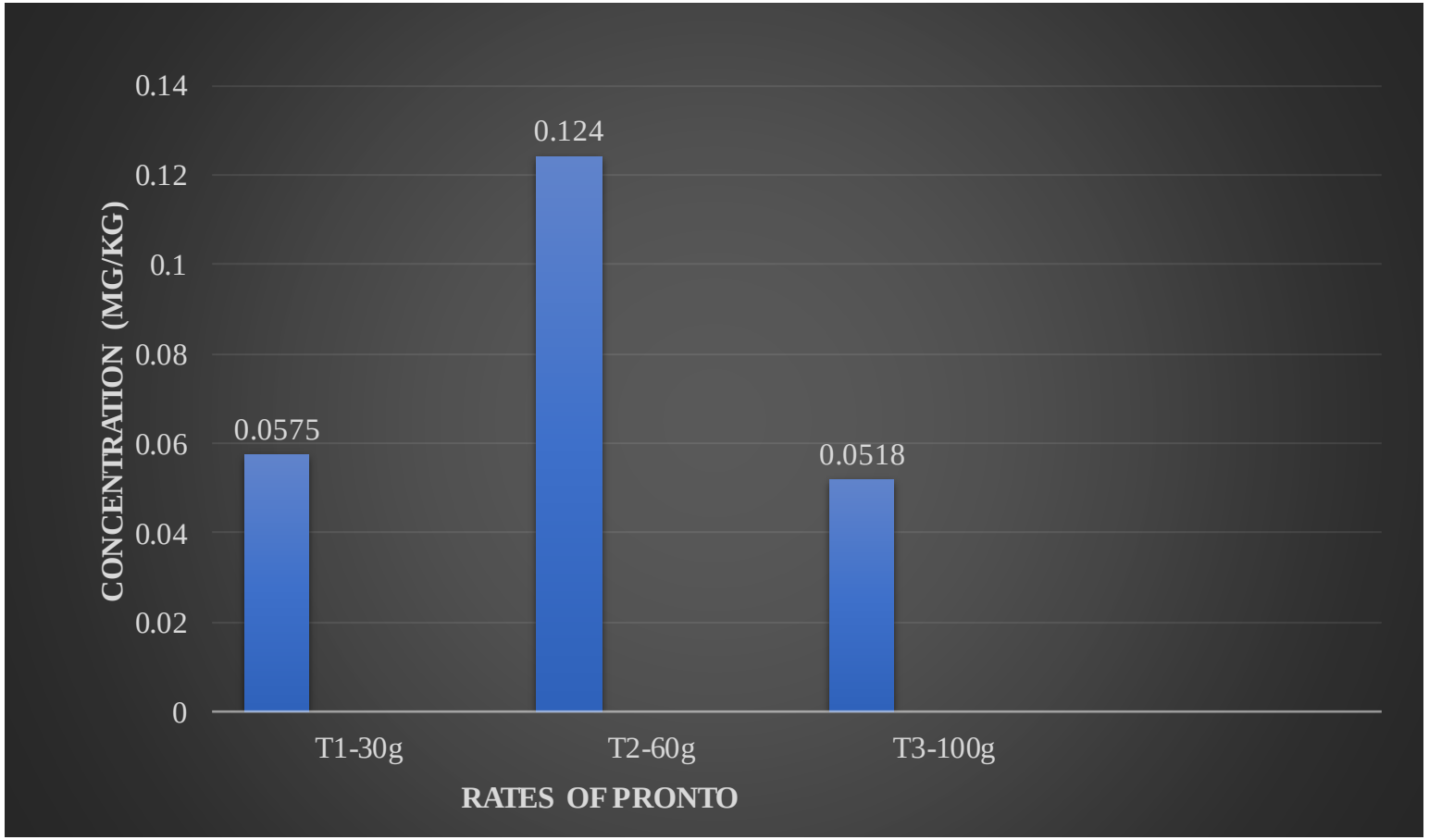

Figure 1. Concentration (mg/kg) of *Imidacloprid* (Pronto) detected at Milk/dough stage

