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A FORECAST MODEL FOR SOME PRINCIPAL CROPS IN RWANDA

Rwandan Agricultural Surveys and Policy Analysis Project

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by

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INTRODUCTION[1]

Forecasting crop production levels before harvest is very important because it allows the authorities to ascertain what the domestic food supply situation will be and therefore take the appropriate action to make up any possible deficit. Methods that have been used to forecast crop harvests or production include farmer opinion surveys, aerial photography, price-rainfall regression analysis, regression analysis relating actual yield to various factors that determine yield and analysis of the deviations from potential crop yield as a result of deviations from normal condition, of the crop water requirement, during different stages of the vegetative cycle of the crop.

In the case of regression analysis, the estimated coefficients give an estimate of the magnitude of the impact of the different factors that affect crop yield. Thus with the estimated coefficients and known levels of the different factors of production, crop production can be forecasted in advance of harvest. The factors that affect crop yield include the amount and distribution of rainfall, the temperature, the incidence of crop disease, the incidence of insect infestation, incidence of crop damage due to wind or hail, technology and the soil fertility. Thus ideally, all these factors should be taken into consideration in forecasting crop production.

METHODOLOGY

In Rwanda there are two crop growing seasons; the first season extends from Sept to February (of the following year) and the second going from March to August of the same year. Because of the rainfall pattern and the different agroclimatological zones, there is a year-round production of the different crops. Hence monthly production data are collected by the Division des Statistiques Agricoles (DSA) of the Ministry of Agriculture. The regression analysis approach was adopted in this study where monthly production data at the Prefecture level, were regressed on rainfall during the vegetative cycle of each crop. The distribution of the rainfall rather than the total amount during the vegetative cycle of a particular crop, is more important in determining crop yield. Consequently, monthly production data were regressed on monthly rainfall data at various stages before harvest of the crop. That is to say, for a crop that is planted in September and harvested in December, the rainfall in September, October, November and December will have different effect on the yield level. This is because the crop requires varying amount of water during different stages of its vegetative cycle. Thus the crop production in December is the cumulative effect of rainfall in September (or 3 months before harvest), October (or 2 months before harvest), November (or 1 month before harvest) and December (or the harvest month). For crops with vegetative cycle of 5 months, the production will be the result of the cumulative effect of rainfall in the preceeding 6 months.

The following crops were considered in this study viz:- beans, peas, sorghum, maize, sweet potatoes, cassava, potatoes and bananas. These crops have varying vegetative cycles. Beans, peas, sweet potatoes and potatoes have a vegetative cycle of 3 to 4 months, whereas sorghum and maize have vegetative cycles of around 5 months. Cassava has a vegetative cycle of 10 months and Bananas a vegetative cycle of 12 to 15 months (Agenda Agricole, 1992). However according to the monthly production data collected by DSA, cassava and bananas are produced all-year round and with peak production around January-February and July-August. Thus the rainfall and other production conditions during the two cropping seasons which have a duration of four to six months, has a greater impact on the production of these crops. One can also assume that a greater proportion of the

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[1] The author acknowledges comments by Dr. David Tardif-Douglin and Samuel Munyaneza on the preliminary draft of this document.

production of these crops come from already established plantings rather than new plantings which have vegetative cycles longer than the normal cropping season. Thus the rainfall during the crop production season of four to six months was considered more appropriate in this model.

Other important factors of production like the incidence of crop disease, the incidence of insect infestation, incidence of crop damage due to wind or hail, technology and soil fertility were not included in the final regression model estimated because of insufficient data for these variables. In any case water or rainfall is the most critical factor affecting crop yield. Temperature levels do not vary significantly in Rwanda and thus temperature variation is not critical.

The regressions were run for the eight crops viz:- beans, peas, sorghum, maize, sweet potatoes, potatoes, cassava and banana at the Prefecture level using monthly production and rainfall data for the period of September 1985 to August 1990. The regression results are reported in annex A. The estimated coefficients are the effects on production of rainfall in a particular month during the vegetative cycle of the crop. These coefficients, together with the monthly rainfall levels are used to predict monthly output for the period of September 1990 to March 1992. The predicted output together with the Forecast equation for each crop are also reported in Annex B. With the forecast equations and monthly rainfall data, production can be predicted for a given month at the Prefecture level for beans, peas, sweet potatoes, potatoes, cassava, bananas, sorghum and maize. In the case of beans, peas, sweet potatoes, potatoes, cassava and bananas, the rainfall three months ago (R_{t-3}), two months ago (R_{t-2}), one month ago (R_{t-1}) and the current month (R_t) are multiplied by the corresponding coefficient in each Crop Forecast equation to obtain the production in that particular month. For sorghum and maize, the rainfall five months ago (R_{t-5}), four months ago (R_{t-4}), three months ago (R_{t-3}), two months ago (R_{t-2}), one month ago (R_{t-1}) and the current month R_t are multiplied by the corresponding coefficient in the sorghum and maize Forecast equations to obtain the production in the particular month. Let's say we want to predict the production of beans in July in the Prefecture of Butare, we will need to perform the following calculations:- (3.3432xRainfall in April + 5.0148xRainfall in May + 5.0148xRainfall in June + 3.3432xRainfall in July). Similarly, to predict the production of sorghum in July in the Prefecture of Butare, we would proceed as follows:- (1.4764xRainfall in February + 2.4606xRainfall in March + 2.9528xRainfall in April + 2.9528xRainfall in May + 2.4606xRainfall in June + 1.4764xRainfall in July). Similar calculations can be performed for the other crops in each of the 10 Prefectures by multiplying the relevant monthly rainfall by the corresponding coefficients in the forecast equations specified for each crop. The results of such calculations for the months of September 1990 to March 1992 are reported in Annex B. Thus the model allows prediction of production in a given month. The forecast equations for beans and sorghum in the 10 Prefectures is as follows:-

BUTARE

(1) Bean Production at Time (t) = $3.3432*R_{t-3} + 5.0148*R_{t-2} + 5.0148*R_{t-1} + 3.3432*R_t$

(2) Sorghum Production at Time (t) = $1.4764*R_{t-5} + 2.4606*R_{t-4} + 2.9528*R_{t-3}$

$$+ 2.9528*R_{t-2} + 2.4606*R_{t-1} + 1.4764*R_t$$

CYANGUGU

(1) Bean Production at Time (t) = $1.0004*R_{t-3} + 1.5006*R_{t-2} + 1.5006*R_{t-1} + 1.0004*R_t$

(2) Sorghum Production at Time (t) = $0.06399*R_{t-5} + 0.10665*R_{t-4} + 0.12798*R_{t-3}$

$+ 0.12798*R_{t-2} + 0.10665*R_{t-1} + 0.06399*R_t$

GISENYI

(1) Bean Production at Time (t) = $2.5114*R_{t-3} + 3.7671*R_{t-2} + 3.7671*R_{t-1} + 2.5114*R_t$

(2) Sorghum Production at Time (t) = $0.12584*R_{t-5} + 0.20973*R_{t-4} + 0.25167*R_{t-3}$

$+ 0.25167*R_{t-2} + 0.20973*R_{t-1} + 0.12584*R_t$

KIGALI

(1) Bean Production at Time (t) = $8.7631*R_{t-3} + 13.145*R_{t-2} + 13.145*R_{t-1} + 8.7631*R_t$

(2) Sorghum Production at Time (t) = $3.7921*R_{t-5} + 6.3202*R_{t-4} + 7.5842*R_{t-3}$

$+ 7.5842*R_{t-2} + 6.3202*R_{t-1} + 3.7921*R_t$

RUHENGERI

(1) Bean Production at Time (t) = $3.2174*R_{t-3} + 4.826*R_{t-2} + 4.826*R_{t-1} + 3.2174*R_t$

(2) Sorghum Production at Time (t) = $0.94585*R_{t-5} + 1.5764*R_{t-4} + 1.8917*R_{t-3}$

$+ 1.8917*R_{t-2} + 1.5764*R_{t-1} + 0.94585*R_t$

BYUMBA

(1) Bean Production at Time (t) = $8.2572*R_{t-3} + 12.386*R_{t-2} + 12.386*R_{t-1} + 8.2572*R_t$

(2) Sorghum Production at Time (t) = $2.53*R_{t-5} + 4.2167*R_{t-4} + 5.06*R_{t-3}$

$+ 5.06*R_{t-2} + 4.2167*R_{t-1} + 2.53*R_t$

GIKONGORO

(1) Bean Production at Time (t) = $1.2594*R_{t-3} + 1.8891*R_{t-2} + 1.8891*R_{t-1} + 1.2594*R_t$

(2) Sorghum Production at Time (t) = $0.59023*R_{t-5} + 0.98372*R_{t-4} + 1.1805*R_{t-3}$

$+ 1.1805*R_{t-2} + 0.98372*R_{t-1} + 0.59023*R_t$

GITARAMA

(1) Bean Production at Time (t) = $3.974*R_{t-3} + 5.9611*R_{t-2} + 5.9611*R_{t-1} + 3.974*R_t$

(2) Sorghum Production at Time (t) = $0.98731*R_{t-5} + 1.6455*R_{t-4} + 1.9746*R_{t-3}$

$+ 1.9746*R_{t-2} + 1.6455*R_{t-1} + 0.98731*R_t$

KIBUYE

(1) Bean Production at Time (t) = $1.9367*R_{t-3} + 2.9051*R_{t-2} + 2.9051*R_{t-1} + 1.9367*R_t$

(2) Sorghum Production at Time (t) = $0.61039*R_{t-5} + 1.0173*R_{t-4} + 1.2208*R_{t-3}$

$+ 1.2208*R_{t-2} + 1.0173*R_{t-1} + 0.61039*R_t$

KIBUNGO

(1) Bean Production at Time (t) = $5.7259*R_{t-3} + 8.5888*R_{t-2} + 8.5888*R_{t-1} + 5.7259*R_t$

(2) Sorghum Production at Time (t) = $1.088*R_{t-5} + 1.8134*R_{t-4} + 2.176*R_{t-3}$

$+ 2.176*R_{t-2} + 1.8134*R_{t-1} + 1.088*R_t$

Where:

R_{t-5} is the amount of rainfall in millimeters, five months before harvest, R_{t-4} is the amount of rainfall in millimeters, four months before harvest, R_{t-3} is the amount of rainfall in millimeters, three months before harvest, R_{t-2} is the amount of rainfall in millimeters, two months before harvest, R_{t-1} is the amount of rainfall in millimeters, one month before harvest and R_t is the amount of rainfall in millimeters, in the harvest month of the crop.

Thus the data needed for the application of the model in predicting monthly crop production at the

Prefecture level, is good monthly rainfall data for each Prefecture. These data are collected by the Department of Meteorology of the Ministry of Transport and Communications and published in the "BULLETIN AGROMETEOROLOGIQUE" for the first 10 days, second 10 days and last 10 days of each month.

To improve the reliability of the forecast model, two other approachs were tried. First the mean monthly price for the period 1986-1990 was calculated and then a series of the deviations of the individual monthly prices from this mean was constructed. Similarly, a series of the deviations of monthly production from the mean production for 1986-1990 was also constructed. Then the deviations of monthly prices from the mean price of 1986-1990 were regressed on the deviations of monthly production from the mean production for 1986-1990. The objective of this approach was to establish the relationship between deviations of monthly prices from the mean price and deviations of monthly production from the mean production. Then from the relationship established one can predict the shortfall of production from the mean or the excess of production above the mean, using the deviations of monthly market prices from the mean of 1986-1990. The second approach involved constructing a series of the deviations of monthly rainfall from the mean rainfall of 1986-1990 and regressing these deviations on the deviations of monthly production from the mean production of 1986-1990. The objective of this approach was to establish the relationship between deviations of rainfall from the mean of 1986-1990 and deviations of monthly crop production from the mean of 1986-1990. Then from the relationship established, one can predict the shortfall of production from the mean production or the excess of production above the mean production, using the deviations of monthly rainfall from the mean of 1986-1990.

The estimated coefficients from these two other approaches were used to predict crop production beyond the reference period. The predicted results were then compared with the results of the regression of rainfall during different stages of the vegetative cycle of the crop on the monthly production. Among the three approaches, the predicted production from the relationship between the rainfall during the different stages of the vegetative cycle of the crop on the monthly production, appeared to be more realistic. To further test the validity of the model, we would need to compare the predicted crop production figures with the actual crop production figures. However, the actual crop production figures for the prediction period were still being processed and thus not available for the comparison. This could be done at a future date when the actual figures become available.

Annex A PARAMETER ESTIMATE OF CROP FORECAST MODEL

I BUTARE

Parameter estimates of the model

Crop	Variable	Coeff. Estimate	t Statist.
Beans	Rainfall		
	t	3.3432	4.6456
	t-1	5.0148	4.6456
	t-2	5.0148	4.6456
	t-3	3.3432	4.6456
Peas	Rainfall		
	t	0.13462	5.8923
	t-1	0.20193	5.8923
	t-2	0.20193	5.8923
	t-3	0.13462	5.8923
Sorghum	Rainfall		
	t	2.1241	2.4782
	t-1	3.1862	2.4782
	t-2	3.1862	2.4782
	t-3	2.1241	2.4782
Maize	Rainfall		
	t	0.46351	6.4760
	t-1	0.69527	6.4760
	t-2	0.69527	6.4760
	t-3	0.46351	6.4760
Sweet Potato	Rainfall		
	t	14.047	12.771
	t-1	21.070	12.771
	t-2	21.070	12.771
	t-3	14.047	12.771
Cassava	Rainfall		
	t	7.4626	11.946
	t-1	11.194	11.946
	t-2	11.194	11.946
	t-3	7.4626	11.946
Potato	Rainfall		
	t	0.63686	5.5516
	t-1	0.95530	5.5516
	t-2	0.95530	5.5516
	t-3	0.63686	5.5516
Banana	Rainfall		
	t	27.171	13.064
	t-1	40.756	13.064
	t-2	40.756	13.064
	t-3	27.171	13.064

I BUTARE

Parameter Estimates of the model

Crop	Variable	Coeff. Estimate	t Statist.
Sorghum	Rainfall		
	t	1.4764	3.0850
	t-1	2.4606	3.0850
	t-2	2.9528	3.0850
	t-3	2.9528	3.0850
	t-4	2.4606	3.0850
	t-5	1.4764	3.0850
Maize	Rainfall		
	t	0.22944	6.0008
	t-1	0.38239	6.0008
	t-2	0.45887	6.0008
	t-3	0.45887	6.0008
	t-4	0.38239	6.0008
	t-5	0.22944	6.0008

II. CYANGUGU

Parameter Estimate of the model

Crop	Variable	Coeff. Estimate	t Statist.
Beans	Rainfall		
	t	1.0004	6.1944
	t-1	1.5006	6.1944
	t-2	1.5006	6.1944
	t-3	1.0004	6.1944
Peas	Rainfall		
	t	0.76796E-01	3.9941
	t-1	0.11519	3.9941
	t-2	0.11519	3.9941
	t-3	0.76796E-01	3.9941
Sorghum	Rainfall		
	t	0.94568E-01	3.6443
	t-1	0.14185	3.6443
	t-2	0.14185	3.6443
	t-3	0.94568E-01	3.6443
Maize	Rainfall		
	t	1.0549	6.2752
	t-1	1.5823	6.2752
	t-2	1.5823	6.2752
	t-3	1.0549	6.2752
Sweet Potato	Rainfall		
	t	4.2036	13.621
	t-1	6.3054	13.621
	t-2	6.3054	13.621
	t-3	4.2036	13.621
Cassava	Rainfall		
	t	2.2200	6.7232
	t-1	3.3299	6.7232
	t-2	3.3299	6.7232
	t-3	2.2200	6.7232
Potato	Rainfall		
	t	0.38253	5.9545
	t-1	0.57379	5.9545
	t-2	0.57379	5.9545
	t-3	0.38253	5.9545
Banana	Rainfall		
	t	17.917	13.706
	t-1	26.876	13.706
	t-2	26.876	13.706
	t-3	17.917	13.706

II. CYANGUGU

Parameter Estimate of the model

Crop	Variable	Coeff. Estimate	t Statist.
Sorghum	Rainfall		
	t	0.63990E-01	4.5914
	t-1	0.10665	4.5914
	t-2	0.12798	4.5914
	t-3	0.12798	4.5914
	t-4	0.10665	4.5914
	t-5	0.63990E-01	4.5914
Maize	Rainfall		
	t	0.58712	6.2275
	t-1	0.97854	6.2275
	t-2	1.1742	6.2275
	t-3	1.1742	6.2275
	t-4	0.97854	6.2275
	t-5	0.58712	6.2275

III. GISENYI

Parameter estimates of the model

Crop	Variable	Coeff. Estimate	t Statist.
Beans	Rainfall		
	t	2.5114	5.5728
	t-1	3.7671	5.5728
	t-2	3.7671	5.5728
	t-3	2.5114	5.5728
Peas	Rainfall		
	t	0.19615	3.2484
	t-1	0.14711	3.2484
	t-2	0.29422	3.2484
	t-3	0.19615	3.2484
Sorghum	Rainfall		
	t	0.20270	3.0267
	t-1	0.30405	3.0267
	t-2	0.30405	3.0267
	t-3	0.20270	3.0267
Maize	Rainfall		
	t	3.9464	3.8690
	t-1	5.9197	3.8690
	t-2	5.9197	3.8690
	t-3	3.9464	3.8690
Sweet Potato	Rainfall		
	t	9.5686	16.043
	t-1	14.353	16.043
	t-2	14.353	16.043
	t-3	9.5686	16.043
Cassava	Rainfall		
	t	1.5935	12.108
	t-1	2.3902	12.108
	t-2	2.3902	12.108
	t-3	1.5935	12.108
Potato	Rainfall		
	t	7.3666	9.9785
	t-1	11.050	9.9785
	t-2	11.050	9.9785
	t-3	7.3666	9.9785
Banana	Rainfall		
	t	28.928	16.113
	t-1	43.392	16.113
	t-2	43.392	16.113
	t-3	28.928	16.113

III. GISENYI

Parameter Estimates of the model

Crop	Variable	Coeff. Estimate	t Statist.
Sorghum	Rainfall		
	t	0.12584	3.3459
	t-1	0.20973	3.3459
	t-2	0.25167	3.3459
	t-3	0.25167	3.3459
	t-4	0.20973	3.3459
	t-5	0.12584	3.3459
Maize	Rainfall		
	t	2.1154	3.7440
	t-1	3.5256	3.7440
	t-2	4.2307	3.7440
	t-3	4.2307	3.7440
	t-4	3.5256	3.7440
	t-5	2.1154	3.7440

IV. KIGALI

Parameter Estimates of the model

Crop	Variable	Coeff. Estimate	t Statist.
Beans	Rainfall		
	t	8.7631	6.5403
	t-1	13.145	6.5403
	t-2	13.145	6.5403
	t-3	8.7631	6.5403
Peas	Rainfall		
	t	0.17059	5.7510
	t-1	0.25589	5.7510
	t-2	0.25589	5.7510
	t-3	0.17059	5.7510
Sorghum	Rainfall		
	t	4.3808	1.9986
	t-1	6.5711	1.9986
	t-2	6.5711	1.9986
	t-3	4.3808	1.9986
Maize	Rainfall		
	t	1.4177	5.8028
	t-1	2.1265	5.8028
	t-2	2.1265	5.8028
	t-3	1.4177	5.8028
Sweet Potato	Rainfall		
	t	13.189	15.296
	t-1	19.783	15.296
	t-2	19.783	15.296
	t-3	13.189	15.296
Cassava	Rainfall		
	t	13.087	16.318
	t-1	19.630	16.318
	t-2	19.630	16.318
	t-3	13.087	16.318
Potato	Rainfall		
	t	1.1029	7.2800
	t-1	1.6543	7.2800
	t-2	1.6543	7.2800
	t-3	1.1029	7.2800
Banana	Rainfall		
	t	79.539	12.837
	t-1	119.31	12.837
	t-2	119.31	12.837
	t-3	79.539	12.837

