

An Investigation into the Effect of Seasonal Variation on the Price of Four Vegetable Crops in Trinidad and Tobago

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Introduction

- The government of Trinidad and Tobago has embarked upon the production of a set of recommended crops that they consider important to assist in the nutritional security component of their food security programme

Objectives

- Main Objective
 - determine whether or not there was a significant difference among the average quarterly prices
- Specific Objective
 - collect data to assess the statistical difference among the average quarterly prices

Time Series Model

- Trend - the tendency of the series to rise or fall over a period of time,
- Seasonal variations - short term periodic fluctuation in values due to different circumstances;
- Cyclical variation - medium-term changes caused by factors which apply for a while, then go away and return again in a repetitive cycle
- Random variation - non-recurring random variations

ANOVA Model

- An ANOVA decomposes the variability in the response variable amongst the different factors.
- A one factor analysis of variance is a special case of analysis of variance for one factor of interest and is a generalization of the two –sampled t-test.

Methodology

- Data Collection
 - Quarterly Agricultural Survey
 - NAMDEVCO
 - Excel File
 - Minitab
 - Descriptive statistics
 - ANOVA

Results

	<i>Lettuce</i>	<i>Patchoi</i>	<i>Cabbage</i>	<i>Dasheen</i>
Count	228	228	228	228
Mean	1.88	2.02	4.13	1.46
Sample standard deviation	1.08	1.25	2.38	0.89
Coefficient of variation (CV)	57.39%	61.63%	57.58%	60.86%

Results Contd

Crops	Quarter 1	Quarter 2	Quarter 3	Quarter 3
Lettuce N = 57	42.31%	53.60%	63.83%	54.60%
Pat Choi N =57	56.68%	58.68%	69.87%	56.50%
Cabbage N =57	59.43%	58.65%	62.62%	46.50%
Dasheen Bush N = 57	57.68%	72.01%	53.68%	58.44%

One-way ANOVA

Lettuce versus Quarters

Source	DF	SS	MS	F	P
Quarters	3	15.34	5.11	4.62	0.004
Error	224	247.95	1.11		
Total	227	262.79			

The p-value of 0.004 from the analysis of variance table indicated that there was a statistical difference among the quarterly prices for lettuce over the nineteen years under investigation.

One-way ANOVA

Patchoi Versus Quarter

- Source DF SS MS F P
- Quarters 3 9.00 3.00 1.96 0.121
- Error 224 342.96 1.53
- Total 227 351.96

The p-value of 0.121 from the analysis of variance table indicated that there was not a statistical difference among the quarterly price for patchoi over the nineteen years under investigation

One-way ANOVA

Cabbage Versus Quarter

Source	DF	SS	MS	F	P
Quarters	3	53.70	17.90	3.26	0.022
Error	224	1230.84	5.49		
Total	227	1284.54			

The p-value of 0.022 from the analysis of variance table indicated that there was a statistical difference among the quarterly price for cabbage over the nineteen years under investigation.

One-way ANOVA

Dasheen Bush Versus Quarter

Source	DF	SS	MS	F	P
Quarters	3	0.818	0.273	0.34	0.795
Error	224	178.852	0.798		
Total	227	179.670			

The p-value of 0.795 from the analysis of variance table indicated that there was not a statistical difference among the quarterly price for dasheen over the nineteen years under investigation.