Results

T2- Senescence stage

Sample	Concentration Detected (Mg/Kg)
T2 -30g	0.0575
T2-60g	0.133
T2-100g	0.0356

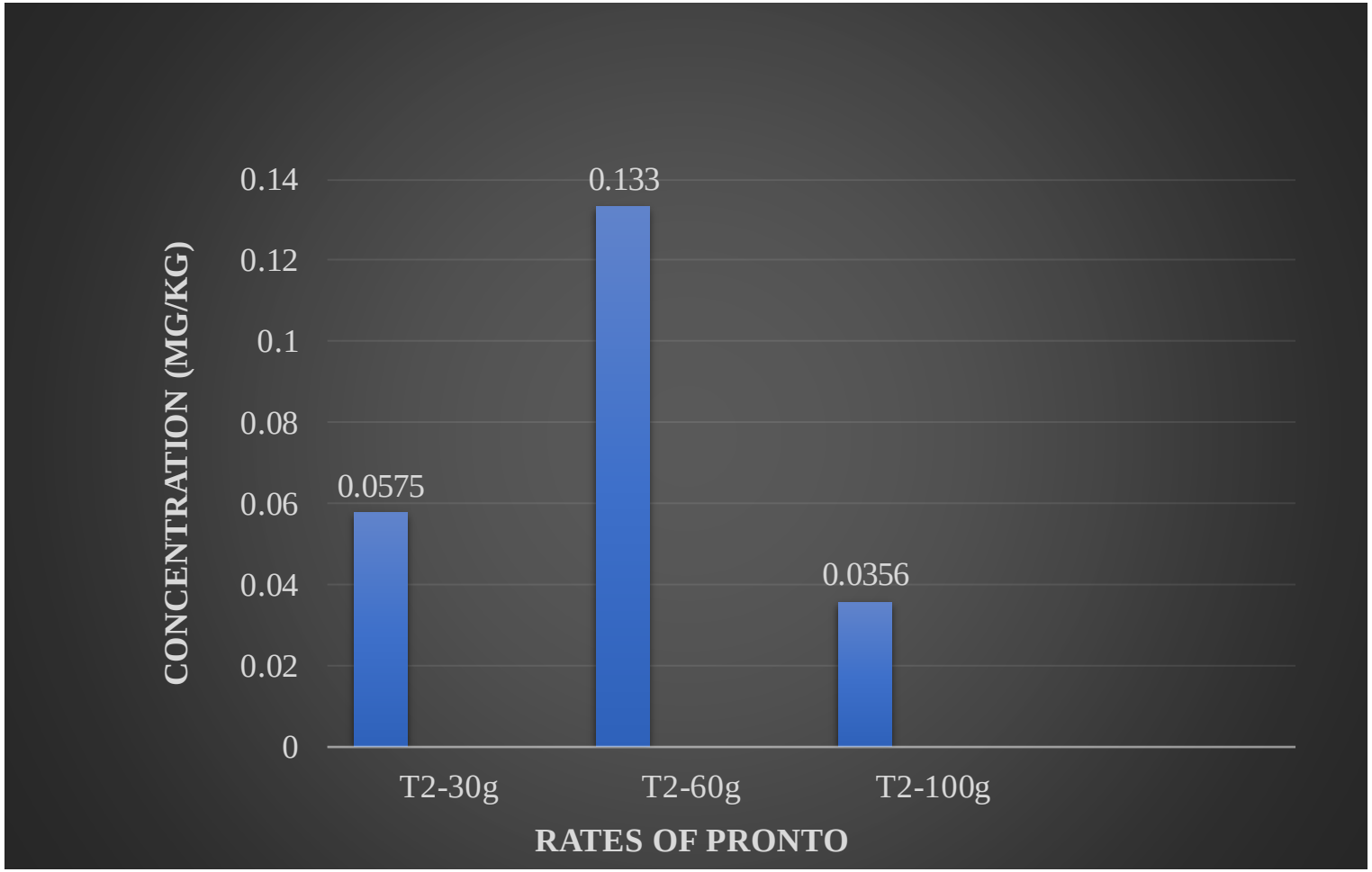

Figure 2. Concentration (mg/kg) of *Imidacloprid* (Pronto) detected at Senescence stage