IV. KIGALI

Parameter Estimates of the model

Crop	Variable	Coeff. Estimate	t Statist.
Sorghum	Rainfall		
	t	3.7921	3.1618
	t-1	6.3202	3.1618
	t-2	7.5842	3.1618
	t-3	7.5842	3.1618
	t-4	6.3202	3.1618
	t-5	3.7921	3.1618
Maize	Rainfall		
	t	0.83268	6.1056
	t-1	1.3878	6.1056
	t-2	1.6654	6.1056
	t-3	1.6654	6.1056
	t-4	1.3878	6.1056
	t-5	0.83268	6.1056

V. RUHENGERI

Parameter Estimates of the model

Crop	Variable	Coeff. Estimate	t Statist.
Beans	Rainfall		
	t	3.2174	5.7253
	t-1	4.8260	5.7253
	t-2	4.8260	5.7253
	t-3	3.2174	5.7253
Peas	Rainfall		
	t	0.22938	4.4560
	t-1	0.34407	4.4560
	t-2	0.34407	4.4560
	t-3	0.22938	4.4560
Sorghum	Rainfall		
	t	1.4005	4.1669
	t-1	2.1008	4.1669
	t-2	2.1008	4.1669
	t-3	1.4005	4.1669
Maize	Rainfall		
	t	2.5045	4.7482
	t-1	3.7567	4.7482
	t-2	3.7567	4.7482
	t-3	2.5045	4.7482
Sweet Potato	Rainfall		
	t	15.781	22.203
	t-1	23.671	22.203
	t-2	23.671	22.203
	t-3	15.781	22.203
Cassava	Rainfall		
	t	0.87691	12.023
	t-1	1.3154	12.023
	t-2	1.3154	12.023
	t-3	0.87691	12.023
Potato	Rainfall		
	t	16.499	13.412
	t-1	24.749	13.412
	t-2	24.749	13.412
	t-3	16.499	13.412
Banana	Rainfall		
	t	23.347	18.450
	t-1	35.020	18.450
	t-2	35.020	18.450
	t-3	23.347	18.450

V. RUHENGERI

Parameter Estimates of the model

Crop	Variable	Coeff. Estimate	T-Stat.
Sorghum	Rainfall		
	t	0.94585	5.3177
	t-1	1.5764	5.3177
	t-2	1.8917	5.3177
	t-3	1.8917	5.3177
	t-4	1.5764	5.3177
	t-5	0.94585	5.3177
Maize	Rainfall		
	t	1.5213	5.4495
	t-1	2.5355	5.4495
	t-2	3.0426	5.4495
	t-3	3.0426	5.4495
	t-4	2.5355	5.4495
	t-5	1.5213	5.4495

VI. BYUMBA

Parameter Estimates of the model

Crop	Variable	Coeff. Estimate	t Statist.
Beans	Rainfall		
	t	8.2572	5.9003
	t-1	12.386	5.9003
	t-2	12.386	5.9003
	t-3	8.2572	5.9003
Peas	Rainfall		
	t	0.52452	5.2109
	t-1	0.78678	5.2109
	t-2	0.78678	5.2109
	t-3	0.52452	5.2109
Sorghum	Rainfall		
	t	3.5815	2.2342
	t-1	5.3722	2.2342
	t-2	5.3722	2.2342
	t-3	3.5815	2.2342
Maize	Rainfall		
	t	1.7212	5.8648
	t-1	2.5818	5.8648
	t-2	2.5818	5.8648
	t-3	1.7212	5.8648
Sweet Potato	Rainfall		
	t	21.001	20.134
	t-1	31.502	20.134
	t-2	31.502	20.134
	t-3	21.001	20.134
Cassava	Rainfall		
	t	3.0092	11.358
	t-1	4.5137	11.358
	t-2	4.5137	11.358
	t-3	3.0092	11.358
Potato	Rainfall		
	t	2.5339	7.6482
	t-1	3.8009	7.6482
	t-2	3.8009	7.6482
	t-3	2.5339	7.6482
Banana	Rainfall		
	t	58.721	14.283
	t-1	88.081	14.283
	t-2	88.081	14.283
	t-3	58.721	14.283

VI. BYUMBA

Parameter Estimates of the model

Crop	Variable	Coeff. Estimate	T-Stat.
Sorghum	Rainfall		
	t	2.5300	2.7800
	t-1	4.2167	2.7800
	t-2	5.0600	2.7800
	t-3	5.0600	2.7800
	t-4	4.2167	2.7800
	t-5	2.5300	2.7800
Maize	Rainfall		
	t	0.94263	6.1721
	t-1	1.5710	6.1721
	t-2	1.8853	6.1721
	t-3	1.8853	6.1721
	t-4	1.5710	6.1721
	t-5	0.94263	6.1721

VII. GIKONGORO

Parameter Estimates of the model

Crop	Variable	Coeff. Estimate	t Statist.
Beans	Rainfall		
	t	1.2594	4.1468
	t-1	1.8891	4.1468
	t-2	1.8891	4.1468
	t-3	1.2594	4.1468
Peas	Rainfall		
	t	0.28652	3.8344
	t-1	0.42978	3.8344
	t-2	0.42978	3.8344
	t-3	0.28652	3.8344
Sorghum	Rainfall		
	t	0.41919	1.0806
	t-1	0.62878	1.0806
	t-2	0.62878	1.0806
	t-3	0.41919	1.0806
Maize	Rainfall		
	t	0.99030	6.7281
	t-1	1.4855	6.7281
	t-2	1.4855	6.7281
	t-3	0.99030	6.7281
Sweet Potato	Rainfall		
	t	15.881	15.333
	t-1	23.821	15.333
	t-2	23.821	15.333
	t-3	15.881	15.333
Cassava	Rainfall		
	t	2.5516	12.754
	t-1	3.8274	12.754
	t-2	3.8274	12.754
	t-3	2.5516	12.754
Potato	Rainfall		
	t	0.59376	7.1275
	t-1	0.89064	7.1275
	t-2	0.89064	7.1275
	t-3	0.59376	7.1275
Banana	Rainfall		
	t	8.9025	12.603
	t-1	13.354	12.603
	t-2	13.354	12.603
	t-3	8.9025	12.603

VII. GIKONGORO

Parameter Estimates of the model

Crop	Variable	Coeff. Estimate	t Statist.
Sorghum	Rainfall		
	t	0.59023	2.7006
	t-1	0.98372	2.7006
	t-2	1.1805	2.7006
	t-3	1.1805	2.7006
	t-4	0.98372	2.7006
	t-5	0.59023	2.7006
Maize	Rainfall		
	t	0.54249	6.0635
	t-1	0.90415	6.0635
	t-2	1.0850	6.0635
	t-3	1.0850	6.0635
	t-4	0.90415	6.0635
	t-5	0.54249	6.0635

VIII. GITARAMA

Parameter Estimates of the model

Crop	Variable	Coeff. Estimate	t Statist.
Beans	Rainfall		
	t	3.9740	7.5172
	t-1	5.9611	7.5172
	t-2	5.9611	7.5172
	t-3	3.9740	7.5172
Peas	Rainfall		
	t	0.15151	7.0072
	t-1	0.22726	7.0072
	t-2	0.22726	7.0072
	t-3	0.15151	7.0072
Sorghum	Rainfall		
	t	1.3167	2.3752
	t-1	1.9750	2.3752
	t-2	1.9750	2.3752
	t-3	1.3167	2.3752
Mais	Rainfall		
	t	0.60665	6.6440
	t-1	0.90998	6.6440
	t-2	0.90998	6.6440
	t-3	0.60665	6.6440
Sweet Potato	Rainfall		
	t	11.911	15.531
	t-1	17.867	15.531
	t-2	17.867	15.531
	t-3	11.911	15.531
Cassava	Rainfall		
	t	10.907	13.825
	t-1	16.361	13.825
	t-2	16.361	13.825
	t-3	10.907	13.825
Potato	Rainfall		
	t	0.78719	5.1480
	t-1	1.1808	5.1480
	t-2	1.1808	5.1480
	t-3	0.78719	5.1480
Banana	Rainfall		
	t	46.161	15.077
	t-1	69.242	15.077
	t- 2	69.242	15.077
	t-3	46.161	15.077

VIII. GITARAMA

Parameter Estimates of the model

Crop	Variable	Coeff. Estimate	t Statist.
Sorghum	Rainfall		
	t	0.9873 1	3.1719
	t-1	1.6455	3.1719
	t-2	1.9746	3.1719
	t-3	1.9746	3.1719
	t-4	1.6455	3.1719
	t-5	0.98731	3.1719
Maize	Rainfall		
	t	0.30955	6.8816
	t-1	0.51591	6.8816
	t-2	0.61910	6.8816
	t-3	0.61910	6.8816
	t-4	0.51591	6.8816
	t-5	0.30955	6.8816

IX. KIBUYE

Parameter Estimates of the model

Crop	Variable	Coeff. Estimate	t Statist.
Beans	Rainfall		
	t	1.9367	4.8639
	t-1	2.9051	4.8639
	t-2	2.9051	4.8639
	t-3	1.9367	4.8639
Peas	Rainfall		
	t	0.29481	3.8196
	t-1	0.44221	3.8196
	t-2	0.44221	3.8196
	t-3	0.29481	3.8196
Sorghum	Rainfall		
	t	0.61054	1.5370
	t-1	0.91581	1.5370
	t-2	0.91581	1.5370
	t-3	0.61054	1.5370
Maize	Rainfall		
	t	4.0839	4.3693
	t-1	6.1258	4.3693
	t-2	6.1258	4.3693
	t-3	4.0839	4.3693
Sweet Potato	Rainfall		
	t	10.265	16.002
	t-1	15.398	16.002
	t-2	15.398	16.002
	t-3	10.265	16.002
Cassava	Rainfall		
	t	3.3417	5.0605
	t-1	5.0126	5.0605
	t-2	5.0126	5.0605
	t-3	3.3417	5.0605
Potato	Rainfall		
	t	1.6588	6.7698
	t-1	2.4881	6.7698
	t-2	2.4881	6.7698
	t-3	1.6588	6.7698
Banana	Rainfall		
	t	18.626	4.8063
	t-1	27.940	4.8063
	t-2	27.940	4.8063
	t-3	18.626	4.8063

IX. KIBUYE

Parameter Estimates of the model

Crop	Variable	Coeff. Estimate	t Statist.
Sorghum	Rainfall		
	t	0.61039	2.2490
	t-1	1.0173	2.2490
	t-2	1.2208	2.2490
	t-3	1.2208	2.2490
	t-4	1.0173	2.2490
	t-5	0.61039	2.2490
Maize	Rainfall		
	t	1.4525	3.0287
	t-1	2.4208	3.0287
	t-2	2.9049	3.0287
	t-3	2.9049	3.0267
	t-4	2.4208	3.0287
	t-5	1.4525	3.0287

X. KIBUNGO

Parameter Estimates of the model

Crop	Variable	Coeff. Estimate	t Statist.
Beans	Rainfall		
	t	5.7259	7.5592
	t-1	8.5888	7.5592
	t-2	8.5888	7.5592
	t-3	5.7259	7.5592
Peas	Rainfall		
	t	0.18621	5.0975
	t-1	0.27932	5.0975
	t-2	0.27932	5.0975
	t-3	0.18621	5.0975
Sorghum	Rainfall		
	t	1.0365	1.2797
	t-1	1.5547	1.2797
	t-2	1.5547	1.2797
	t-3	1.0365	1.2797
Maize	Rainfall		
	t	0.74875	7.8258
	t-1	1.1231	7.8258
	t-2	1.1231	7.8258
	t-3	0.74875	7.8258
Sweet Potato	Rainfall		
	t	6.6920	12.840
	t-1	10.038	12.840
	t-2	10.038	12.840
	t-3	6.6920	12.840
Cassava	Rainfall		
	t	4.1516	11.997
	t-1	6.2274	11.997
	t-2	6.2274	11.997
	t-3	4.1516	11.997
Potato	Rainfall		
	t	0.55107	6.9836
	t-1	0.82660	6.9836
	t-2	0.82660	6.9836
	t-3	0.55107	6.9836
Banana	Rainfall		
	t	98.985	11.327
	t-1	148.48	11.327
	t-2	148.48	11.327
	t-3	98.985	11.327

X. KIBUNGO

Parameter Estimate of the model

Crop	Variable	Coeff. Estimate	t Statist.
Sorghum	Rainfall		
	t	1.0880	2.3866
	t-1	1.8134	2.3866
	t-2	2.1760	2.3866
	t-3	2.1760	2.3866
	t-4	1.8134	2.3866
	t-5	1.0880	2.3866
Maize	Rainfall		
	t	0.44011	8.6847
	t-1	0.73352	8.6847
	t-2	0.88022	8.6847
	t-3	0.88022	8.6847
	t-4	0.73352	8.6847
	t-5	0.44011	8.6847

Annex B PREDICTED CROP PRODUCTION IN TONNES

PREFECTURE: BUTARE PREDICTED BEAN PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Bean (t-3)	Contr. Prodn Bean (t-2)	Contr. Prodn Bean (t-1)	Contr. Prodn Bean (t)	Predted[a] Prodn Bean
Feb.1990	165.10					
Mar.1990	110.10					
Apr.1990	192.60					
May 1990	67.90					
Jun.1990	0.00					
Jul.1990	0.00					
Aug.1990	11.40					
Sep.1990	50.00	0	0	57	167	224
Oct.1990	109.50	0	57	251	366	674
Nov.1990	143.60	38	251	549	480	1318
Dec.1990	135.50	167	549	720	453	1889
Jan.1991	80.70	366	720	680	270	2036
Feb.1991	21.80	480	680	405	73	1637
Mar.1991	63.90	453	405	109	214	1181
Apr.1991	172.10	270	109	320	575	1275
May 1991	218.00	73	320	863	729	1985
Jun.1991	24.20	214	863	1093	81	2251
Jul.1991	2.20	575	1093	121	7	1797
Aug.1991	1.90	729	121	11	6	868
Sep.1991	35.90	81	11	10	120	221
Oct.1991	249.10	7	10	180	833	1030
Nov.1991	110.80	6	180	1249	370	1806
Dec.1991	82.50	120	1249	556	276	2201
Jan.1992	32.10	833	556	414	107	1909
Feb.1992	99.50	370	414	161	333	1278
Mar.1992	117.90	276	161	499	0	0

(1) Forecast Equation for Bean - Bean Production = $3.3432*R_{t-3} + 5.0148*R_{t-2} + 5.0148*R_{t-1} + 3.3432*R_t$

Where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest,

R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

a. Column t-3 is the contribution of rainfall three months ago, to monthly production, column t-2 is the contribution of rainfall two months ago, to monthly production, column t-1 is the contribution of rainfall one month ago, to monthly production, column t is the contribution of rainfall in the current month, to monthly production and the last column is the predicted monthly production which is the sum of t-3, t-2, t-1 and t.

PREFECTURE: BUTARE PREDICTED SORGHUM PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Sorghum (t-5)	Contr. Prodn Sorghum (t-4)	Contr. Prodn Sorghum (t-3)	Contr. Prodn Sorghum (t-2)	Contr. Prodn Sorghum (t-1)	Contr. Prodn Sorghum (t)	Predted[a] Prodn Sorghum
Feb.1990	165.10							
Mar.1990	110.10							
Apr.1990	192.60							
May 1990	67.90							
Jun.1990	0.00							
Jul.1990	0.00							
Aug.1990	11.40							
Sep.1990	50.00	284	167	0	0	28	74	553
Oct.1990	109.50	100	0	0	34	123	162	419
Nov.1990	143.60	0	0	34	148	269	212	663
Dec.1990	135.50	0	28	148	323	353	200	1052
Jan.1991	80.70	17	123	323	424	333	119	1340
Feb.1991	21.80	74	269	424	400	199	32	1398
Mar.1991	63.90	162	353	400	238	54	94	1301
Apr.1991	172.10	212	333	238	64	157	254	1259
May 1991	218.00	200	199	64	189	423	322	1397
Jun.1991	24.20	119	54	189	508	536	36	1442
Jul.1991	2.20	32	157	508	644	60	3	1404
Aug.1991	1.90	94	423	644	71	5	3	1241
Sep.1991	35.90	254	536	71	6	5	53	926
Oct.1991	249.10	322	60	6	6	88	368	850
Nov.1991	10.80	36	5	6	106	613	164	929
Dec.1991	82.50	3	5	106	736	273	122	1244
Jan.1992	32.10	3	88	736	327	203	47	1404
Feb.1992	99.50	53	613	327	244	79	147	1463
Mar.1992	117.90	0	273	244	95	245	174	1030

(2) Forecast Equation for Sorghum - Sorghum Production = $1.4764*R_{t-5} + 2.4606*R_{t-4} + 2.9528*R_{t-3} + 2.9528*R_{t-2} + 2.4606*R_{t-1} + 1.4764*R_t$

where:

R_{t-5} is rainfall five months before harvest, R_{t-4} is rainfall four months before harvest,

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest

R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

b. Column t-5 is the contribution of rainfall five months ago, to monthly production, column t-4 is the contribution of rainfall four months ago, to monthly production, column t-3 is the contribution of rainfall three months ago, to monthly production, column t-2 is the contribution of rainfall two months ago, to monthly production, column t-1 is the contribution of rainfall one month ago, to monthly production, column t is the contribution of rainfall in the current month, to monthly production and the last column is the predicted monthly production which is the sum of t-5, t-4, t-3, t-2, t-1 and t.

PREFECTURE: BUTARE PREDICTED MAIZE PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Maize (t-5)	Contr. Prodn Maize (t-4)	Contr. Prodn Maize (t-3)	Contr. Prodn Maize (t-2)	Contr. Prodn Maize (t-1)	Contr. Prodn Maize (t)	Predted Prodn Maize
Feb.1990	55.10							
Mar.1990	110.10							
Apr.1990	192.60							
May 1990	67.90							
Jun.1990	0.00							
Jul.1990	0.00							
Aug.1990	11.40							
Sep.1990	50.00	44	26	0	0	4	11	86
Oct.1990	109.50	16	0	0	5	19	25	65
Nov.1990	143.60	0	0	5	23	42	33	103
Dec.1990	135.50	0	4	23	50	55	31	164
Jan.1991	80.70	3	19	50	66	52	19	208
Feb.1991	21.80	11	42	66	62	31	5	217
Mar.1991	63.90	25	55	62	37	8	15	202
Apr.1991	172.10	33	52	37	10	24	39	196
May 1991	218.00	31	31	10	29	66	50	217
Jun.1991	24.20	19	8	29	79	83	6	224
Jul.1991	2.20	5	24	79	100	9	1	218
Aug.1991	1.90	15	66	100	11	1	0	193
Sep.1991	35.90	39	83	11	1	1	8	144
Oct.1991	249.10	50	9	1	1	14	57	132
Nov.1991	110.80	6	1	1	16	95	25	144
Dec.1991	82.50	1	1	16	114	42	19	193
Jan.1992	32.10	0	14	114	51	32	7	218
Feb.1992	99.50	8	95	51	38	12	23	227
Mar.1992	117.90	57	42	38	15	38	27	217

(3) Forecast Equation - Maize Production = $0.22944*R_{t-5} + 0.38239*R_{t-4} + 0.45887*R_{t-3} + 0.45887*R_{t-2} + 0.38239*R_{t-1} + 0.22944*R_t$

Where:

R_{t-5} is rainfall five months before harvest, R_{t-4} is rainfall four months before harvest, R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: BUTARE PREDICTED PEAS PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Peas (t-3)	Contr. Prodn Peas (t-2)	Contr. Prodn Peas (t-1)	Contr. Prodn Peas (t)	Predted Prodn Peas
Feb.1990	165.10					
Mar.1990	110.10					
Apr.1990	192.60					
May 1990	67.90					
Jun.1990	0.00					
Jul.1990	0.00					
Aug.1990	11.40					
Sep.1990	50.00	0	0	2	7	9
Oct.1990	109.50	0	2	10	15	27
Nov.1990	143.60	2	10	22	19	53
Dec.1990	135.50	7	22	29	18	76
Jan.1991	80.70	15	29	27	11	82
Feb.1991	21.80	19	27	16	3	66
Mar.1991	63.90	18	16	4	9	48
Apr.1991	172.10	11	4	13	23	51
May 1991	218.00	3	13	35	29	80
Jun.1991	24.20	9	35	44	3	91
Jul.1991	2.20	23	44	5	0	72
Aug.1991	1.90	29	5	0	0	35
Sep.1991	35.90	3	0	0	5	9
Oct.1991	249.10	0	0	7	34	41
Nov.1991	110.80	0	7	50	15	73
Dec 1991	82.50	5	50	22	11	89
Jan.1992	32.10	34	22	17	4	77
Feb.1992	99.50	15	17	6	13	51
Mar.1992	117.90	11	6	20	16	54

(4) Forecast Equation for Peas - Peas Production = $0.13462*R_{t-3} + 0.20193*R_{t-2} + 0.20193*R_{t-1} + 0.13462*R_t$

Where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: BUTARE PREDICTED SWEET POTATOES PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Sw.Potato (t-3)	Contr. Prodn Sw.Potato (t-2)	Contr. Prodn Sw.Potato (t-1)	Contr. Prodn Sw.Potato (t)	Predted Prodn Sw.Potato
Feb.1990	165.10					
Mar.1990	110.10					
Apr.1990	192.60					
May 1990	67.90					
Jun.1990	0.00					
Jul.1990	0.00					
Aug.1990	11.40					
Sep.1990	50.00	0	0	240	702	943
Oct.1990	109.50	0	240	1054	1538	2832
Nov.1990	143.60	160	1054	2307	2017	5538
Dec.1990	135.50	702	2307	3026	1903	7939
Jan.1991	80.70	1538	3026	2855	1134	8552
Feb.1991	21.80	2017	2855	1700	306	6879
Mar.1991	63.90	1903	1700	459	898	4961
Apr.1991	172.10	1134	459	1346	2417	5357
May 1991	218.00	306	1346	3626	3062	8341
Jun.1991	24.20	898	3626	4593	340	9457
Jul.1991	2.20	2417	4593	510	31	7552
Aug.1991	1.90	3062	510	46	27	3645
Sep.1991	35.90	340	46	40	504	931
Oct.1991	249.10	31	40	756	3499	4326
Nov.1991	110.80	27	756	5249	1556	7588
Dec.1991	82.50	504	5249	2335	1159	9246
Jan.1992	32.10	3499	2335	1738	451	8023
Feb.1992	99.50	1556	1738	676	1398	5369
Mar.1992	117.90	1159	676	2096	1656	5588

(5) Forecast Equation for Sweet Potato - Sweet Potato Production = $14.047*R_{t-3} + 21.07*R_{t-2} + 21.07*R_{t-1} + 14.047*R_t$

Where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: BUTARE PREDICTED CASSAVA PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Cassava (t-3)	Contr. Prodn Cassava (t-2)	Contr. Prodn Cassava (t-1)	Contr. Prodn Cassava (t)	Predted Prodn Cassava
Feb.1990	165.10					
Mar.1990	110.10					
Apr.1990	192.60					
May 1990	67.90					
Jun.1990	0.00					
Jul.1990	0.00					
Aug.1990	11.40					
Sep.1990	50.00	0	0	128	373	501
Oct.1990	109.50	0	128	560	817	1504
Nov.1990	143.60	85	560	1226	1072	2942
Dec.1990	135.50	373	1226	1607	1011	4218
Jan.1991	80.70	817	1607	1517	602	4544
Feb.1991	21.80	1072	1517	903	163	3654
Mar.1991	63.90	1011	903	244	477	2635
Apr.1991	172.10	602	244	715	1284	2846
May 1991	218.00	163	715	1926	1627	4431
Jun.1991	24.20	477	1926	2440	181	5024
Jul.1991	2.20	1284	2440	271	16	4012
Aug.1991	1.90	1627	271	25	14	1937
Sep.1991	35.90	181	25	21	268	494
Oct.1991	249.10	16	21	402	1859	2298
Nov.1991	110.80	14	402	2788	827	4031
Dec.1991	82.50	268	2788	1240	616	4912
Jan.1992	32.10	1859	1240	924	240	4262
Feb.1992	99.50	827	924	359	743	2852
Mar.1992	117.90	616	359	1114	880	2969

(6) Forecast Equation for Cassava - Cassava Production = $7.4626*R_{t-3} + 11.194*R_{t-2} + 11.194*R_{t-1} + 7.4626*R_t$

Where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: BUTARE PREDICTED POTATO PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Potato (t-3)	Contr. Prodn Potato (t-2)	Contr. Prodn Potato (t-1)	Contr. Prodn Potato (t)	Predted Prodn Potato
Feb.1990	165.10					
Mar.1990	110.10					
Apr.1990	192.60					
May 1990	67.90					
Jun.1990	0.00					
Jul.1990	0.00					
Aug.1990	11.40					
Sep.1990	50.00	0	0	11	32	43
Oct.1990	109.50	0	11	48	70	128
Nov.1990	143.60	7	48	105	91	251
Dec.1990	135.50	32	105	137	86	360
Jan.1991	80.70	70	137	129	51	388
Feb.1991	21.80	91	129	77	14	312
Mar.1991	63.90	86	77	21	41	225
Apr.1991	172.10	51	21	61	110	243
May 1991	218.00	14	61	164	139	378
Jun.1991	24.20	41	164	208	15	429
Jul.1991	2.20	110	208	23	1	342
Aug.1991	1.90	139	23	2	1	165
Sep.1991	35.90	15	2	2	23	42
Oct.1991	249.10	1	2	34	159	196
Nov.1991	110.80	1	34	238	71	344
Dec.1991	82.50	23	238	106	53	419
Jan.1992	32.10	159	106	79	20	364
Feb.1992	99.50	71	79	31	63	243
Mar.1992	117.90	53	31	95	75	253

(7) Forecast Equation for Potato - Potato Production = $0.63686*R_{t-3} + 0.9553*R_{t-2} + 0.9553*R_{t-1} + 0.63686*R_t$

Where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: BUTARE PREDICTED BANANA PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Banana (t-3)	Contr. Prodn Banana (t-2)	Contr. Prodn Banana (t-1)	Contr. Prodn Banana (t)	Predted Prodn Banana
Feb.1990	165.10					
Mar.1990	110.10					
Apr.1990	192.60					
May 1990	67.90					
Jun.1990	0.00					
Jul.1990	0.00					
Aug.1990	11.40					
Sep.1990	50.00	0	0	465	1359	1823
Oct.1990	109.50	0	465	2038	2975	5478
Nov.1990	143.60	310	2038	4463	3902	10712
Dec.1990	135.50	1359	4463	5853	3682	15356
Jan.1991	80.70	2975	5853	5522	2193	16543
Feb.1991	21.80	3902	5522	3289	592	13306
Mar.1991	63.90	3682	3289	888	1736	9595
Apr.1991	172.10	2193	888	2604	4676	10362
May 1991	218.00	592	2604	7014	5923	16134
Jun.1991	24.20	1736	7014	8885	658	18293
Jul.1991	2.20	4676	8885	986	60	14607
Aug.1991	1.90	5923	986	90	52	7051
Sep.1991	35.90	658	90	77	975	1800
Oct.1991	249.10	60	77	1463	6768	8369
Nov.1991	110.80	52	1463	10152	3011	14678
Dec.1991	82.50	975	10152	4516	2242	17885
Jan.1992	32.10	6768	4516	3362	872	15519
Feb.1992	99.50	3011	3362	1308	2704	10385
Mar.1992	117.90	2242	1308	4055	3203	10809

(8) Forecast Equation for Banana - Banana Production = $27.171*R_{t-3} + 40.756*R_{t-2} + 40.756*R_{t-1} + 27.171*R_t$

Where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: CYANGUGU PREDICTED BEAN PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Bean (t-3)	Contr. Prodn Bean (t-2)	Contr. Prodn Bean (t-1)	Contr. Prodn Buan (t)	Predted Prodn Bean
Feb.1990	223.70					
Mar.1990	208.80					
Apr.1990	137.30					
May 1990	81.80					
Jun.1990	8.50					
Jul.1990	0.00					
Aug.1990	41.30					
Sep.1990	157.60	9	0	62	158	228
Oct.1990	139.20	0	62	236	139	438
Nov.1990	153.40	41	236	209	153	640
Dec.1990	105.90	158	209	230	106	703
Jan.1991	188.00	139	230	159	188	716
Feb.1991	160.00	153	159	282	160	755
Mar.1991	192.20	106	282	240	192	820
Apr.1991	217.70	188	240	288	218	934
May 1991	106.40	160	288	327	106	882
Jun.1991	35.40	192	327	160	35	714
Jul.1991	14.70	218	160	53	15	445
Aug.1991	2.00	106	53	22	2	184
Sep.1991	74.70	35	22	3	75	135
Oct.1991	182.80	15	3	112	183	313
Nov.1991	188.00	2	112	274	188	576
Dec.1991	111.20	75	274	282	111	742
Jan.1992	119.00	183	282	167	119	751
Feb.1992	138.90	188	167	179	139	672
Mar.1992	174.30	111	179	208	174	673

(1) Forecast Equation for beans - Bean Production = $1.0004*R_{t-3} + 1.5006*R_{t-2} + 1.5006*R_{t-1} + 1.0004*R_t$

Where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: CYANGUGU PREDICTED SORGHUM PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Sorghum (t-5)	Contr. Prodn Sorghum (t-4)	Contr. Prodn Sorghum (t-3)	Contr. Prodn Sorghum (t-2)	Contr. Prodn Sorghum (t-1)	Contr. Prodn Sorghum (t)	Predted Prodn Sorghum
Feb.1990	223.70							
Mar.1990	208.80							
Apr.1990	137.30							
May 1990	81.80							
Jun.1990	8.50							
Jul.1990	0.00							
Aug.1990	41.30							
Sep.1990	157.60	9	9	1	0	4	10	33
Oct.1990	139.20	5	1	0	5	17	9	37
Nov.1990	153.40	1	0	5	20	15	10	51
Dec.1990	105.90	0	4	20	18	16	7	66
Jan.1991	188.00	3	17	18	20	11	12	80
Feb.1991	160.00	10	15	20	14	20	10	88
Mar.1991	192.20	9	16	14	24	17	12	92
Apr.1991	217.70	10	11	24	20	20	14	100
May 1991	106.40	7	20	20	25	23	7	102
Jun.1991	35.40	12	17	25	28	11	2	95
Jul.1991	14.70	10	20	28	14	4	1	77
Aug.1991	2.00	12	23	14	5	2	0	55
Sep.1991	74.70	14	11	5	2	0	5	37
Oct.1991	182.80	7	4	2	0	8	12	32
Nov.1991	188.00	2	2	0	10	19	12	45
Dec.1991	111.20	1	0	10	23	20	7	61
Jan.1992	119.00	0	8	23	24	12	8	75
Feb.1992	138.90	5	19	24	14	13	9	84
Mar.1992	174.30	12	20	14	15	15	11	87

(2) Forecast Equation for Sorghum - Sorghum Production = $0.06399*R_{t-5} + 0.10665*R_{t-4} + 0.12798*R_{t-3} + 0.12798*R_{t-2} + 0.10665*R_{t-1} + 0.06399*R_t$

Where:

R_{t-5} is rainfall five months before harvest, R_{t-4} is rainfall four months before harvest, R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: CYANGUGU PREDICTED MAIZE PRODUCTION IN TONNES

Month/Yr	Rainfall	Contr. Prodn Maize (t-5)	Contr. Prodn Maize (t-4)	Contr. Prodn Maize (t-3)	Contr. Prodn Maize (t-2)	Contr. Prodn Maize (t-1)	Contr. Prodn Maize (t)	Predted Prodn Maize
Feb.1990	223.70							
Mar.1990	208.80							
Apr.1990	137.30							
May 1990	81.80							
Jun.1990	8.50							
Jul.1990	0.00							
Aug.1990	41.30							
Sep.1990	157.60	81	80	10	0	40	93	304
Oct.1990	139.20	48	8	0	48	154	82	341
Nov.1990	153.40	5	0	48	185	136	90	465
Dec.1990	105.90	0	40	185	163	150	62	601
Jan.1991	188.00	24	154	163	180	104	110	736
Feb.1991	160.00	93	136	180	124	184	94	811
Mar.1991	192.20	82	150	124	221	157	113	846
Apr.1991	217.70	90	104	221	188	188	128	918
May 1991	106.40	62	184	188	226	213	62	935
Jun.1991	35.40	110	157	226	256	104	21	873
Jul.1991	14.70	94	188	256	125	35	9	706
Aug.1991	2.00	113	213	125	42	14	1	508
Sep.1991	74.70	128	104	42	17	2	44	337
Oct.1991	182.80	62	35	17	2	73	107	297
Nov.1991	188.00	21	14	2	88	179	110	414
Dec.1991	111.20	9	2	88	215	184	65	562
Jan.1992	119.00	1	73	215	221	109	70	688
Feb.1992	138.90	44	179	221	131	116	82	772
Mar.1992	174.30	107	184	131	140	136	102	800

(3) Forecast Equation for Maize - Maize Production = $0.58712*R_{t-5} + 0.97854*R_{t-4} + 1.1742*R_{t-3} + 1.1742*R_{t-2} + 0.97854*R_{t-1} + 0.58712*R_t$

Where:

R_{t-5} is rainfall five months before harvest, R_{t-4} is rainfall four months before harvest,

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest,

R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: CYANGUGU PREDICTED PEAS PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Peas (t-3)	Contr. Prodn Peas (t-2)	Contr. Prodn Peas (t-1)	Contr. Prodn Peas (t)	Predted Prodn Peas
Feb.1990	223.70					
Mar.1990	208.80					
Apr.1990	137.30					
May 1990	81.80					
Jun.1990	8.50					
Jul.1990	0.00					
Aug.1990	41.30					
Sep.1990	157.60	1	0	5	12	18
Oct.1990	139.20	0	5	18	11	34
Nov.1990	153.40	3	18	16	12	49
Dec.1990	105.90	12	16	18	8	54
Jan.1991	188.00	11	18	12	14	55
Feb.1991	160.00	12	12	22	12	58
Mar.1991	192.20	8	22	18	15	63
Apr.1991	217.70	14	18	22	17	72
May 1991	106.40	12	22	25	8	68
Jun.1991	35.40	15	25	12	3	55
Jul.1991	14.70	17	12	4	1	34
Aug.1991	2.00	8	4	2	0	14
Sep.1991	74.70	3	2	0	6	10
Oct.1991	182.80	1	0	9	14	24
Nov.1991	188.00	0	9	21	14	44
Dec.1991	111.20	6	21	22	9	57
Jan.1992	119.00	14	22	13	9	58
Feb.1992	138.90	14	13	14	11	52
Mar.1992	174.30	9	14	16	13	52

(4) Forecast Equation for Peas - Peas Production = $0.076796*R_{t-3} + 0.11519*R_{t-2} + 0.11519*R_{t-1} + 0.076796*R_t$

Where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: CYANGUGU PREDICTED SWEET POTATO PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Sw.Potato (t-3)	Contr. Prodn Sw.Potato (t-2)	Contr. Prodn Sw.Potato (t-1)	Contr. Prodn Sw.Potato (t)	Predted Prodn Sw.Potato
Feb.1990	223.70					
Mar.1990	208.80					
Apr.1990	137.30					
May 1990	81.80					
Jun.1990	8.50					
Jul.1990	0.00					
Aug.1990	41.30					
Sep.1990	157.60	36	0	260	662	959
Oct.1990	139.20	0	260	994	585	1839
Nov.1990	153.40	174	994	878	645	2690
Dec.1990	105.90	662	878	967	445	2953
Jan.1991	188.00	585	967	668	790	3010
Feb.1991	160.00	645	668	1185	673	3171
Mar.1991	192.20	445	1185	1009	808	3447
Apr.1991	217.70	790	1009	1212	915	3926
May 1991	106.40	673	1212	1373	447	3704
Jun.1991	35.40	808	1373	671	149	3000
Jul.1991	14.70	915	671	223	62	1871
Aug.1991	2.00	447	223	93	8	772
Sep.1991	74.70	149	93	13	314	568
Oct.1991	182.80	62	13	471	768	1314
Nov.1991	188.00	8	471	1153	790	2422
Dec.1991	111.20	314	1153	1185	467	3119
Jan.1992	119.00	768	1185	701	500	3155
Feb.1992	138.90	790	701	750	584	2826
Mar.1992	174.30	467	750	876	733	2826

(5) Forecast Equation for Sweet Potato - Sweet Potato Production = $4.2036*R_{t-3} + 6.3054*R_{t-2} + 6.3054*R_{t-1} + 4.2036*R_t$

Where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: CYANGUGU PREDICTED CASSAVA PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Cassava (t-3)	Contr. Prodn Cassava (t-2)	Contr. Prodn Cassava (t-1)	Contr. Prodn Cassava (t)	Predted Prodn Cassava
Feb.1990	223.70					
Mar.1990	208.80					
Apr.1990	137.30					
May 1990	81.80					
Jun.1990	8.50					
Jul.1990	0.00					
Aug.1990	41.30					
Sep.1990	157.60	19	0	138	350	506
Oct.1990	139.20	0	138	525	309	971
Nov.1990	153.40	92	525	464	341	1421
Dec.1990	105.90	350	464	511	235	1559
Jan.1991	188.00	309	511	353	417	1590
Feb.1991	160.00	341	353	626	355	1674
Mar.1991	192.20	235	626	533	427	1821
Apr.1991	217.70	417	533	640	483	2073
May 1991	106.40	355	640	725	236	1956
Jun.1991	35.40	427	725	354	79	1584
Jul.1991	14.70	483	354	118	33	988
Aug.1991	2.00	236	118	49	4	407
Sep.1991	74.70	79	49	7	166	300
Oct.1991	182.80	33	7	249	406	694
Nov.1991	188.00	4	249	609	417	1279
Dec.1991	111.20	166	609	626	247	1647
Jan.1992	119.00	406	626	370	264	1666
Feb.1992	138.90	417	370	396	308	1492
Mar.1992	174.30	247	396	463	387	1493

(6) Forecast Equation for Cassava - Cassava Production = $2.22*R_{t-3} + 3.3299*R_{t-2} + 3.3299*R_{t-1} + 2.22*R_t$