Results

T3-Milk/Dough (5 days after milk)+senescence

Sample	Concentration Detected (Mg/Kg)
T3-30g	0.0850
T3- 60g	0.128
T3-100g	0.0488

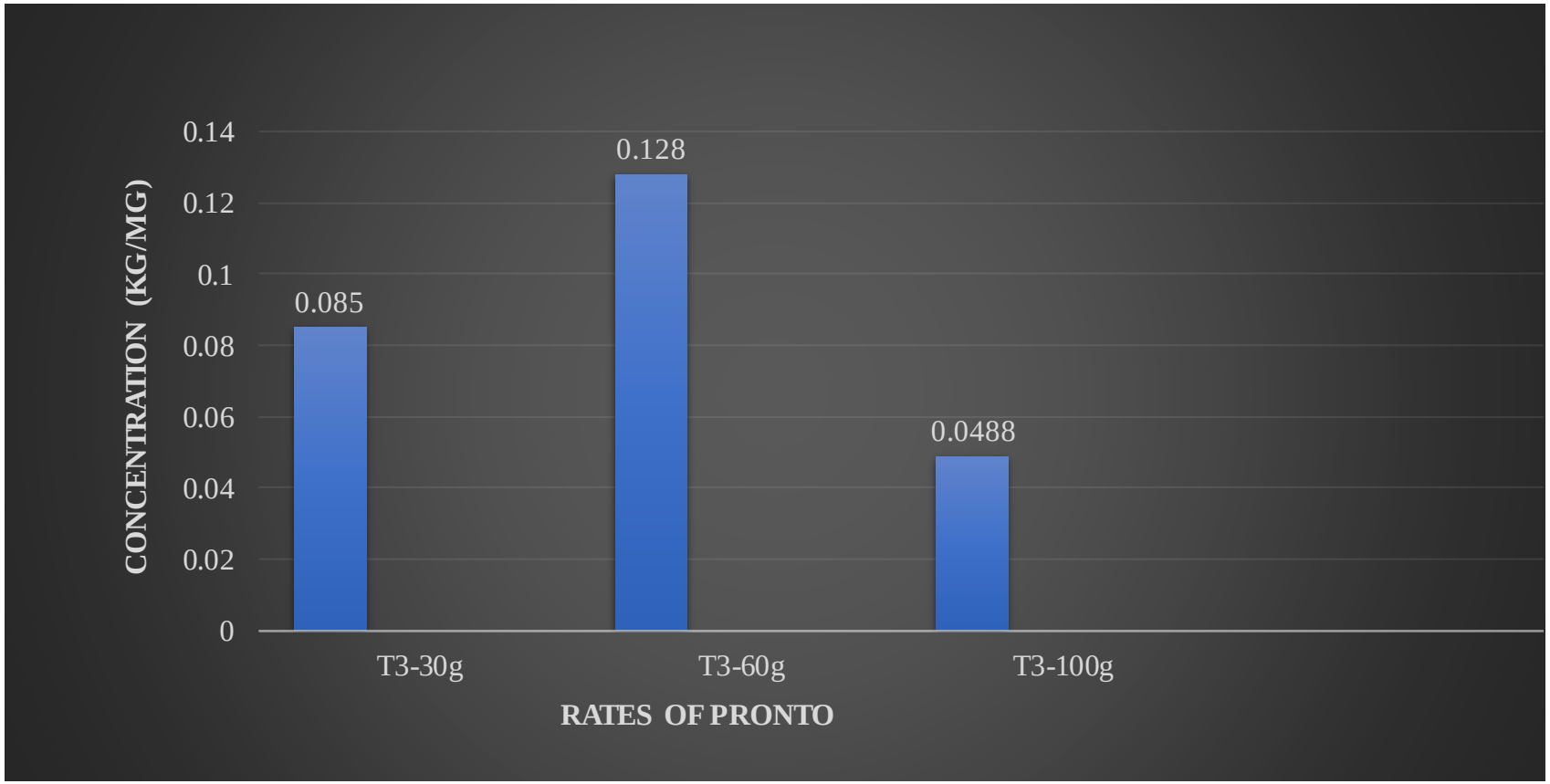

Figure 3. Concentration (mg/kg) of *Imidacloprid* (Pronto) detected at Milk/Dough (5 days after milk)+senescence