Where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: CYANGUGU PREDICTED POTATO PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Potato (t-3)	Contr. Prodn Potato (t-2)	Contr. Prodn Potato (t-1)	Contr. Prodn Potato (t)	Predted Prodn Potato
Feb.1990	223.70					
Mar.1990	208.80					
Apr.1990	137.30					
May 1990	81.80					
Jun.1990	8.50					
Jul.1990	0.00					
Aug.1990	41.30					
Sep.1990	157.60	3	0	24	60	87
Oct.1990	139.20	0	24	90	53	167
Nov.1990	153.40	16	90	80	59	245
Dec.1990	105.90	60	80	88	41	269
Jan.1991	188.00	53	88	61	72	274
Feb.1991	160.00	59	61	108	61	289
Mar.1991	192.20	41	108	92	74	314
Apr.1991	217.70	72	92	110	83	357
May 1991	106.40	61	110	125	41	337
Jun.1991	35.40	74	125	61	14	273
Jul.1991	14.70	83	61	20	6	170
Aug.1991	2.00	41	20	8	1	70
Sep.1991	74.70	14	8	1	29	52
Oct.1991	182.80	6	1	43	70	120
Nov.1991	188.00	1	43	105	72	220
Dec.1991	111.20	29	105	108	43	284
Jan.1992	119.00	70	108	64	46	287
Feb.1992	138.90	72	64	68	53	257
Mar.1992	174.30	43	68	80	67	257

(7) Forecast Equation for Potato - Potato Production = $0.38253*R_{t-3} + 0.57379*R_{t-2} + 0.57379*R_{t-1} + 0.38253*R_t$

Where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: CYANGUGU PREDICTED BANANA PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Banana (t-3)	Contr. Prodn Banana (t-2)	Contr. Prodn Banana (t-1)	Contr. Prodn Banana (t)	Predted Prodn Banana
Feb.1990	223.70					
Mar.1990	208.80					
Apr.1990	137.30					
May 1990	81.80					
Jun.1990	8.50					
Jul.1990	0.00					
Aug.1990	41.30					
Sep.1990	157.60	152	0	1110	2824	4086
Oct.1990	139.20	0	1110	4236	2494	7840
Nov.1990	153.40	740	4236	3741	2748	11465
Dec.1990	105.90	2824	3741	4123	1897	12585
Jan.1991	188.00	2494	4123	2846	3368	12831
Feb.1991	160.00	2748	2846	5053	2867	13514
Mar.1991	192.20	1897	5053	4300	3444	14694
Apr.1991	217.70	3368	4300	5166	3901	16735
May 1991	106.40	2867	5166	5851	1906	15790
Jun.1991	35.40	3444	5851	2860	634	12788
Jul.1991	14.70	3901	2860	951	263	7975
Aug.1991	2.00	1906	951	395	36	3289
Sep.1991	74.70	634	395	54	1338	2421
Oct.1991	182.80	263	54	2008	3275	5600
Nov.1991	188.00	36	2008	4913	3368	10325
Dec.1991	111.20	1338	4913	5053	1992	13296
Jan.1992	119.00	3275	5053	2989	2132	13449
Feb.1992	138.90	3368	2989	3198	2489	12044
Mar.1992	174.30	1992	3198	3733	3123	12047

(8) Forecast Equation for Banana - Banana Production = $17.917*R_{t-3} + 26.876*R_{t-2} + 26.876*R_{t-1} + 17.917*R_t$

Where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: GISENYI PREDICTED BEAN PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Bean (t-3)	Contr. Prodn Bean (t-2)	Contr. Prodn Bean (t-1)	Contr. Prodn Bean (t)	Predted Prodn Bean
Feb.1990	117.40					
Mar.1990	111.90					
Apr.1990	179.80					
May 1990	90.40					
Jun.1990	5.20					
Jul.1990	0.00					
Aug.1990	77.60					
Sep.1990	153.20	13	0	292	385	690
Oct.1990	90.70	0	292	577	228	1097
Nov.1990	47.50	195	577	342	119	1233
Dec.1990	148.70	385	342	179	373	1279
Jan.1991	92.10	228	179	560	231	1198
Feb.1991	84.00	119	560	347	211	1237
Mar.1991	202.60	373	347	316	509	1546
Apr.1991	90.30	231	316	763	227	1538
May 1991	99.00	211	763	340	249	1563
Jun.1991	102.80	509	340	373	258	1480
Jul.1991	71.80	227	373	387	180	1167
Aug.1991	7.00	249	387	270	18	924
Sep.1991	71.70	258	270	26	180	735
Oct.1991	157.20	180	26	270	395	872
Nov.1991	136.00	18	270	592	342	1221
Dec.1991	84.80	180	592	512	213	1498
Jan.1992	53.30	395	512	319	134	1360
Feb.1992	75.90	342	319	201	191	1052
Mar.1992	98.40	213	201	286	247	947

(1) Forecast Equation for Bean - Bean Production = $2.5114*R_{t-3} + 3.7671*R_{t-2} + 3.7671*R_{t-1} + 2.5114*R_t$

Where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: GISENYI PREDICTED SORGHUM PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Sorghum (t-5)	Contr. Prodn Sorghum (t-4)	Contr. Prodn Sorghum (t-3)	Contr. Prodn Sorghum (t-2)	Contr. Prodn Sorghum (t-1)	Contr. Prodn Sorghum (t)	Predted Prodn Sorghum
Feb.1990	117.40							
Mar.1990	111.90							
Apr.1990	179.80							
May 1990	90.40							
Jun.1990	5.20							
Jul.1990	0.00							
Aug.1990	77.60							
Sep.1990	153.20	23	19	1	0	16	19	78
Oct.1990	90.70	11	1	0	20	32	11	76
Nov.1990	47.50	1	0	20	39	19	6	84
Dec.1990	148.70	0	16	39	23	10	19	106
Jan.1991	92.10	10	32	23	12	31	12	119
Feb.1991	84.00	19	19	12	37	19	11	118
Mar.1991	202.60	11	10	37	23	18	25	125
Apr.1991	90.30	6	31	23	21	42	11	135
May 1991	99.00	19	19	21	51	19	12	142
Jun.1991	102.80	12	18	51	23	21	13	137
Jul.1991	71.80	11	42	23	25	22	9	131
Aug.1991	7.00	25	19	25	26	15	1	111
Sep.1991	71.70	11	21	26	18	1	9	87
Oct.1991	157.20	12	22	18	2	15	20	89
Nov.1991	136.00	13	15	2	18	33	17	98
Dec.1991	84.80	9	1	18	40	29	11	107
Jan.1992	53.30	1	15	40	34	18	7	114
Feb.1992	75.90	9	33	34	21	11	10	118
Mar.1992	98.40	20	29	21	13	16	12	111

(2) Foercast Equation for Sorghum - Sorghum Production = $0.12584*R_{t-5} + 0.20973*R_{t-4} + 0.25167*R_{t-3} + 0.25167*R_{t-2} + 0.20973*R_{t-1} + 0.12584*R_t$

Where:

R_{t-5} is rainfall five months before harvest, R_{t-4} is rairfall four months before harvest, R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: GISENYI PREDICTED MAIZE PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Maize (t-5)	Contr. Prodn Maize (t-4)	Contr. Prodn Maize (t-3)	Contr. Prodn Maize (t-2)	Contr. Prodn Maize (t-1)	Contr. Prodn Maize (t)	Predted Prodn Maize
Feb.1990	117.40							
Mar.1990	111.90							
Apr.1990	179.80							
May 1990	90.40							
Jun.1990	5.20							
Jul.1990	0.00							
Aug.1990	77.60							
Sep.1990	153.20	380	319	22	0	274	324	1319
Oct.1990	90.70	191	18	0	328	540	192	1270
Nov.1990	47.50	11	0	328	648	320	100	1408
Dec.1990	148.70	0	274	648	384	167	315	1787
Jan.1991	92.10	164	540	384	201	524	195	2008
Feb.1991	84.00	324	320	201	629	325	178	1976
Mar.1991	202.60	192	167	629	390	296	429	2103
Apr.1991	90.30	100	524	390	355	714	191	2275
May 1991	99.00	315	325	355	857	318	209	2380
Jun.1991	102.80	195	296	857	382	349	217	2297
Jul.1991	71.80	178	714	382	419	362	152	2207
Aug.1991	7.00	429	318	419	435	253	15	1869
Sep.1991	71.70	191	349	435	304	25	152	1455
Oct.1991	157.20	209	362	304	30	253	333	1491
Nov.1991	136.00	217	253	30	303	554	288	1645
Dec.1991	84.80	152	25	303	665	479	179	1804
Jan.1992	53.30	15	253	665	575	299	113	1920
Feb.1992	75.90	152	554	575	359	188	161	1989
Mar.1992	98.40	333	479	359	225	268	208	1872

(3) Foercast Equation for Maize - Maize Production = $2.1154*R_{t-5} + 3.5256*R_{t-4} + 4.2307*R_{t-3} + 4.2307*R_{t-2} + 3.5256*R_{t-1} + 2.1154*R_t$

Where:

R_{t-5} is rainfall five months before harvest, R_{t-4} is rainfall four months before harvest, R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: GISENYI PREDICTED PEAS PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Peas (t-3)	Contr. Prodn Peas (t-2)	Contr. Prodn Peas (t-1)	Contr. Prodn Peas (t)	Predted Prodn Peas
Feb.1990	117.40					
Mar.1990	111.90					
Apr.1990	179.80					
May 1990	90.40					
Jun.1990	5.20					
Jul.1990	0.00					
Aug.1990	77.60					
Sep.1990	153.20	1	0	11	30	42
Oct.1990	90.70	0	23	23	18	63
Nov.1990	47.50	15	45	13	9	83
Dec.1990	148.70	30	27	7	29	93
Jan.1991	92.10	18	14	22	18	72
Feb.1991	84.00	9	44	14	16	83
Mar.1991	202.60	29	27	12	40	108
Apr.1991	90.30	18	25	30	18	90
May 1991	99.00	16	60	13	19	109
Jun.1991	102.80	40	27	15	20	101
Jul.1991	71.80	18	29	15	14	76
Aug.1991	7.00	19	30	11	1	62
Sep.1991	71.70	20	21	1	14	56
Oct.1991	157.20	14	2	11	31	58
Nov.1991	136.00	1	21	23	27	72
Dec.1991	84.80	14	46	20	17	97
Jan.1992	53.30	31	40	12	10	94
Feb.1992	75.90	27	25	8	15	74
Mar.1992	98.40	17	16	11	19	63

(4) Forecast Equation for Peas - Peas Production = $0.19615*R_{t-3} + 0.29422*R_{t-2} + 0.14711*R_{t-1} + 0.19615*R_t$

Where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: GISENYI PREDICTED SWEET POTATO PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Sw.Potato (t-3)	Contr. Prodn Sw.Potato (t-2)	Contr. Prodn Sw.Potato (t-1)	Contr. Prodn Sw.Potato (t)	Predted Prodn Sw.Potato
Feb.1990	117.40					
Mar.1990	111.90					
Apr.1990	179.80					
May 1990	90.40					
Jun.1990	5.20					
Jul.1990	0.00					
Aug.1990	77.60					
Sep.1990	153.20	50	0	1114	1466	2629
Oct.1990	90.70	0	1114	2199	868	4181
Nov.1990	47.50	743	2199	1302	455	4698
Dec.1990	148.70	1466	1302	682	1423	4872
Jan.1991	92.10	868	682	2134	881	4565
Feb.1991	84.00	455	2134	1322	804	4714
Mar.1991	202.50	1423	1322	1206	1939	5889
Apr.1991	90.30	881	1206	2908	864	5859
May 1991	99.00	804	2908	1296	947	5955
Jun.1991	102.80	1939	1296	1421	984	5639
Jul.1991	71.80	864	1421	1475	687	4448
Aug.1991	7.00	947	1475	1031	67	3520
Sep.1991	71.70	984	1031	100	686	2801
Oct.1991	157.20	687	100	1029	1504	3321
Nov.1991	136.00	67	1029	2256	1301	4654
Dec.1991	84.80	686	2256	1952	811	5706
Jan.1992	53.30	1504	1952	1217	510	5183
Feb.1992	75.90	1301	1217	765	726	4010
Mar.1992	98.40	811	765	1089	942	3607

(5) Forecast Equation for Sweet Potato - Sweet Potato Production = $9.5686*R_{t-3} + 14.353*R_{t-2} + 14.353*R_{t-1} + 9.5686*R_t$

Where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: GISENYI PREDICTED CASSAVA PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Cassava (t-3)	Contr. Prodn Cassava (t-2)	Contr. Prodn Cassava (t-1)	Contr. Prodn Cassava (t)	Predted Prodn Cassava
Feb.1990	117.40					
Mar.1990	111.90					
Apr.1990	179.80					
May 1990	90.40					
Jun.1990	5.20					
Jul.1990	0.00					
Aug.1990	77.60					
Sep.1990	153.20	8	0	185	244	438
Oct.1990	90.70	0	185	366	145	696
Nov.1990	47.50	124	366	217	76	782
Dec.1990	148.70	244	217	114	237	811
Jan.1991	92.10	145	114	355	147	760
Feb.1991	84.00	76	355	220	134	785
Mar.1991	202.60	237	220	201	323	981
Apr.1991	90.30	147	201	484	144	976
May 1991	99.00	134	484	216	158	992
Jun.1991	102.80	323	216	237	164	939
Jul.1991	71.80	144	237	246	114	741
Aug.1991	7.00	158	246	172	11	586
Sep.1991	71.70	164	172	17	114	466
Oct.1991	157.20	114	17	171	250	553
Nov.1991	136.00	11	171	376	217	775
Dec.1991	84.80	114	376	325	135	950
Jan.1992	53.30	250	325	203	85	863
Feb.1992	75.90	217	203	127	121	668
Mar.1992	98.40	135	127	181	157	601

6) Forecast Equation for Cassava - Cassava Production = $1.5935*R_{t-3} + 2.3902*R_{t-2} + 2.3902*R_{t-1} + 1.5935*R_t$

where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: GISENYI PREDICTED POTATO PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Potato (t-3)	Contr. Prodn Potato (t-2)	Contr. Prodn Potato (t-1)	Contr. Prodn Potato (t)	Predted Prodn Potato
Feb.1990	117.40					
Mar.1990	111.90					
Apr.1990	179.80					
May 1990	90.40					
Jun.1990	5.20					
Jul.1990	0.00					
Aug.1990	77.60					
Sep.1990	153.20	38	0	857	1129	2024
Oct.1990	90.70	0	857	1693	668	3218
Nov.1990	47.50	572	1693	1002	350	3617
Dec.1990	148.70	1129	1002	525	1095	3751
Jan.1991	92.10	668	525	1643	678	3515
Feb.1991	84.00	350	1643	1018	619	3630
Mar.1991	202.60	1095	1018	928	1492	4534
Apr.1991	90.30	678	928	2239	665	4511
May 1991	99.00	619	2239	998	729	4585
Jun.1991	102.80	1492	998	1094	757	4342
Jul.1991	71.80	665	1094	1136	529	3424
Aug.1991	7.00	729	1136	793	52	2710
Sep.1991	71.70	757	793	77	528	2156
Oct.1991	157.20	529	77	792	1158	2557
Nov.1991	136.00	52	792	1737	1002	3583
Dec.1991	84.80	528	1737	1503	625	4393
Jan.1992	53.30	1158	1503	937	393	3991
Feb.1992	75.90	1002	937	589	559	3087
Mar.1992	98.40	625	589	839	725	2777

(7) Forecast Equation for Potato - Potato Production = $7.3666*R_{t-3} + 11.05*R_{t-2} + 11.05*R_{t-1} + 7.3666*R_t$

Where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: GISENYI

PREDICTED BANANA PRODUCTION IN TONNES

Month/Yr	Rainfall	Contr. Prodn Banana (t-3)	Contr. Prodn Banana (t-2)	Contr. Prodn Banana (t-1)	Contr. Prodn Banana (t)	Predted Prodn Banana
Feb.1990	117.40					
Mar.1990	111.90					
Apr.1990	179.80					
May 1990	90.40					
Jun.1990	5.20					
Jul.1990	0.00					
Aug.1990	77.60					
Sep.1990	153.20	150	0	3367	4432	7549
Oct.1990	90.70	0	3367	6648	2624	12639
Nov.1990	47.50	2245	6648	3936	1374	14202
Dec.1990	148.70	4432	3936	2061	4302	14730
Jan.1991	92.10	2624	2061	6452	2664	13802
Feb.1991	84.00	1374	6452	3996	2430	14253
Mar.1991	202.60	4302	3996	3645	5861	17804
Apr.1991	90.30	2664	3645	8791	2612	17713
May 1991	99.00	2430	8791	3918	2864	18003
Jun.1991	102.80	5861	3918	4296	2974	17049
Jul.1991	71.80	2612	4296	4461	2077	13446
Aug.1991	7.00	2864	4461	3116	202	10643
Sep.1991	71.70	2974	3116	304	2074	8467
Oct.1991	157.20	2077	304	3111	4547	10039
Nov.1991	136.00	202	3111	6821	3934	14069
Dec.1991	84.80	2074	6821	5901	2453	17250
Jan.1992	53.30	4547	5901	3680	1542	15670
Feb.1992	75.90	3934	3680	2313	2196	12122
Mar.1992	98.40	2453	2313	3293	2847	10906

(8) Forecast Equation for Banana - Banana Production = $28.928*R_{t-3} + 43.392R_{t-2} + 43.392R_{t-1} + 28.928*R_t$

Where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: KIGALI PREDICTED BEAN PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Bean (t-3)	Contr. Prodn Bean (t-2)	Contr. Prodn Bean (t-1)	Contr. Prodn Bean (t)	Predted Prodn Bean
Feb.1990	143.30					
Mar.1990	136.00					
Apr.1990	157.00					
May 1990	39.10					
Jun.1990	0.00					
Jul.1990	0.00					
Aug.1990	13.60					
Sep.1990	155.20	0	0	179	1360	1539
Oct.1990	104.70	0	179	2040	917	3136
Nov.1990	78.20	119	2040	1376	685	4221
Dec.1990	120.80	1360	1376	1028	1059	4823
Jan.1991	72.20	917	1028	1588	633	4166
Feb.1991	95.20	685	1588	949	834	4057
Mar.1991	82.50	1059	949	1251	723	3982
Apr.1991	134.40	633	1251	1084	1178	4146
May 1991	178.10	834	1084	1767	1561	5246
Jun.1991	18.40	723	1767	2341	161	4992
Jul.1991	11.10	1178	2341	242	97	3858
Aug.1991	36.90	1561	242	146	323	2272
Sep.1991	49.60	161	146	485	435	1227
Oct.1991	145.70	97	485	652	1277	2511
Nov.1991	63.80	323	652	1915	559	3450
Dec.1991	52.30	435	1915	839	458	3647
Jan.1992	46.40	1277	839	687	407	3210
Feb.1992	72.70	559	687	610	637	2494
Mar.1992	94.10	458	610	956	825	2848

(1) Forecast Equation for Bean - Bean Production = $8.7631*R_{t-3} + 13.145*R_{t-2} + 13.145*R_{t-1} + 8.7631*R_t$

Where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: KIGALI PREDICTED SORGHUM PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Sorghum (t-5)	Contr. Prodn Sorghum (t-4)	Contr. Prodn Sorghum (t-3)	Contr. Prodn Sorghum (t-2)	Contr. Prodn Sorghum (t-1)	Contr. Prodn Sorghum (t)	Predted Prodn Sorghum
Feb.1990	143.30							
Mar.1990	136.00							
Apr.1990	157.00							
May 1990	39.10							
Jun.1990	0.00							
Jul.1990	0.00							
Aug.1990	13.60							
Sep.1990	155.20	595	247	0	0	86	589	1517
Oct.1990	104.70	148	0	0	103	981	397	1629
Nov.1990	78.20	0	0	103	1177	662	297	2238
Dec.1990	120.80	0	86	1177	794	494	458	3009
Jan.1991	72.20	52	981	794	593	763	274	3457
Feb.1991	95.20	589	662	593	916	456	361	3577
Mar.1991	82.50	397	494	916	548	602	313	3270
Apr.1991	134.40	297	763	548	722	521	510	3361
May 1991	178.10	458	456	722	626	849	675	3787
Jun.1991	18.40	274	602	626	1019	1126	70	3716
Jul.1991	11.10	361	521	1019	1351	116	42	3411
Aug.1991	36.90	313	849	1351	140	70	140	2863
Sep.1991	49.60	510	1126	140	84	233	188	2280
Oct.1991	145.70	675	116	84	280	313	553	2022
Nov.1991	63.80	70	70	280	376	921	242	1959
Dec.1991	52.30	42	233	376	1105	403	198	2358
Jan.1992	46.40	140	313	1105	484	331	176	2549
Feb.1992	72.70	188	921	484	397	293	276	2558
Mar.1992	94.10	553	403	397	352	459	357	2521

(2) Forecast Equation for Sorghum - Sorghum Production = $3.7921*R_{t-5} + 6.3202*R_{t-4} + 7.5842*R_{t-3} + 7.5842*R_{t-2} + 6.3202*R_{t-1} + 3.7921*R_t$

Where:

R_{t-5} is rainfall five months before harvest, R_{t-4} is rainfall four months before harvest,

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest,

R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: KIGALI PREDICTED MAIZE PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Maize (t-5)	Contr. Prodn Maize (t-4)	Contr. Prodn Maize (t-3)	Contr. Prodn Maize (t-2)	Contr. Prodn Maize (t-1)	Contr. Prodn Maize (t)	Predted Prodn Maize
Feb.1990	143.30							
Mar.1990	136.00							
Apr.1990	157.00							
May 1990	39.10							
Jun.1990	0.00							
Jul.1990	0.00							
Aug.1990	13.60							
Sep.1990	155.20	131	54	0	0	19	129	333
Oct.1990	104.70	33	0	0	23	215	87	358
Nov.1990	78.20	0	0	23	258	145	65	492
Dec.1990	120.80	0	19	258	174	109	101	661
Jan.1991	72.20	11	215	174	130	168	60	759
Feb.1991	95.20	129	145	130	201	100	79	785
Mar.1991	82.50	87	109	201	120	132	69	718
Apr.1991	134.40	65	168	120	159	114	112	738
May 1991	178.10	101	100	159	137	187	148	832
Jun.1991	18.40	60	132	137	224	247	15	816
Jul.1991	11.10	79	114	224	297	26	9	749
Aug.1991	36.90	69	187	297	31	15	31	629
Sep.1991	49.60	112	247	31	18	51	41	501
Oct.1991	145.70	148	26	18	61	69	121	444
Nov.1991	63.80	15	15	61	83	202	53	430
Dec.1991	52.30	9	51	83	243	89	44	518
Jan.1992	46.40	31	69	243	106	73	39	560
Feb.1992	72.70	41	202	106	87	64	61	562
Mar.1992	94.10	121	89	87	77	101	78	553

(3) Forecast Equation for Maize - Maize Production = $0.83268*R_{t-5} + 1.3878*R_{t-4} + 1.6654*R_{t-3} + 1.6654*R_{t-2} + 1.3878*R_{t-1} + 0.83268*R_t$

Where:

R_{t-5} is rainfall five months before harvest, R_{t-4} is rainfall four months before harvest, R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: KIGALI PREDICTED PEAS PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Peas (t-3)	Contr. Prodn Peas (t-2)	Contr. Prodn Peas (t-1)	Contr. Prodn Peas (t)	Predted Prodn Peas
Feb.1990	143.30					
Mar.1990	136.00					
Apr.1990	157.00					
May 1990	39.10					
Jun.1990	0.00					
Jul.1990	0.00					
Aug.1990	13.60					
Sep.1990	155.20	0	0	3	26	30
Oct.1990	104.70	0	3	40	18	61
Nov.1990	78.20	2	40	27	13	82
Dec.1990	120.80	26	27	20	21	94
Jan.1991	72.20	18	20	31	12	81
Feb.1991	95.20	13	31	18	16	79
Mar.1991	82.50	21	18	24	14	78
Apr.1991	134.40	12	24	21	23	81
May 1991	178.10	16	21	34	30	102
Jun.1991	18.40	14	34	46	3	97
Jul.1991	11.10	23	46	5	2	75
Aug.1991	36.90	30	5	3	6	44
Sep.1991	49.60	3	3	9	8	24
Oct.1991	145.70	2	9	13	25	49
Nov.1991	63.80	6	13	37	11	67
Dec.1991	52.30	8	37	16	9	71
Jan.1992	46.40	25	16	13	8	62
Feb.1992	72.70	11	13	12	12	49
Mar.1992	94.10	9	12	19	16	55

(4) Forecast Equation for Peas - Peas Production = $0.17059*R_{t-3} + 0.25589*R_{t-2} + 0.25589*R_{t-1} + 0.17059*R_t$

Where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: KIGALI PREDICTED SWEET POTATO PRODUCTION IN TONNES

Month/Yr	Rainfall	Contr. Prodn Sw.Potato (t-3)	Contr. Prodn Sw.Potato (t-2)	Contr. Prodn Sw.Potato (t-1)	Contr. Prodn Sw.Potato (t)	Predted Prodn Sw.Potato
Feb.1990	143.30					
Mar.1990	136.00					
Apr.1990	157.00					
May 1990	39.10					
Jun.1990	0.00					
Jul.1990	0.00					
Aug.1990	13.60					
Sep.1990	155.20	0	0	269	2047	2316
Oct.1990	104.70	0	269	3070	1381	4720
Nov.1990	78.20	179	3070	2071	1031	6352
Dec.1990	120.80	2047	2071	1547	1593	7258
Jan.1991	72.20	1381	1547	2390	952	6270
Feb.1991	95.20	1031	2390	1428	1256	6105
Mar.1991	82.50	1593	1428	1883	1088	5993
Apr.1991	134.40	952	1883	1632	1773	6240
May 1991	178.10	1256	1632	2659	2349	7895
Jun.1991	18.40	1088	2659	3523	243	7513
Jul.1991	11.10	1773	3523	364	146	5806
Aug.1991	36.90	2349	364	220	487	3419
Sep.1991	49.60	243	220	730	654	1846
Oct.1991	145.70	146	730	981	1922	3779
Nov.1991	63.80	487	981	2882	841	5192
Dec.1991	52.30	654	2882	1262	690	5488
Jan.1992	46.40	1922	1262	1035	612	4830
Feb.1992	72.70	841	1035	918	959	3753
Mar.1992	94.10	690	918	1438	1241	4287

(5) Forecast Equation for Sweet Potato - Sweet Potato Production = $13.189*R_{t-3} + 19.783*R_{t-2} + 19.783*R_{t-1} + 13.189*R_t$

Where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: KIGALI PREDICTED CASSAVA PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Cassava (t-3)	Contr. Prodn Cassava (t-2)	Contr. Prodn Cassava (t-1)	Contr. Prodn Cassava (t)	Predted Prodn Cassava
Feb.1990	143.30					
Mar.1990	136.00					
Apr.1990	157.00					
May 1990	39.10					
Jun.1990	0.00					
Jul.1990	0.00					
Aug.1990	13.60					
Sep.1990	155.20	0	0	267	2031	2298
Oct.1990	104.70	0	267	3047	1370	4684
Nov.1990	78.20	178	3047	2055	1023	6303
Dec.1990	120.80	2031	2055	1535	1581	7202
Jan.1991	72.20	1370	1535	2371	945	6221
Feb.1991	95.20	1023	2371	1417	1246	6058
Mar.1991	82.50	1581	1417	1869	1080	5947
Apr.1991	134.40	945	1869	1619	1759	6192
May 1991	178.10	1246	1619	2638	2331	7834
Jun.1991	18.40	1080	2638	3496	241	7455
Jul.1991	11.10	1759	3496	361	145	5761
Aug.1991	36.90	2331	361	218	483	3393
Sep.1991	49.60	241	218	724	649	1832
Oct.1991	145.70	145	724	974	1907	3750
Nov.1991	63.80	483	974	2860	835	5152
Dec.1991	52.30	649	2860	1252	684	5446
Jan.1992	46.40	1907	1252	1027	607	4793
Feb.1992	72.70	835	1027	911	951	3724
Mar.1992	94.10	684	911	1427	1231	4254

(6) Forecast Equation for Cassava - Cassava Production = $13.087*R_{t-3} + 19.63*R_{t-2} + 19.63*R_{t-1} + 13.087*R_t$

Where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: KIGALI PREDICTED POTATO PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Potato (t-3)	Contr. Prodn Potato (t-2)	Contr. Prodn Potato (t-1)	Contr. Prodn Potato (t)	Predted Prodn Potato
Feb.1990	143.30					
Mar.1990	136.00					
Apr.1990	157.00					
May 1990	39.10					
Jun.1990	0.00					
Jul.1990	0.00					
Aug.1990	13.60					
Sep.1990	155.20	0	0	22	171	194
Oct.1990	104.70	0	22	257	115	395
Nov.1990	78.20	15	257	173	86	531
Dec.1990	120.80	171	173	129	133	607
Jan.1991	72.20	115	129	200	80	524
Feb.1991	95.20	86	200	119	105	511
Mar.1991	82.50	133	119	157	91	501
Apr.1991	134.40	80	157	136	148	522
May 1991	178.10	105	136	222	196	660
Jun.1991	18.40	91	222	295	20	628
Jul.1991	11.10	148	295	30	12	486
Aug.1991	36.90	196	30	18	41	286
Sep.1991	49.60	20	18	61	55	154
Oct.1991	145.70	12	61	82	161	316
Nov.1991	63.80	41	82	241	70	434
Dec.1991	52.30	55	241	106	58	459
Jan.1992	46.40	161	106	87	51	404
Feb.1992	72.70	70	87	77	80	314
Mar.1992	94.10	58	77	120	104	358

(7) Forecast Equation for Potato - Potato Production = $1.1029*R_{t-3} + 1.6543*R_{t-2} + 1.6543*R_{t-1} + 1.1029*R_t$

Where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: KIGALI PREDICTED BANANA PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Banana (t-3)	Contr. Prodn Banana (t-2)	Contr. Prodn Banana (t-1)	Contr. Prodn Banana (t)	Predted Prodn Banana
Feb.1990	143.30					
Mar.1990	136.00					
Apr.1990	157.00					
May 1990	39.10					
Jun.1990	0.00					
Jul.1990	0.00					
Aug.1990	13.60					
Sep.1990	155.20	0	0	1623	12344	13967
Oct.1990	104.70	0	1623	18517	8328	28467
Nov.1990	78.20	1082	18517	12492	6220	38310
Dec.1990	120.80	12344	12492	9330	9608	43775
Jan.1991	72.20	8328	9330	14413	5743	37813
Feb.1991	95.20	6220	14413	8614	7572	36819
Mar.1991	82.50	9608	8614	11358	6562	36143
Apr.1991	134.40	5743	11358	9843	10690	37634
May 1991	178.10	7572	9843	16035	14166	47616
Jun.1991	18.40	6562	16035	21249	1464	45310
Jul.1991	11.10	10690	21249	2195	883	35017
Aug.1991	36.90	14166	2195	1324	2935	20621
Sep.1991	49.60	1464	1324	4403	3945	11136
Oct.1991	145.70	883	4403	5918	11589	22792
Nov.1991	63.80	2935	5918	17383	5075	31311
Dec.1991	52.30	3945	17383	7612	4160	33100
Jan.1992	46.40	11589	7612	6240	3691	29131
Feb.1992	72.70	5075	6240	5536	5782	22633
Mar.1992	94.10	4160	5536	8674	7485	25854

(8) Forecast Equation for Banana - Banana Production = $79.539*R_{t-3} + 119.31*R_{t-2} + 119.31*R_{t-1} + 79.539*R_t$

Where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: RUHENGERI PREDICTED BEAN PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Bean (t-3)	Contr. Prodn Bean (t-2)	Contr. Prodn Bean (t-1)	Contr. Prodn Bean (t)	Predted Prodn Bean
Feb.1990	149.70					
Mar.1990	97.30					
Apr.1990	267.60					
May 1990	119.20					
Jun.1990	1.90					
Ju.1990	0.00					
Aug.1990	70.40					
Sep.1990	160.10	6	0	340	515	861
Oct.1990	150.70	0	340	773	485	1597
Nov.1990	136.20	227	773	727	438	2165
Dec.1990	123.00	515	727	657	396	2295
Jan.1991	96.00	485	657	594	309	2045
Feb.1991	133.30	438	594	463	429	1924
Mar.1991	104.60	396	463	643	337	1839
Apr.1991	128.50	309	643	505	413	1870
May 1991	165.90	429	505	620	534	2088
Jun.1991	36.10	337	620	801	116	1873
Jul.1991	27.30	413	801	174	83	1476
Aug.1991	6.30	534	174	132	20	860
Sep.1991	69.00	116	132	30	222	500
Oct.1991	251.20	88	30	333	744	1195
Nov.1991	132.00	20	333	1116	425	1894
Dec.1991	53.80	222	1116	637	173	2148
Jan.1992	52.00	744	637	260	167	1808
Feb.1992	67.20	425	260	251	216	1151
Mar.1992	150.60	173	251	324	485	1233

(1) Forecast Equation for Bean - Bean Production = $3.2174*R_{t-3} + 4.826*R_{t-2} + 4.826*R_{t-1} + 3.2174*R_t$

Where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: RUHENGERI PREDICTED SORGHUM PRODUCTION IN TONNES

Month/Yr	Rainfall	Contr. Prodn Sorghum (t-5)	Contr. Prodn Sorghum (t-4)	Contr. Prodn Sorghum (t-3)	Contr. Prodn Sorghum (t-2)	Contr. Prodn Sorghum (t-1)	Contr. Prodn Sorghum (t)	Predted Prodn Sorghum
Feb.1990	149.70							
Mar.1990	97.30							
Apr.1990	267.60							
May 1990	119.20							
Jun.1990	1.90							
Ju.1990	0.00							
Aug.1990	70.40							
Sep.1990	160.10	253	188	4	0	111	151	707
Oct.1990	150.70	113	3	0	133	252	143	644
Nov.1990	136.20	2	0	133	303	238	129	804
Dec.1990	123.00	0	111	303	285	215	116	1030
Jan.1991	96.00	67	252	285	258	194	91	1146
Feb.1991	133.30	151	238	258	233	151	126	1157
Mar.1991	104.60	143	215	233	182	210	99	1081
Apr.1991	128.50	129	194	182	252	165	122	1043
May 1991	165.90	116	151	252	198	203	157	1077
Jun.1991	36.10	91	210	198	243	262	34	1038
Jul.1991	27.30	126	165	243	314	57	26	931
Aug.1991	6.30	99	203	314	68	43	6	733
Sep.1991	69.00	122	262	68	52	10	65	578
Oct.1991	231.20	157	57	52	12	109	219	605
Nov.1991	132.00	34	43	12	131	364	125	709
Dec.1991	53.80	26	10	131	437	208	51	863
Jan.1992	52.00	6	109	437	250	85	49	936
Feb.1992	67.20	65	364	250	102	82	64	927
Mar.1992	150.60	219	208	102	98	106	142	875

(2) Forecast equation for Sorghum - Sorghum Production = $0.94585*R_{t-5} + 1.5764*R_{t-4} + 1.8917*R_{t-3} + 1.8917*R_{t-2} + 1.5764*R_{t-1} + 0.94585*R_t$

Where:

R_{t-5} is rainfall five months before harvest, R_{t-4} is rainfall four months before harvest, R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: RUHENGERI PREDICTED MAIZE PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Maize (t-5)	Contr. Prodn Maize (t-4)	Contr. Prodn Maize (t-3)	Contr. Prodn Maize (t-2)	Contr. Prodn Maize (t-1)	Contr. Prodn Maize (t)	Predted Prodn Maize
Feb.1990	149.70							
Mar.1990	97.30							
Apr.1990	267.60							
May 1990	119.20							
Jun.1990	1.90							
Ju.1990	0.00							
Aug.1990	70.40							
Sep.1990	160.10	407	302	6	0	178	244	1137
Oct.1990	150.70	181	5	0	214	406	229	1036
Nov.1990	136.20	3	0	214	487	382	207	1294
Dec.1990	123.00	0	178	487	459	345	187	1657
Jan.1991	96.00	107	406	459	414	312	146	1844
Feb.1991	133.30	244	382	414	374	243	203	1860
Mar.1991	104.60	229	345	374	292	338	159	1738
Apr.1991	128.50	207	312	292	406	265	195	1677
May 1991	165.90	187	243	406	318	326	252	1733
Jun.1991	36.10	146	338	318	391	421	55	1669
Jul.1991	27.30	203	265	391	505	92	42	1497
Aug.1991	6.30	159	326	505	110	69	10	1178
Sep.1991	69.00	195	421	110	83	16	105	930
Oct.1991	231.20	252	92	83	19	175	352	973
Nov.1991	132.00	55	69	19	210	586	201	1140
Dec.1991	53.80	42	16	210	703	335	82	1387
Jan.1992	52.00	10	175	703	402	136	79	1505
Feb.1992	67.20	105	586	402	164	132	102	1491
Mar.1992	150.60	352	335	164	158	170	229	1408

(3) Forecast equation for Maize - Maize Production = $1.5213*R_{t-5} + 2.5355*R_{t-4} + 3.0426*R_{t-3} + 3.0426*R_{t-2} + 2.5355*R_{t-1} + 1.5213*R_t$

Where:

R_{t-5} is rainfall five months before harvest, R_{t-4} is rainfall four months before harvest, R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: RUHENGERI PREDICTED PEAS PRODUCTION IN TONNES

Month/Yr	(mm) Rainfall	Contr. Prodn Peas (t-3)	Contr. Prodn Peas (t-2)	Contr. Prodn Peas (t-1)	Contr. Prodn Peas (t)	Predted Prodn Peas
Feb.1990	149.70					
Mar.1990	97.30					
Apr.1990	267.60					
May 1990	119.20					
Jun.1990	1.90					
Ju.1990	0.00					
Aug.1990	70.40					
Sep.1990	160.10	0	0	24	37	61
Oct.1990	150.70	0	24	55	35	114
Nov.1990	136.20	16	55	52	31	154
Dec.1990	123.00	37	52	47	28	164
Jan.1991	96.00	35	47	42	22	146
Feb.1991	133.30	31	42	33	31	137
Mar.1991	104.60	28	33	46	24	131
Apr.1991	128.50	22	46	36	29	133
May 1991	165.90	31	36	44	38	149
Jun.1991	36.10	24	44	57	8	134
Jul.1991	27.30	29	57	12	6	105
Aug.1991	6.30	38	12	9	1	61
Sep.1991	69.00	8	9	2	16	36
Oct.1991	231.20	6	2	24	53	85
Nov.1991	132.00	1	24	80	30	135
Dec.1991	53.80	16	80	45	12	153
Jan.1992	52.00	53	45	19	12	129
Feb.1992	67.20	30	19	18	15	82
Mar.1992	150.60	12	18	23	35	88

(4) Forecast Equation for Peas - Peas Production = $0.22938*R_{t-3} + 0.34407*R_{t-2} + 0.34407*R_{t-1} + 0.22938*R_t$

Where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: RUHENGERI PREDICTED SWEET POTATO PRODUCTION IN TONNES