Results

T4- Milk/Dough to Harvesting

Sample	Concentration Detected (Mg/Kg)
T4-30g	0.897
T4-60g	1.63
T4-100g	0.789

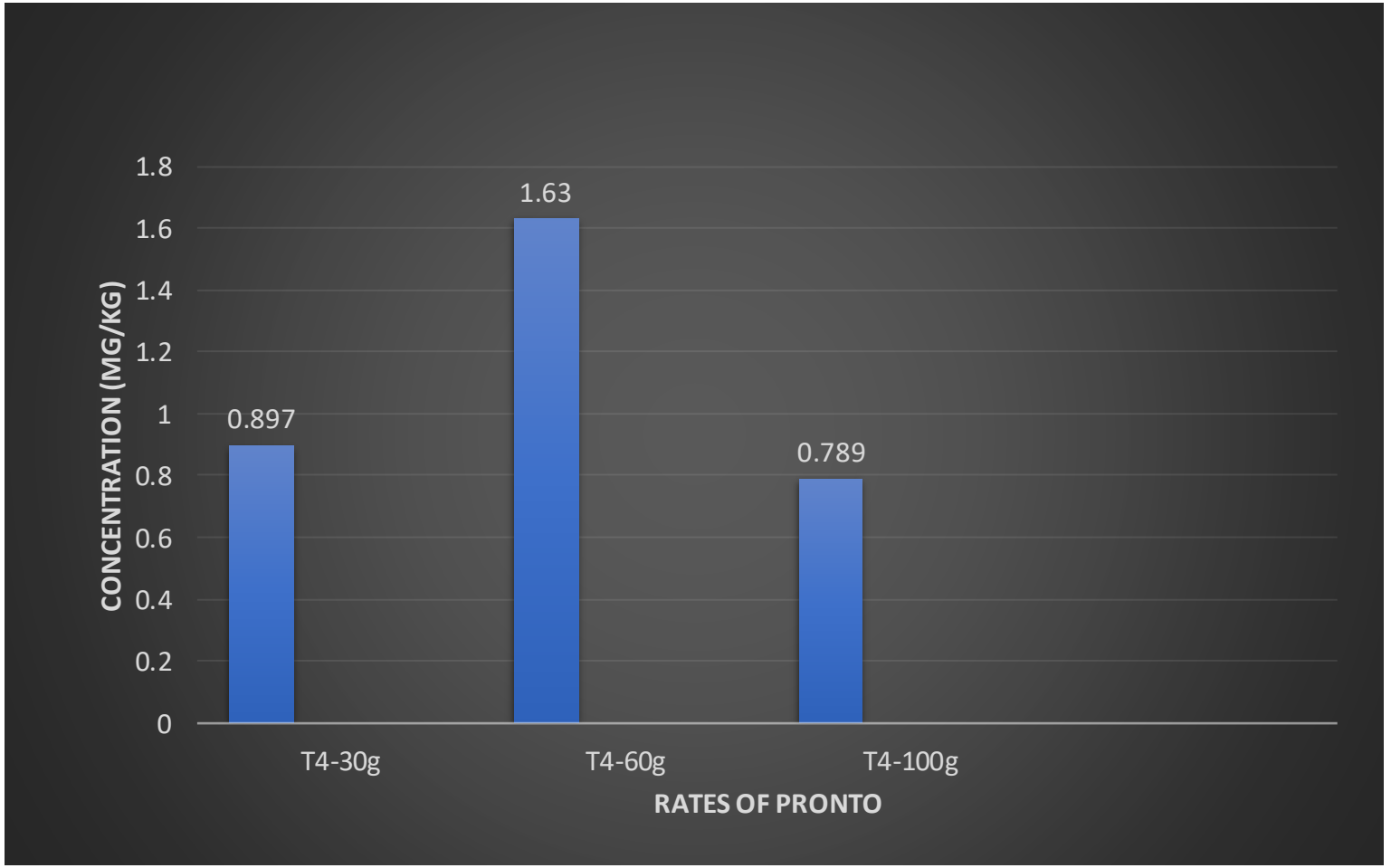

Figure 4. Concentration (mg/kg) of *Imidacloprid* (Pronto) detected at Milk/Dough to Harvesting

Results

Table i. Mean concentration (mg/kg) of *Imidacloprid* (Pronto) detected at different growth stages

Stage of the crop	MEAN Concentration (Mg/kg)
Milk/dough	0.07
Senescence	0.07
Milk/dough (5 days after milk + senescence)	0.08
Milk/dough to harvesting.	1.05

Conclusions/ Discussion:

- Residue of Imidacloprid was found and detected at all stages when applied.
- When imidacloprid was applied at milk/dough and senescence stage, respectively there was no difference in the mean residue detected.
- There was a higher residual difference observed between Milk/dough to harvesting (T4) and all other treatments.
- Residue of all samples were below the EU recommended limit of **1.5 mg/kg** for *Imidacloprid*.
- HOWEVER, FROM ALL INDICATION EU IS HEADING TO ACCEPT MRL OF *0.01 MG/KG* FOR IMIDACLOPRID … SO WE NEED TO TAKE THE NECESSARY STEPS NOW TO ADDRESS THIS ISSUE.