Month/Yr	Rainfall	Contr. Prodn Sw.Potato (t-3)	Contr. Prodn Sw.Potato (t-2)	Contr. Prodn Sw.Potato (t-1)	Contr. Prodn Sw.Potato (t)	Predted Prodn Sw.Potato
Feb.1990	149.70					
Mar.1990	97.30					
Apr.1990	267.60					
May 1990	119.20					
Jun.1990	1.90					
Ju.1990	0.00					
Aug.1990	70.40					
Sep.1990	160.10	30	0	1666	2527	4223
Oct.1990	150.70	0	1666	3790	2378	7834
Nov.1990	136.20	1111	3790	3567	2149	10617
Dec.1990	123.00	2527	3567	3224	1941	11259
Jan.1991	96.00	2378	3224	2912	1515	10029
Feb.1991	133.30	2149	2912	2272	2104	9437
Mar.1991	104.60	1941	2272	3155	1651	9020
Apr.1991	128.50	1515	3155	2476	2028	9174
May 1991	165.90	2104	2476	3042	2618	10239
Jun.1991	36.10	1651	3042	3927	570	9189
Jul.1991	27.30	2028	3927	855	431	7240
Aug.1991	6.30	2618	855	646	99	4218
Sep.1991	69.00	570	646	149	1089	2454
Oct.1991	231.20	431	149	1633	3649	5862
Nov.1991	132.00	99	1633	5473	2083	9289
Dec.1991	53.80	1089	5473	3125	849	10535
Jan.1992	52.00	3649	3125	1273	821	8867
Feb.1992	67.20	2083	1273	1231	1060	5648
Mar.1992	150.60	849	1231	1591	2377	6047

(5) Forecast Equation for Sweet Potato - Sweet Potato Production = $15.781*R_{t-3} + 23.671*R_{t-2} + 23.671*R_{t-1} + 15.781*R_t$

Where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: RUHENGERI PREDICTED CASSAVA PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Cassava (t-3)	Contr. Prodn Cassava (t-2)	Contr. Prodn Cassava (t-1)	Contr. Prodn Cassava (t)	Predted Prodn Cassava
Feb.1990	149.70					
Mar.1990	97.30					
Apr.1990	267.60					
May 1990	119.20					
Jun.1990	1.90					
Ju.1990	0.00					
Aug.1990	70.40					
Sep.1990	160.10	2	0	93	140	235
Oct.1990	150.70	0	93	211	132	435
Nov.1990	136.20	62	211	198	119	590
Dec.1990	123.00	140	198	179	108	626
Jan.1991	96.00	132	179	162	84	557
Feb.1991	133.30	119	162	126	117	524
Mar.1991	104.60	108	126	175	92	501
Apr.1991	128.50	84	175	138	113	510
May 1991	165.90	117	138	169	145	569
Jun.1991	36.10	92	169	218	32	511
Jul.1991	27.30	113	218	47	24	402
Aug.1991	6.30	145	47	36	6	234
Sep.1991	69.00	32	36	8	61	136
Oct.1991	231.20	24	8	91	203	326
Nov.1991	132.00	6	91	304	116	516
Dec.1991	53.80	61	304	174	47	585
Jan.1992	52.00	203	174	71	46	493
Feb.1992	67.20	116	71	68	59	314
Mar.1992	150.60	47	68	88	132	336

(6) Forecast Equation for Cassava - Cassava Production = $0.87691*R_{t-3} + 1.3154*R_{t-2} + 1.3154*R_{t-1} + 0.87691*R_t$

Where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: RUHENGERI PREDICTED POTATO PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Potato (t-3)	Contr. Prodn Potato (t-2)	Contr. Prodn Potato (t-1)	Contr. Prodn Potato (t)	Predted Prodn Potato
Feb.1990	149.70					
Mar.1990	97.30					
Apr.1990	267.60					
May 1990	119.20					
Jun.1990	1.90					
Ju.1990	0.00					
Aug.1990	70.40					
Sep.1990	160.10	31	0	1742	2641	4415
Oct.1990	150.70	0	1742	3962	2486	8191
Nov.1990	136.20	1162	3962	3730	2247	11101
Dec.1990	123.00	2641	3730	3371	2029	11771
Jan.1991	96.00	2486	3371	3044	1584	10485
Feb.1991	133.30	2247	3044	2376	2199	9867
Mar.1991	104.60	2029	2376	3299	1726	9430
Apr.1991	128.50	1584	3299	2589	2120	9592
May 1991	165.90	2199	2589	3180	2737	10705
Jun.1991	36.10	1726	3180	4106	596	9608
Jul.1991	27.30	2120	4106	893	450	7570
Aug.1991	6.30	2737	893	675	104	4410
Sep.1991	69.00	596	676	156	1138	2566
Oct.1991	231.20	450	156	1708	3815	6129
Nov.1991	132.00	104	1708	5722	2178	9711
Dec.1991	53.80	1138	5722	3267	888	11015
Jan.1992	52.00	3815	3267	1331	858	9271
Feb.1992	67.20	2178	1331	1287	1109	5905
Mar.1992	150.60	888	1287	1663	2485	6322

(7) Forecast Equation for Potato - Potato Production = $16.499*R_{t-3} + 24.749*R_{t-2} + 24.749*R_{t-1} + 16.499*R_t$

Where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: RUHENGERI PREDICTED BANANA PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Banana (t-3)	Contr. Prodn Banana (t-2)	Contr. Prodn Banana (t-1)	Contr. Prodn Banana (t)	Predted Prodn Banana
Feb.1990	149.70					
Mar.1990	97.30					
Apr.1990	267.60					
May 1990	119.20					
Jun.1990	1.90					
Ju.1990	0.00					
Aug.1990	70.40					
Sep.1990	160.10	44	0	2465	3738	6248
Oct.1990	150.70	0	2465	5607	3518	11591
Nov.1990	136.20	1644	5607	5278	3180	15708
Dec.1990	123.00	3738	5278	4770	2872	16457
Jan.1991	96.00	3518	4770	4307	2241	14837
Feb.1991	133.30	3180	4307	3362	3112	13961
Mar.1991	104.60	2872	3362	4668	2442	13344
Apr.1991	128.50	2241	4668	3663	3000	13573
May 1991	165.90	3112	3663	4500	3873	15149
Jun.1991	36.10	2442	4500	5810	843	13595
Jul.1991	27.30	3000	5810	1264	637	10712
Aug.1991	6.30	3873	1264	956	147	6241
Sep.1991	69.00	843	956	221	1611	3630
Oct.1991	231.20	637	221	2416	5398	8672
Nov.1991	132.00	147	2416	8097	3082	13742
Dec.1991	53.80	1611	8097	4623	1256	15586
Jan.1992	52.00	5398	4623	1884	1214	13119
Feb.1992	67.20	3082	1884	1821	1569	8356
Mar.1992	150.60	1256	1821	2353	3516	8947

(8) Forecast Equation for Banana - Banana Production = $23.347*R_{t-3} + 35.02*R_{t-2} + 35.02*R_{t-1} + 23.347*R_t$

Where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: GIKONGORO PREDICTED BEAN PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Bean (t-3)	Contr. Prodn Bean (t-2)	Contr. Prodn Bean (t-1)	Contr. Prodn Bean (t)	Predted Prodn Bean
Feb.1990						
Mar.1990	139.50					
Apr.1990	262.70					
May 1990	62.60					
Jun.1990	1.80					
Jul.1990	0.00					
Aug.1990	13.30					
Sep.1990	76.00	2	0	25	96	123
Oct.1990	109.10	0	25	144	137	306
Nov.1990	118.30	17	144	206	149	515
Dec.1990	110.70	96	206	223	139	665
Jan.1991	89.70	137	223	209	113	683
Feb.1991	141.10	149	209	169	178	705
Mar.1991	154.60	139	169	267	195	770
Apr.1991	150.70	113	267	292	190	861
May 1991	214.10	178	292	285	270	1024
Jun.1991	34.70	195	285	404	44	928
Jul.1991	6.30	190	404	66	8	668
Aug.1991	0.00	270	66	12	0	347
Sep.1991	47.40	44	12	0	60	115
Oct.1991	199.30	8	0	90	251	348
Nov.1991	109.20	0	90	376	138	604
Dec.1991	86.40	60	376	206	109	751
Jan.1992	98.10	251	206	163	124	744
Feb.1992	137.40	138	163	185	173	659
Mar.1992	189.80	109	185	260	239	793

(1) Forecast Equation for Bean - Bean Production = $1.2594*R_{t-3} + 1.8891*R_{t-2} + 1.8891*R_{t-1} + 1.2594*R_t$

Where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: GIKONGORO PREDICTED SORGHUM PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Sorghum (t-5)	Contr. Prodn Sorghum (t-4)	Contr. Prodn Sorghum (t-3)	Contr. Prodn Sorghum (t-2)	Contr. Prodn Sorghum (t-1)	Contr. Prodn Sorghum (t)	Predted Prodn Sorghum
Feb.1990								
Mar.1990	139.50							
Apr.1990	262.70							
May 1990	62.60							
Jun.1990	1.80							
Jul.1990	0.00							
Aug.1990	13.30							
Sep.1990	76.00	155	62	2	0	13	45	277
Oct.1990	109.10	37	2	0	16	75	64	194
Nov.1990	118.30	1	0	16	90	107	70	284
Dec.1990	110.70	0	13	90	129	116	65	413
Jan.1991	89.70	8	75	129	140	109	53	513
Feb.1991	141.10	45	107	140	131	88	83	594
Mar.1991	154.60	64	116	131	106	139	91	647
Apr.1991	150.70	70	109	106	167	152	89	692
May 1991	214.10	65	88	167	183	148	126	777
Jun.1991	34.70	53	139	183	178	211	20	783
Jul.1991	6.30	83	152	178	253	34	4	704
Aug.1991	0.00	91	148	253	41	6	0	539
Sep.1991	47.40	89	211	41	7	0	28	376
Oct.1991	199.30	126	34	7	0	47	118	332
Nov.1991	109.20	20	6	0	56	196	64	343
Dec.1991	86.40	4	0	56	235	107	51	453
Jan.1992	98.10	0	47	235	129	85	58	554
Feb.1992	137.40	28	196	129	102	97	81	633
Mar.1992	189.80	118	107	102	116	135	112	690

(2) Forecast Equation for Sorghum - Sorghum Production = $0.59023*R_{t-5} + 0.98372*R_{t-4} + 1.1805*R_{t-3} + 1.1805*R_{t-2} + 0.98372*R_{t-1} + 0.59023*R_t$

Where:

R_{t-5} is rainfall five months before harvest, R_{t-4} is rainfall four months before harvest, R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: GIKONGORO PREDICTED MAIZE PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Maize (t-5)	Contr. Prodn Maize (t-4)	Contr. Prodn Maize (t-3)	Contr. Prodn Maize (t-2)	Contr. Prodn Maize (t-1)	Contr. Prodn Maize (t)	Predted Prodn Maize
Feb.1990								
Mar.1990	139.50							
Apr.1990	262.70							
May 1990	62.60							
Jun.1990	1.80							
Jul.1990	0.00							
Aug.1990	13.30							
Sep.1990	76.00	143	57	2	0	12	41	254
Oct.1990	109.10	34	2	0	14	69	59	178
Nov.1990	118.30	1	0	14	82	99	64	261
Dec.1990	110.70	0	12	82	118	107	60	380
Jan.1991	89.70	7	69	118	128	100	49	471
Feb.1991	141.10	41	99	128	120	81	77	546
Mar.1991	154.60	59	107	120	97	128	84	595
Apr.1991	150.70	64	100	97	153	140	82	636
May 1991	214.10	60	81	153	168	136	116	714
Jun.1991	34.70	49	128	168	164	194	19	720
Jul.1991	6.30	77	140	164	232	31	3	647
Aug.1991	0.00	84	136	232	38	6	0	496
Sep.1991	47.40	82	194	38	7	0	26	346
Oct.1991	199.30	116	31	7	0	43	108	305
Nov.1991	109.20	19	6	0	51	180	59	315
Dec.1991	86.40	3	0	51	216	99	47	417
Jan.1992	98.10	0	43	216	118	78	53	509
Feb.1992	137.40	26	180	118	94	89	75	581
Mar.1992	189.80	108	99	94	106	124	103	634

(3) Forecast Equation for Maize - Maize Production = $0.54249*R_{t-5} + 0.90415*R_{t-4} + 1.085*R_{t-3} + 1.085*R_{t-2} + 0.90415*R_{t-1} + 0.54249*R_t$

Where:

R_{t-5} is rainfall five months before harvest, R_{t-4} is rainfall four months before harvest, R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: GIKONGORO PREDICTED PEAS PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Peas (t-3)	Contr. Prodn Peas (t-2)	Contr. Prodn Peas (t-1)	Contr. Prodn Peas (t)	Predted Prodn Peas
Feb.1990						
Mar.1990	139.50					
Apr.1990	262.70					
May 1990	62.60					
Jun.1990	1.80					
Jul.1990	0.00					
Aug.1990	13.30					
Sep.1990	76.00	1	0	6	22	28
Oct.1990	109.10	0	6	33	31	70
Nov.1990	118.30	4	33	47	34	117
Dec.1990	110.70	22	47	51	32	151
Jan.1991	89.70	31	51	48	26	155
Feb.1991	141.10	34	48	39	40	160
Mar.1991	154.60	32	39	61	44	175
Apr.1991	150.70	26	61	66	43	196
May 1991	214.10	40	66	65	61	233
Jun.1991	34.70	44	65	92	10	211
Jul.1991	6.30	43	92	15	2	152
Aug.1991	0.00	61	15	3	0	79
Sep.1991	47.40	10	3	0	14	26
Oct.1991	199.30	2	0	20	57	79
Nov.1991	109.20	0	20	86	31	137
Dec.1991	86.40	14	86	47	25	171
Jan.1992	98.10	57	47	37	28	169
Feb.1992	137.40	31	37	42	39	150
Mar.1992	189.80	25	42	59	54	180

(4) Forecast Equation for Peas - Peas Production = $0.28652*R_{t-3} + 0.42978*R_{t-2} + 0.42973*R_{t-1} + 0.28652*R_t$

Where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest

R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: GIKONGORO PREDICTED SWEET POTATO PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Sw.Potato (t-3)	Contr. Prodn Sw.Potato (t-2)	Contr. Prodn Sw.Potato (t-1)	Contr. Prodn Sw.Potato (t)	Predted Prodn Sw.Potato
Feb.1990						
Mar.1990	139.50					
Apr.1990	262.70					
May 1990	62.60					
Jun.1990	1.80					
Jul.1990	0.00					
Aug.1990	13.30					
Sep.1990	76.00	29	0	3083	1207	4319
Oct.1990	109.10	0	317	17618	1733	19668
Nov.1990	118.30	211	1810	25292	1879	29192
Dec.1990	110.70	1207	2599	27424	1758	32988
Jan.1991	89.70	1733	2818	25663	1425	31638
Feb.1991	141.10	1879	2637	20794	2241	27551
Mar.1991	154.60	1758	2137	32710	2455	39060
Apr.1991	150.70	1425	3361	35840	2393	43018
May 1991	214.10	2241	3683	34935	3400	44259
Jun.1991	34.70	2455	3590	49633	551	56229
Jul.1991	6.30	2393	5100	8044	100	15638
Aug.1991	0.00	3400	827	1460	0	5687
Sep.1991	47.40	551	150	0	753	1454
Oct.1991	199.30	100	0	10988	3165	14253
Nov.1991	109.20	0	1129	46202	1734	49065
Dec.1991	86.40	753	4748	25315	1372	32187
Jan.1992	98.10	3165	2601	20029	1558	27354
Feb.1992	137.40	1734	2058	22742	2182	28716
Mar.1992	189.80	1372	2337	31852	3014	38575

(5) Forecast Equation for Sweet Potato - Sweet Potato Production = $15.881*R_{t-3} + 23.821*R_{t-2} + 23.821*R_{t-1} + 15.881*R_t$

Where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: GIKONGORO PREDICTED CASSAVA PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Cassava (t-3)	Contr. Prodn Cassava (t-2)	Contr. Prodn Cassava (t-1)	Contr. Prodn Cassava (t)	Predtd Prodn Cassava
Feb.1990						
Mar.1990	139.50					
Apr.1990	262.70					
May 1990	62.60					
Jun.1990	1.80					
Jul.1990	0.00					
Aug.1990	13.30					
Sep.1990	76.00	29	0	3083	1207	4319
Oct.1990	109.10	0	317	17618	1733	19668
Nov.1990	118.30	211	1810	25292	1879	29192
Dec.1990	110.70	1207	2599	27424	1758	32988
Jan.1991	89.70	1733	2818	25663	1425	31638
Feb.1991	141.10	1879	2637	20794	2241	27551
Mar.1991	154.60	1758	2137	32710	2455	39060
Apr.1991	150.70	1425	3361	35840	2393	43018
May 1991	214.10	2241	3683	34935	3400	44259
Jun.1991	34.70	2455	3590	49633	551	56229
Jul.1991	6.30	2393	5100	8044	100	15638
Aug.1991	0.00	3400	827	1460	0	5687
Sep.1991	47.40	551	150	0	753	1454
Oct.1991	199.30	100	0	10983	3165	14253
Nov.1991	109.20	0	1129	46202	1734	49065
Dec.1991	86.40	753	4748	25315	1372	32187
Jan.1992	98.10	3165	2601	20029	1558	27354
Feb.1992	137.40	1734	2058	22742	2182	28716
Mar.1992	189.80	1372	2337	31852	3014	38575

(6) Forecast Equation for Cassava - Cassava Production = $2.5516*R_{t-3} + 3.8274*R_{t-2} + 3.8274*R_{t-1} + 2.5516*R_t$

Where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: GIKONGORO PREDICTED POTATO PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Potato (t-3)	Contr. Prodn Potato (t-2)	Contr. Prodn Potato (t-1)	Contr. Prodn Potato (t)	Predted Prodn Potato
Feb.1990						
Mar.1990	139.50					
Apr.1990	262.70					
May 1990	62.60					
Jun.1990	1.80					
Ju .1990	0.00					
Aug.1990	13.30					
Sep.1990	76.00	1	0	12	45	58
Oct.1990	109.10	0	12	68	65	144
Nov.1990	118.30	8	68	97	70	243
Dec.1990	110.70	45	97	105	66	313
Jan.1991	89.70	65	105	99	53	322
Feb.1991	141.10	70	99	80	84	333
Mar.1991	154.60	66	80	126	92	363
Apr.1991	150.70	53	126	138	89	406
May 1991	214.10	84	138	134	127	483
Jun.1991	34.70	92	134	191	21	437
Jul.1991	6.30	89	191	31	4	315
Aug.1991	0.00	127	31	6	0	164
Sep.1991	47.40	21	6	0	28	54
Oct.1991	199.30	4	0	42	118	164
Nov.1991	109.20	0	42	178	65	285
Dec.1991	86.40	28	178	97	51	354
Jan.1992	98.10	118	97	77	58	351
Feb.1992	137.40	65	77	87	82	311
Mar.1992	189.80	51	87	122	113	374

(7) Forecast Equation for Potato - Potato Production = $0.59376*R_{t-3} + 0.89064*R_{t-2} + 0.89064*R_{t-1} + 0.59376*R_t$

Where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: GIKONGORO PREDICTED BANANA PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Banana (t-3)	Contr. Prodn Banana (t-2)	Contr. Prodn Banana (t-1)	Contr. Prodn Banana (t)	Predted Prodn Banana
Feb.1990						
Mar.1990	139.50					
Apr.1990	262.70					
May 1990	62.60					
Jun.1990	1.80					
Jul.1990	0.00					
Aug.1990	13.30					
Sep.1990	76.00	16	0	178	677	870
Oct.1990	109.10	0	178	1015	971	2164
Nov.1990	118.30	118	1015	1457	1053	3643
Dec.1990	110.70	677	1457	1580	986	4699
Jan.1991	89.70	971	1580	1478	799	4828
Feb.1991	141.10	1053	1478	1198	1256	4985
Mar.1991	154.60	986	1198	1884	1376	5444
Apr.1991	150.70	799	1884	2065	1342	6089
May 1991	214.10	1256	2065	2012	1906	7239
Jun.1991	34.70	1376	2012	2859	309	6557
Jul.1991	6.30	1342	2859	463	56	4720
Aug.1991	0.00	1906	463	84	0	2454
Sep.1991	47.40	309	84	0	422	815
Oct.1991	199.30	56	0	633	1774	2463
Nov.1991	109.20	0	633	2661	972	4267
Dec.1991	86.40	422	2661	1458	769	5311
Jan.1992	98.10	1774	1458	1154	873	5260
Feb.1992	137.40	972	1154	1310	1223	4659
Mar.1992	189.80	769	1310	1835	1690	5604

(8) Forecast Equation for Banana - Banana Production = $8.9025*R_{t-3} + 13.354*R_{t-2} + 13.354*R_{t-1} + 8.9025*R_t$

Where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: GITARAMA PREDICTED BEAN PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Bean (t-3)	Contr. Prodn Bean (t-2)	Contr. Prodn Bean (t-1)	Contr. Prodn Bean (t)	Predted Prodn Bean
Feb.1990	120.90					
Mar.1990	191.20					
Apr.1990	187.60					
May 1990	59.20					
Jun.1990	4.40					
Jul.1990	0.00					
Aug.1990	244.00					
Sep.1990	88.90	17	0	1455	353	1825
Oct.1990	308.00	0	1455	530	1224	3208
Nov.1990	136.50	970	530	1836	542	3878
Dec.1990	110.30	353	1836	814	438	3441
Jan.1991	140.20	1224	814	658	557	3252
Feb.1991	139.50	542	658	836	554	2590
Mar.1991	135.80	438	836	832	540	2645
Apr.1991	121.00	557	832	810	481	2679
May 1991	138.60	554	810	721	551	2636
Jun.1991	74.90	540	721	826	298	2385
Jul.1991	14.50	481	826	446	58	1811
Aug.1991	31.20	551	446	86	124	1208
Sep.1991	37.80	298	86	186	150	720
Oct.1991	98.10	58	186	225	390	859
Nov.1991	65.30	124	225	585	260	1194
Dec.1991	134.10	150	585	389	533	1657
Jan.1992	107.80	390	389	799	428	2007
Feb.1992	86.50	260	799	643	344	2045
Mar.1992	166.50	533	643	516	662	2353

(1) Forecast Equation for Bean - Bean Production = $3.974*R_{t-3} + 5.9611*R_{t-2} + 5.9611*R_{t-1} + 3.974*R_t$

Where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: GITARAMA PREDICTED SORGHUM PRODUCTION IN TONNES

Month/Yr	Rainfall	Contr. Prodn Sorghum (t-5)	Contr. Prodn Sorghum (t-4)	Contr. Prodn Sorghum (t-3)	Contr. Prodn Sorghum (t-2)	Contr. Prodn Sorghum (t-1)	Contr. Prodn Sorghum (t)	Predted Prodn Sorghum
Feb.1990	120.90							
Mar.1990	191.20							
Apr.1990	187.60							
May 1990	59.20							
Jun.1990	4.40							
Jul.1990	0.00							
Aug.1990	244.00							
Sep.1990	88.90	185	97	9	0	402	88	781
Oct.1990	308.00	58	7	0	482	146	304	998
Nov.1990	136.50	4	0	482	176	507	135	1303
Dec.1990	110.30	0	402	176	608	225	109	1519
Jan.1991	140.20	241	146	608	270	181	138	1585
Feb.1991	139.50	88	507	270	218	231	138	1450
Mar.1991	135.80	304	225	218	277	230	134	1387
Apr.1991	121.00	135	181	277	275	223	119	1211
May 1991	138.60	109	231	275	268	199	137	1219
Jun.1991	74.90	138	230	268	239	228	74	1177
Jul.1991	14.50	138	223	239	274	123	14	1011
Aug.1991	31.20	134	199	274	148	24	31	809
Sep.1991	37.80	119	228	148	29	51	37	613
Oct.1991	98.10	137	123	29	62	62	97	509
Nov.1991	65.30	74	24	62	75	161	64	460
Dec.1991	134.10	14	51	75	194	107	132	574
Jan.1992	107.80	31	62	194	129	221	106	743
Feb.1992	86.50	37	161	129	265	177	85	855
Mar.1992	166.50	97	107	265	213	142	164	989

(2) Forecast Equation for Sorghum - Sorghum Production = $0.98731*R_{t-5} + 1.6455*R_{t-4} + 1.9746*R_{t-3} + 1.9746*R_{t-2} + 1.6455*R_{t-1} + 0.98731*R_t$

Where:

R_{t-5} is rainfall five months before harvest, R_{t-4} is rainfall four months before harvest,

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest,

R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: GITARAMA PREDICTED MAIZE PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Maize (t-5)	Contr. Prodn Maize (t-4)	Contr. Prodn Maize (t-3)	Contr. Prodn Maize (t-2)	Contr. Prodn Maize (t-1)	Contr. Prodn Maize (t)	Predted Prodn Maize
Feb.1990	120.90							
Mar.1990	191.20							
Apr.1990	187.60							
May 1990	59.20							
Jun.1990	4.40							
Jul.1990	0.00							
Aug.1990	244.00							
Sep.1990	88.90	50	31	3	0	125	28	245
Oct.1990	308.00	18	2	0	151	46	95	313
Nov.1990	136.50	1	0	151	55	159	42	409
Dec.1990	110.30	0	126	55	191	70	34	476
Jan.1991	140.20	76	46	191	85	57	43	497
Feb.1991	139.50	28	159	85	68	72	43	455
Mar.1991	135.80	95	70	68	87	72	42	435
Apr.1991	121.00	42	57	87	86	70	37	380
May 1991	138.60	34	72	86	84	62	43	382
Jun.1991	74.90	43	72	84	75	72	23	369
Jul.1991	14.50	43	70	75	86	39	4	317
Aug.1991	31.20	42	62	86	46	7	10	254
Sep.1991	37.80	37	72	46	9	16	12	192
Oct.1991	98.10	43	39	9	19	20	30	160
Nov.1991	65.30	23	7	19	23	51	20	144
Dec.1991	134.10	4	16	23	61	34	42	180
Jan.1992	107.80	10	20	61	40	69	33	233
Feb.1992	86.50	12	51	40	83	56	27	268
Mar.1992	166.50	30	34	83	67	45	52	310

(3) Forecast Equation for Maize - Maize Production = $0.30955*R_{t-5} + 0.51591*R_{t-4} + 0.6191*R_{t-3} + 0.6191*R_{t-2} + 0.51591*R_{t-1} + 0.30955*R_t$

Where:

R_{t-5} is rainfall five months before harvest, R_{t-4} is rainfall four months before harvest, R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: GITARAMA PREDICTED PEAS PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Peas (t-3)	Contr. Prodn Peas (t-2)	Contr. Prodn Peas (t-1)	Contr. Prodn Peas (t)	Predted Prodn Peas
Feb.1990	120.90					
Mar.1990	191.20					
Apr.1990	187.60					
May 1990	59.20					
Jun.1990	4.40					
Jul.1990	0.00					
Aug.1990	244.00					
Sep.1990	88.90	1	0	55	13	70
Oct.1990	308.00	0	55	20	47	122
Nov.1990	136.50	37	20	70	21	148
Dec.1990	110.30	13	70	31	17	131
Jan.1991	140.20	47	31	25	21	124
Feb.1991	139.50	21	25	32	21	99
Mar.1991	135.80	17	32	32	21	101
Apr.1991	121.00	21	32	31	18	102
May 1991	138.60	21	31	27	21	100
Jun.1991	74.90	21	27	31	11	91
Jul.1991	14.50	18	31	17	2	69
Aug.1991	31.20	21	17	3	5	46
Sep.1991	37.80	11	3	7	6	27
Oct.1991	98.10	2	7	9	15	33
Nov.1991	65.30	5	9	22	10	46
Dec.1991	134.10	6	22	15	20	63
Jan.1992	107.80	15	15	30	16	77
Feb.1992	86.50	10	30	24	13	78
Mar.1992	166.50	20	24	20	25	90

(4) Forecast Equation for Peas - Peas Production = $0.15151*R_{t-3} + 0.22726*R_{t-2} + 0.22726*R_{t-1} + 0.15151*R_t$

Where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: GITARAMA PREDICTED SWEET POTATO PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Sw.Potato (t-3)	Contr. Prodn Sw.Potato (t-2)	Contr. Prodn Sw.Potato (t-1)	Contr. Prodn Sw.Potato (t)	Predted Prodn Sw.Potato
Feb.1990	120.90					
Mar.1990	191.20					
Apr.1990	187.60					
May 1990	59.20					
Jun.1990	4.40					
Jul.1990	0.00					
Aug.1990	244.00					
Sep.1990	88.90	52	0	4360	1059	5471
Oct.1990	308.00	0	4360	1588	3669	9617
Nov.1990	136.50	2906	1588	5503	1626	11624
Dec.1990	110.30	1059	5503	2439	1314	10315
Jan.1991	140.20	3669	2439	1971	1670	9748
Feb.1991	139.50	1626	1971	2505	1662	7763
Mar.1991	135.80	1314	2505	2492	1618	7929
Apr.1991	121.00	1670	2492	2426	1441	8030
May 1991	138.60	1662	2426	2162	1651	7901
Jun.1991	74.90	1618	2162	2476	892	7148
Jul.1991	14.50	1441	2476	1338	173	5429
Aug.1991	31.20	1651	1338	259	372	3620
Sep.1991	37.80	892	259	557	450	2159
Oct.1991	98.10	173	557	675	1168	2574
Nov.1991	65.30	372	675	1753	778	3578
Dec.1991	134.10	450	1753	1167	1597	4967
Jan.1992	107.80	1168	1167	2396	1284	6015
Feb.1992	86.50	778	2396	1926	1030	6130
Mar.1992	166.50	1597	1926	1545	1983	7052

(5) Forecast Equation for Sweet Potato - Sweet Potato Production = $11.911*R_{t-3} + 17.867*R_{t-2} + 17.867*R_{t-1} + 11.911*R_t$

Where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: GITARAMA PREDICTED CASSAVA PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Cassava (t-3)	Contr. Prodn Cassava (t-2)	Contr. Prodn Cassava (t-1)	Contr. Prodn Cassava (t)	Predted Prodn Cassava
Feb.1990	120.90					
Mar.1990	191.20					
Apr.1990	187.60					
May 1990	59.20					
Jun.1990	4.40					
Jul.1990	0.00					
Aug.1990	244.00					
Sep.1990	88.90	48	0	3992	970	5010
Oct.1990	308.00	0	3992	1454	3359	8806
Nov.1990	136.50	2661	1454	5039	1489	10644
Dec.1990	110.30	970	5039	2233	1203	9445
Jan.1991	140.20	3359	2233	1805	1529	8926
Feb.1991	139.50	1489	1805	2294	1522	7109
Mar.1991	135.80	1203	2294	2282	1481	7260
Apr.1991	121.00	1529	2282	2222	1320	7353
May 1991	133.60	1522	2222	1980	1512	7235
Jun.1991	74.90	1481	1980	2268	817	6545
Jul.1991	14.50	1320	2268	1225	158	4971
Aug.1991	31.20	1512	1225	237	340	3315
Sep.1991	37.80	817	237	510	412	1977
Oct.1991	98.10	158	510	618	1070	2357
Nov.1991	65.30	340	618	1605	712	3276
Dec.1991	134.10	412	1605	1068	1463	4548
Jan.1992	107.80	1070	1068	2194	1176	5508
Feb.1992	86.50	712	2194	1764	943	5613
Mar.1992	166.50	1463	1764	1415	1816	6458

(6) Forecast Equation for Cassava - Cassava Production = $10.907*R_{t-3} + 16.361*R_{t-2}$

$+ 16.361*R_{t-1} + 10.907*R_t$

Where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest,

R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: GITARAMA PREDICTED POTATO PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Potato (t-3)	Contr. Prodn Potato (t-2)	Contr. Prodn Potato (t-1)	Contr. Prodn Potato (t)	Predted Prodn Potato
Feb.1990	120.90					
Mar.1990	191.20					
Apr.1990	187.60					
May 1990	59.20					
Jun.1990	4.40					
Jul.1990	0.00					
Aug.1990	244.00					
Sep.1990	88.90	3	0	288	70	362
Oct.1990	308.00	0	288	105	242	636
Nov.1990	136.50	192	105	364	107	768
Dec.1990	110.30	70	364	161	87	682
Jan.1991	140.20	242	161	130	110	644
Feb.1991	139.50	107	130	166	110	513
Mar.1991	135.80	87	166	165	107	524
Apr.1991	121.00	110	165	160	95	531
May 1991	138.60	110	160	143	109	522
Jun.1991	74.90	107	143	164	59	472
Jul.1991	14.50	95	164	88	11	359
Aug.1991	31.20	109	88	17	25	239
Sep.1991	37.80	59	17	37	30	143
Oct.1991	98.10	11	37	45	77	170
Nov.1991	65.30	25	45	116	51	236
Dec.1991	134.10	30	116	77	106	328
Jan.1992	107.80	77	77	158	85	398
Feb.1992	86.50	51	158	127	68	405
Mar.1992	166.50	106	127	102	131	466

(7) Forecast Equation for Potato - Potato Production = $0.78719*R_{t-3} + 1.1808*R_{t-2} + 1.1808*R_{t-1} + 0.78719*R_t$

Where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: GITARAMA PREDICTED BANANA PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Banana (t-3)	Contr. Prodn Banana (t-2)	Contr. Prodn Banana (t-1)	Contr. Prodn Banana (t)	Predted Prodn Banana
Feb.1990	120.90					
Mar.1990	191.20					
Apr.1990	187.60					
May 1990	59.20					
Jun.1990	4.40					
Jul.1990	0.00					
Aug.1990	244.00					
Sep.1990	88.90	203	0	16895	4104	21202
Oct.1990	308.00	0	16895	6156	14218	37268
Nov.1990	136.50	11263	6156	21327	6301	45046
Dec.1990	110.30	4104	21327	9452	5092	39973
Jan.1991	140.20	14218	9452	7637	6472	37778
Feb.1991	139.50	6301	7637	9708	6439	30086
Mar.1991	135.80	5092	9708	9659	6269	30727
Apr.1991	121.00	6472	9659	9403	5585	31120
May 1991	138.60	6439	9403	8378	6398	30619
Jun.1991	74.90	6269	8378	9597	3457	27701
Jul.1991	14.50	5585	9597	5186	669	21038
Aug.1991	31.20	6398	5186	1004	1440	14028
Sep.1991	37.80	3457	1004	2160	1745	8367
Oct.1991	98.10	669	2160	2617	4528	9975
Nov.1991	65.30	1440	2617	6793	3014	13865
Dec.1991	134.10	1745	6793	4522	6190	19249
Jan.1992	107.80	4528	4522	9285	4976	23311
Feb.1992	86.50	3014	9285	7464	3993	23757
Mar.1992	166.50	6190	7464	5989	7686	27330

(8) Forecast Equation for Banana - Banana Production = $46.161*R_{t-3} + 69.242*R_{t-2}$

$+ 69.242*R_{t-1} + 46.161*R_t$

Where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest,

R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: KIBUYE PREDICTED BEAN PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Bean (t-3)	Contr. Prodn Bean (t-2)	Contr. Prodn Bean (t-1)	Contr. Prodn Bean (t	Predted Prodn Bean
Feb.1990	191.20					
Mar.1990	126.00					
Apr.1990	150.70					
May 1990	44.00					
Jun.1990	0.00					
Jul.1990	0.00					
Aug.1990	70.40					
Sep.1990	160.10	0	0	205	310	515
Oct.1990	150.70	0	205	465	292	961
Nov.1990	136.20	136	465	438	264	1303
Dec.1990	123.00	310	438	396	238	1382
Jan.1991	40.50	292	396	357	78	1123
Feb.1991	95.20	264	357	118	184	923
Mar.1991	139.10	238	118	277	269	902
Apr.1991	100.70	78	277	404	195	954
May 1991	132.80	184	404	293	257	1138
Jun.1991	94.50	269	293	386	183	1131
Jul.1991	17.70	195	386	275	34	890
Aug.1991	37.00	257	275	51	72	655
Sep.1991	75.20	183	51	107	146	488
Oct.1991	110.10	34	107	218	213	573
Nov.1991	52.60	72	218	320	102	712
Dec.1991	92.20	146	320	153	179	797
Jan.1992	68.20	213	153	268	132	766
Feb.1992	121.80	102	268	198	236	804
Mar.1992	71.20	179	198	354	138	868

(1) Forecast Equation for Bean - Bean Production = $1.9367*R_{t-3} + 2.9051*R_{t-2}$

$+ 2.9051*R_{t-1} + 1.9367*R_t$

Where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest,

R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: KIBUYE PREDICTED SORGHUM PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Sorghum (t-5)	Contr. Prodn Sorghum (t-4)	Contr. Prodn Sorghum (t-3)	Contr. Prodn Sorghum (t-2)	Contr. Prodn Sorghum (t-1)	Contr. Prodn Sorghum (t)	Predted Prodn Sorghum
Feb.1990	191.20							
Mar.1990	126.00							
Apr.1990	150.70							
May 1990	44.00							
Jun.1990	0.00							
Jul.1990	0.03							
Aug.1990	70.40							
Sep.1990	160.10	92	45	0	0	72	98	306
Oct.1990	150.70	27	0	0	86	163	92	368
Nov.1990	136.20	0	0	86	195	153	83	518
Dec.1990	123.00	0	72	195	184	139	75	665
Jan.1991	40.50	43	163	184	166	125	25	706
Feb.1991	95.20	98	153	166	150	41	58	667
Mar.1991	139.10	92	139	150	49	97	85	612
Apr.1991	100.70	83	125	49	116	142	61	577
May 1991	132.80	75	41	116	170	102	81	586
Jun.1991	94.50	25	97	170	123	135	58	607
Jul.1991	17.70	58	142	123	162	96	11	592
Aug.1991	37.00	85	102	162	115	18	23	505
Sep.1991	75.20	61	135	115	22	38	46	417
Oct.1991	110.10	81	96	22	45	77	67	383
Nov.1991	52.60	58	18	45	92	112	32	357
Dec.1991	92.20	11	38	92	134	54	56	384
Jan.1992	68.20	23	77	134	64	94	42	433
Feb.1992	121.80	46	112	64	113	69	74	478
Mar.1992	71.20	67	54	113	83	124	43	484

(2) Forecast Equation for Sorghum - Sorghum Production = $0.61039*R_{t-5} + 1.0173*R_{t-4} + 1.2208*R_{t-3} + 1.2208*R_{t-2} + 1.0173*R_{t-1} + 0.61039*R_t$

Where:

R_{t-5} is rainfall five months before harvest, R_{t-4} is rainfall four months before harvest,

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest,

R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: KIBUYE PREDICTED MAIZE PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Maize (t-5)	Contr. Prodn Maize (t-4)	Contr. Prodn Maize (t-3)	Contr. Prodn Maize (t-2)	Contr. Prodn Maize (t-1)	Contr. Prodn Maize (t)	Predted Prodn Maize
Feb.1990	191.20							
Mar.1990	126.00							
Apr.1990	150.70							
May 1990	44.00							
Jun.1990	0.00							
Jul.1990	0.00							
Aug.1990	70.40							
Sep.1990	160.10	219	107	0	0	170	233	728
Oct.1990	150.70	64	0	0	205	388	219	875
Nov.1990	136.20	0	0	205	465	365	198	1232
Dec.1990	123.00	0	170	465	438	330	179	1582
Jan.1991	40.50	102	388	438	396	298	59	1600
Feb.1991	95.20	233	365	396	357	98	138	1587
Mar.1991	139.10	219	330	357	118	230	202	1456
Apr.1991	100.70	198	298	118	277	337	146	1373
May 1991	132.80	179	98	277	404	244	193	1394
Jun.1991	94.50	59	230	404	293	321	137	1445
Jul.1991	17.70	138	337	293	386	229	26	1408
Aug.1991	37.00	202	244	386	275	43	54	1203
Sep.1991	75.20	146	321	275	51	90	109	992
Oct.1991	110.10	193	229	51	107	182	160	923
Nov.1991	52.60	137	43	107	218	267	76	849
Dec.1991	92.20	26	90	218	320	127	134	915
Jan.1992	68.20	54	182	320	153	223	99	1031
Feb.1992	121.80	109	267	153	268	165	177	1138
Mar.1992	71.20	160	127	268	198	295	103	1151