List of Insecticide Evaluated

No.	Insecticide	Active Ingredient	Mode of Action	Use
1	Matador	Carbosulfan	Systemic	E, M & L Season
2	Triazophus	Triazophus	Systemic	E, M & L Season
3	Pronto	Imidacloprid	Systemic	E, M & L Season
4	Renova	Thiamethoxam	Systemic	E, M & L Season
5	Sydbar	Imidacloprid	Systemic	E, M & L Season
6	Tornado	Chlorpyrifos & Cypermethrin	Systemic	E, M & L Season
7	Admajor	Imidacloprid	Systemic	E, M & L Season
8	Abamectin	Abamectin	Systemic	E, M & L Season
9	Supercapre	Oxamyl	Systemic	E, M & L Season
10	Terminator	Emamectin Benzoate	Systemic	E, M & L Season
11	Flip	Fipronil	Systemic	E, M & L Season
12	Jackpot	Lamba-cyhalothrin	Contact	E, M & L Season
13	Tenguard	Permethrin	Contact	E, M & L Season
14	Binder	Bifenthrin	Contact	E, M & L Season
15	Fastac	Cypermethrin	Contact	E, M & L Season
16	Bestac	Cypermethrin	Contact	E, M & L Season

***Early, Mid & Late Season**

PRESENT RECOMMENDATIONS without *Imidacloprid*:

No.	Insecticide	Active Ingredient	Mode of Action	Use*
1	Matador	Carbosulfan	Systemic	E, M & L Season
2	Triazophus	Triazophus	Systemic	E, M & L Season
3	Renova	Thiamethoxam	Systemic	E, M & L Season
4	Tornado	Chlorpyrifos & Cypermethrin	Systemic	E, M & L Season
5	Abamectin	Abamectin	Systemic	E, M & L Season
6	Supercapre	Oxamyl	Systemic	E, M & L Season
7	Terminator	Emamectin Benzoate	Systemic	E, M & L Season
8	Flip	Fipronil	Systemic	E, M & L Season
9	Jackpot	Lamba-cyhalothrin	Contact	E, M & L Season
10	Tenguard	Permethrin	Contact	E, M & L Season
11	Binder	Bifenthrin	Contact	E, M & L Season
12	Fastac	Cypermethrin	Contact	E, M & L Season
13	Bestac	Cypermethrin	Contact	E, M & L Season

***Early, Mid & Late Season**

Active Ingredients on EU Restricted list

No.	Insecticide	Active Ingredient	Mode of Action	Status	
1	Pronto	Imidacloprid	Systemic	Restricted Renewal	
2	Renova	Thiamethoxam	Systemic	Restricted Renewal	
3	Sydbar	Imidacloprid	Systemic	Restricted Renewal	
4	Tornado	Chlorpyrifos & Cypermethrin	Systemic	Restricted Renewal	
5	Admajor	Imidacloprid	Systemic	Restricted Renewal	
6	Abamectin	Abamectin	Systemic	Restricted Renewal	
7	Binder	Bifenthrin	Contact	Restricted Renewal	
8	Fastac	Cypermethrin	Contact	Restricted Renewal	
9	Bestac	Cypermethrin	Contact	Restricted Renewal	
10	Flip	Fipronil	Systemic	Restricted Renewal	
11	Matador	Carbosulfan	Systemic	Not Listed	
12	Triazophus	Triazophus	Systemic	Not Listed	
13	Supercapre	Oxamyl	Systemic	Not Listed	
14	Terminator	Emamectin Benzoate	Systemic	Not Listed	
15	Jackpot	Lamba-cyhalothrin	Contact	Not Listed	
16	Tenguard	Permethrin	Contact	Not Listed	

***Early, Mid & Late Season**

NEW PESTICIDES UNDER EVALUATION

Name of Insecticide	Active Ingredient	% Active Ingredient
Undersiege	Lambda-Cyhalothrin	5
	Thiamethoxam	15
Capri	Acetamiprid	20
Karatex	Lambda-Cyhalothrin	5
Advance 10	Pyriproxyfen	10
Medal	Thiamethoxam	25
Vyd-8	Oxamyl	24

FUTURE RESEARCH WORK ON THE PADDY BUG

Conduct comprehensive studies on the paddy bug and its management in Guyana

✓ **Objective:** To study the paddy bug and develop strategies that will effectively reduce its economic impact on rice cultivation in Guyana.

- *National Monitoring*
- *Evaluation of insecticides*
- *Paddy bug preference on varieties and advance breeding lines.*
- *Residual effect of insecticide at varying stages of grain development of paddy.*
- *Spatial and temporal distribution of paddy bugs in Guyana.*
- *Establishment of a paddy bug biological control laboratory.*

FUTURE RESEARCH WORK ON THE PADDY BUG

- *Paddy bug damage analyses – comparing two methods*
- *Grain Damage – Extent of damage during grain development.*
- *Train stakeholders on the effect, impact and management of insect pests*
- *Life cycle studies*
- *To survey/search and identifying Biological Control Agents of the Paddy bugs.*
- *Species identification and distribution*
- *Host Preference*

- **Develop and Implement an Integrated Pest Management (IPM) program**

Thank You!

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Guyana Rice Development Board

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