(3) Forecast Equation for Maize - Maize Production = $1.4525*R_{t-5} + 2.4208*R_{t-4} + 2.9049*R_{t-3} + 2.9049*R_{t-2} + 2.4208*R_{t-1} + 1.4525*R_t$

Where:

R_{t-5} is rainfall five months before harvest, R_{t-4} is rainfall four months before harvest, R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: KIBUYE PREDICTED PEAS PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Peas (t-3)	Contr. Prodn Peas (t-2)	Contr. Prodn Peas (t-1)	Contr. Prodn Peas (t)	Predted Prodn Peas
Feb.1990	191.20					
Mar.1990	126.00					
Apr.1990	150.70					
May 1990	44.00					
Jun.1990	0.00					
Jul.1990	0.00					
Aug.1990	70.40					
Sep.1990	160.10	0	0	31	47	78
Oct.1990	150.70	0	31	71	44	146
Nov.1990	136.20	21	71	67	40	198
Dec.1990	123.00	47	67	60	36	210
Jan.1991	40.50	44	60	54	12	171
Feb.1991	95.20	40	54	18	28	141
Mar.1991	139.10	36	18	42	41	137
Apr.1991	100.70	12	42	62	30	145
May 1991	132.80	28	62	45	39	173
Jun.1991	94.50	41	45	59	28	172
Jul.1991	17.70	30	59	42	5	135
Aug.1991	37.00	39	42	8	11	100
Sep.1991	75.20	28	8	16	22	74
Oct.1991	110.10	5	16	33	32	87
Nov.1991	52.60	11	33	49	16	108
Dec.1991	92.20	22	49	23	27	121
Jan.1992	68.20	32	23	41	20	117
Feb.1992	121.80	16	41	30	36	122
Mar.1992	71.20	27	30	54	21	132

(4) Forecast Equation for Peas - Peas Production = $0.29481*R_{t-3} + 0.44221*R_{t-2}$

$+ 0.44221*R_{t-1} + 0.29481*R_t$

where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: KIBUYE PREDICTED SWEET POTATO PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Sw.Potato (t-3)	Contr. Prodn Sw.Potato (t-2)	Contr. Prodn Sw.Potato (t-1)	Contr. Prodn Sw.Potato (t)	Predted Prodn Sw.Potato
Feb.1990	191.20					
Mar.1990	126.00					
Apr.1990	150.70					
May 1990	44.00					
Jun.1990	0.00					
Jul.1990	0.00					
Aug.1990	70.40					
Sep.1990	160.10	0	0	1084	1643	2727
Oct.1990	150.70	0	1084	2465	1547	5096
Nov.1990	136.20	723	2465	2320	1398	6906
Dec.1990	123.00	1643	2320	2097	1263	7324
Jan.1991	40.50	1547	2097	1894	416	5954
Feb.1991	95.20	1398	1894	624	977	4893
Mar.1991	139.10	1263	624	1466	1428	4780
Apr.1991	100.70	416	1466	2142	1034	5057
May 1991	132.80	977	2142	1551	1363	6033
Jun.1991	94.50	1428	1551	2045	970	5993
Jul.1991	17.70	1034	2045	1455	182	4715
Aug.1991	37.00	1363	1455	273	380	3471
Sep.1991	75.20	970	273	570	772	2584
Oct.1991	110.10	182	570	1158	1130	3040
Nov.1991	52.60	380	1158	1695	540	3773
Dec.1991	92.20	772	1695	810	946	4224
Jan.1992	68.20	1130	810	1420	700	4060
Feb.1992	121.80	540	1420	1050	1250	4260
Mar.1992	71.20	946	1050	1875	731	4603

(5) Forecast Equation for Sweet Potao - Sweet Potato Production = $10.265*R_{t-3} + 15.398*R_{t-2} + 15.398*R_{t-1} + 10.265*R_t$

Where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: KIBUYE PREDICTED CASSAVA PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Cassava (t-3)	Contr. Prodn Cassava (t-2)	Contr. Prodn Cassava (t-1)	Contr. Prodn Cassava (t)	Predted Prodn Cassava
Feb.1990	191.20					
Mar.1990	126.00					
Apr.1990	150.70					
May 1990	44.00					
Jun.1990	0.00					
Jul.1990	0.00					
Aug.1990	70.40					
Sep.1990	160.10	0	0	353	535	888
Oct.1990	150.70	0	353	803	504	1659
Nov.1990	136.20	235	803	755	455	2248
Dec.1990	123.00	535	755	683	411	2384
Jan.1991	40.50	504	683	617	135	1938
Feb.1991	95.20	455	617	203	318	1593
Mar.1991	139.10	411	203	477	465	1556
Apr.1991	100.70	135	477	697	337	1646
May 1991	132.80	318	697	505	444	1964
Jun.1991	94.50	465	505	666	[illegible]	1951
Jul.1991	17.70	337	666	474	59	1535
Aug.1991	37.00	444	474	89	124	1130
Sep.1991	75.20	316	89	185	251	841
Oct.1991	110.10	59	185	377	368	989
Nov.1991	52.60	124	377	552	176	1228
Dec.1991	92.20	251	552	264	308	1375
Jan.1992	68.20	368	264	462	228	1322
Feb.1992	121.80	176	462	342	407	1387
Mar.1992	71.20	308	342	611	238	1498

(6) Forecast Equation for Cassava - Cassava Production = $3.3417*R_{t-3} + 5.0126*R_{t-2} + 5.0126*P_{t-1} + 3.3417*R_t$

Where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: KIBUYE PREDICTED POTATO PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Potato (t-3)	Contr. Prodn Potato (t-2)	Contr. Prodn Potato (t-1)	Contr. Prodn Potato (t)	Predted Prodn Potato
Feb.1990	191.20					
Mar.1990	126.00					
Apr.1990	150.70					
May 1990	44.00					
Jun.1990	0.00					
Jul.1990	0.00					
Aug.1990	70.40					
Sep.1990	160.10	0	0	175	266	441
Oct.1990	150.70	0	175	398	250	823
Nov.1990	136.20	117	398	375	226	1116
Dec.1990	123.00	266	375	339	204	1183
Jan.1991	40.50	250	339	306	67	962
Feb.1991	95.20	226	306	101	158	791
Mar.1991	139.10	204	101	237	231	772
Apr.1991	100.70	67	237	346	167	817
May 1991	[illegible].80	158	346	251	220	975
Jun.1991	9[illegible].0	231	251	330	157	968
Jul.1991	17.70	167	330	235	29	762
Aug.1991	37.00	220	235	44	61	561
Sep.1991	75.20	157	44	92	125	418
Oct.1991	110.10	29	92	187	183	491
Nov.1991	52.60	61	187	274	87	610
Dec.1991	92.20	125	274	131	153	682
Jan.1992	68.20	183	131	229	113	656
Feb.1992	121.80	87	229	170	202	688
Mar.1992	71.20	153	170	303	118	744

(7) Forecast Equation for Potato - Potato Production = $1.6588*R_{t-3} + 2.4881*R_{t-2} + 2.4881*R_{t-1} + 1.6588*R_t$

Where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest.

R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: KIBUYE PREDICTED BANANA PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Banana (t-3)	Contr. Prodn Banana (t-2)	Contr. Prodn Banana (t-1)	Contr. Prodn Banana (t)	Predted Prodn Banana
Feb.1990	191.20					
Mar.1990	126.00					
Apr.1990	150.70					
May 1990	44.00					
Jun.1990	0.00					
Jul.1990	0.00					
Aug.1990	70.40					
Sep.1990	160.10	0	0	1967	2982	4949
Oct.1990	150.70	0	1967	4473	2807	9247
Nov.1990	136.20	1311	4473	4211	2537	12532
Dec.1990	123.00	2982	4211	3805	2291	13289
Jan.1991	40.50	2807	3805	3437	754	10803
Feb.1991	95.20	2537	3437	1132	1773	8878
Mar.1991	139.10	2291	1132	2660	2591	8673
Apr.1991	100.70	754	2660	3886	1876	9176
May 1991	132.80	1773	3886	2814	2474	10947
Jun.1991	94.50	2591	2814	3710	1760	10875
Jul.1991	17.70	1876	3710	2640	330	8556
Aug.1991	37.00	2474	2640	495	689	6298
Sep.1991	75.20	1760	495	1034	1401	4689
Oct.1991	110.10	330	1034	2101	2051	5515
Nov.1991	52.60	689	2101	3076	980	6846
Dec.1991	92.20	1401	3076	1470	1717	7664
Jan.1992	68.20	2051	1470	2576	1270	7367
Feb.1992	121.80	980	2576	1906	2269	7730
Mar.1992	71.20	1717	1906	3403	1326	8352

(8) Forecast Equation for Banana - Banana Production = $18.626*R_{t-3} + 27.94*R_{t-2} + 27.94*R_{t-1} + 18.626*R_t$

Where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: KIBUNGO PREDICTED BEAN PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Bean (t-3)	Contr. Prodn Bean (t-2)	Contr. Prodn Bean (t-1)	Contr. Prodn Bean (t)	Predicted Prodn Bean
Feb.1990	131.00					
Mar.1990	188.40					
Apr.1990	204.60					
May 1990	41.10					
Jun.1990	0.00					
Jul.1990	0.00					
Aug.1990	6.60					
Sep.1990	76.60	0	0	57	439	495
Oct.1990	60.90	0	57	658	349	1063
Nov.1990	119.80	38	658	523	686	1905
Dec.1990	99.70	439	523	1029	571	2561
Jan.1991	50.10	349	1029	856	287	2521
Feb.1991	105.20	686	856	430	602	2575
Mar.1991	113.70	571	430	904	651	2556
Apr.1991	143.20	287	904	977	820	2987
May 1991	192.30	602	977	1230	1101	3910
Jun.1991	14.30	651	1230	1652	82	3614
Jul.1991	0.30	820	1652	123	2	2596
Aug.1991	0.00	1101	123	3	0	1226
Sep.1991	17.70	82	3	0	101	186
Oct.1991	185.60	2	0	152	1063	12[illegible]
Nov.1991	79.10	0	152	1594	453	21[illegible]
Dec.1991	70.10	101	1594	679	401	277[illegible]
Jan.1992	33.10	1063	679	602	190	2534
Feb.1992	107.90	453	602	284	618	1957
Mar.1992	101.70	401	284	927	582	2195

(1) Forecast Equation for Bean - Bean Production = $5.7259*R_{t-3} + 8.5888*R_{t-2} + 8.5888*R_{t-1} + 5.7259*R_t$

Where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: KIBUNGO PREDICTED SORGHUM PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Sorghum (t-5)	Contr. Prodn Sorghum (t-4)	Contr. Prodn Sorghum (t-3)	Contr. Prodn Sorghum (t-2)	Contr. Prodn Sorghum (t-1)	Contr. Prodn Sorghum (t)	Predted Prodn Sorghum
Feb.1990	131.00							
Mar.1990	188.40							
Apr.1990	204.60							
May 1990	41.10							
Jun.1990	0.00							
Jul.1990	0.00							
Aug.1990	6.60							
Sep.1990	76.60	223	75	0	0	12	83	392
Oct.1990	60.90	45	0	0	14	139	66	264
Nov.1990	119.80	0	0	14	167	110	130	422
Dec.1990	99.70	0	12	167	133	217	108	637
Jan.1991	50.10	7	139	133	261	181	55	775
Feb.1991	105.20	83	110	261	217	91	114	877
Mar.1991	113.70	66	217	217	109	191	124	924
Apr.1991	143.20	130	181	109	229	206	156	1011
May 1991	192.30	108	91	229	247	260	209	1145
Jun.1991	14.30	55	191	247	312	349	16	1169
Jul.1991	0.30	114	206	312	418	26	0	1077
Aug.1991	0.00	124	260	418	31	1	0	833
Sep.1991	17.70	156	349	31	1	0	19	556
Oct.1991	185.60	209	26	1	0	32	202	470
Nov.1991	79.10	16	1	0	39	337	86	477
Dec.1991	70.10	0	0	39	404	143	76	662
Jan.1992	33.10	0	32	404	172	127	36	771
Feb.1992	107.90	19	337	172	153	60	117	858
Mar.1992	101.70	202	143	153	72	196	111	876

(2) Forecast Equation for Sorghum - Sorghum Production = $1.088*R_{t-5} + 1.8134*R_{t-4} + 2.176*R_{t-3} + 2.176*R_{t-2} + 1.8134*R_{t-1} + 1.088*R_t$

Where:

R_{t-5} is rainfall five months before harvest, R_{t-4} is rainfall four months before harvest,

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest,

R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: KIBUNGO PREDICTED MAIZE PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Maize (t-5)	Contr. Prodn Maize (t-4)	Contr. Prodn Maize (t-3)	Contr. Prodn Maize (t-2)	Contr. Prodn Maize (t-1)	Contr. Prodn Maize (t)	Predted Prodn Maize
Feb.1990	131.00							
Mar.1990	188.40							
Apr.1990	204.60							
May 1990	41.10							
Jun.1990	0.00							
Jul.1990	0.00							
Aug.1990	6.60							
Sep.1990	76.60	90	30	0	0	5	34	159
Oct.1990	60.90	18	0	0	6	56	27	107
Nov.1990	119.80	0	0	6	67	45	53	171
Dec.1990	99.70	0	5	67	54	88	44	258
Jan.1991	50.10	3	56	54	105	73	22	313
Feb.1991	105.20	34	45	105	88	37	46	355
Mar.1991	113.70	27	88	88	44	77	50	374
Apr.1991	143.20	53	73	44	93	83	63	409
May 1991	192.30	44	37	93	100	105	85	463
Jun.1991	14.30	22	77	100	126	141	6	473
Jul.1991	0.30	46	83	126	169	10	0	436
Aug.1991	0.00	50	105	169	13	0	0	337
Sep.1991	17.70	63	141	13	0	0	8	225
Oct.1991	185.60	85	10	0	0	13	82	190
Nov.1991	79.10	6	0	0	16	136	35	193
Dec.1991	70.10	0	0	16	163	58	31	268
Jan.1992	33.10	0	13	163	70	51	15	312
Feb.1992	107.90	8	136	70	62	24	47	347
Mar.1992	101.70	82	58	62	29	79	45	354

(3) Forecast Equation for Maize - Maize Production = $0.44011*R_{t-5} + 0.73352*R_{t-4} + 0.88022*R_{t-3} + 0.88022*R_{t-2} + 0.73352*R_{t-1} + 0.44011*R_t$

Where:

R_{t-5} is rainfall five months before harvest, R_{t-4} is rainfall four months before harvest, R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: KIBUNGO PREDICTED PEAS PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Peas (t-3)	Contr. Prodn Peas (t-2)	Contr. Prodn Peas (t-1)	Contr. Prodn Peas (t)	Predted Prodn Peas
Feb.1990	131.00					
Mar.1990	188.40					
Apr.1990	204.60					
May 1990	41.10					
Jun.1990	0.00					
Jul.1990	0.00					
Aug.1990	6.60					
Sep.1990	76.60	0	0	2	14	16
Oct.1990	60.90	0	2	21	11	35
Nov.1990	119.80	1	21	17	22	62
Dec.1990	99.70	14	17	33	19	83
Jan.1991	50.10	11	33	28	9	82
Feb.1991	105.20	22	28	14	20	84
Mar.1991	113.70	19	14	29	21	83
Apr.1991	143.20	9	29	32	27	97
May 1991	192.30	20	32	40	36	127
Jun.1991	14.30	21	40	54	3	118
Jul.1991	0.30	27	54	4	0	84
Aug.1991	0.00	36	4	0	0	40
Sep.1991	17.70	3	0	0	3	6
Oct.1991	105.60	0	0	5	35	40
Nov.1991	79.10	0	5	52	15	72
Dec.1991	70.10	3	52	22	13	90
Jan.1992	33.10	35	22	20	6	82
Feb.1992	107.90	15	20	9	20	64
Mar.1992	101.70	13	9	30	19	71

(4) Forecast Equation for Peas - Peas Production = $0.18621*R_{t-3} + 0.27932*R_{t-2} + 0.27932*R_{t-1} + 0.18621*R_t$

Where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: KIBUNGO PREDICTED SWEET POTATO PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Sw.Potato (t-3)	Contr. Prodn Sw.Potato (t-2)	Contr. Prodn Sw.Potato (t-1)	Contr. Prodn Sw.Potato (t)	Predted Prodn Sw.Potato
Feb.1990	131.00					
Mar.1990	188.40					
Apr.1990	204.60					
May 1990	41.10					
Jun.1990	0.00					
Jul.1990	0.00					
Aug.1990	6.60					
Sep.1990	76.60	0	0	66	513	579
Oct.1990	60.90	0	66	769	408	1243
Nov.1990	119.80	44	769	611	802	2226
Dec.1990	99.70	513	611	1203	667	2994
Jan.1991	50.10	408	1203	1001	335	2946
Feb.1991	105.20	802	1001	503	704	3009
Mar.1991	113.70	667	503	1056	761	2987
Apr.1991	143.20	335	1056	1141	958	3491
May 1991	192.30	704	1141	1437	1287	4570
Jun.1991	14.30	761	1437	1930	96	4224
Jul.1991	0.30	958	1930	144	2	3034
Aug.1991	0.00	1287	144	3	0	1433
Sep.1991	17.70	96	3	0	118	217
Oct.1991	185.60	2	0	178	1242	1422
Nov.1991	79.10	0	178	1863	529	2570
Dec.1991	70.10	118	1863	794	469	3245
Jan.1992	33.10	1242	794	704	222	2961
Feb.1992	107.90	529	704	332	722	2287
Mar.1992	101.70	469	332	1083	681	2565

(5) Forecast Equation for Sweet Potato - Sweet Potato Production = $6.692*R_{t-3} + 10.038*R_{t-2} + 10.038*R_{t-1} + 6.692*R_t$

Where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: KIBUNGO

PREDICTED CASSAVA PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Cassava (t-3)	Contr. Prodn Cassava (t-2)	Contr. Prodn Cassava (t-1)	Contr. Prodn Cassava (t)	Predted Prodn Cassava
Feb.1990	131.00					
Mar.1990	188.40					
Apr.1990	204.60					
May 1990	41.10					
Jun.1990	0.00					
Jul.1990	0.00					
Aug.1990	6.60					
Sep.1990	76.60	0	0	41	318	359
Oct.1990	60.90	0	41	477	253	771
Nov.1990	119.80	27	477	379	497	1381
Dec.1990	99.70	318	379	746	414	1857
Jan.1991	50.10	253	746	621	208	1828
Feb.1991	105.20	497	621	312	437	1867
Mar.1991	113.70	414	312	655	472	1853
Apr.1991	143.20	208	655	708	595	2166
May 1991	192.30	437	708	892	798	2835
Jun.1991	14.30	472	892	1198	59	2621
Jul.1991	0.30	595	1198	89	1	1882
Aug.1991	0.00	798	89	2	0	889
Sep.1991	17.70	59	2	0	73	135
Oct.1991	185.60	1	0	110	771	882
Nov.1991	79.10	0	110	1156	328	1594
Dec.1991	70.10	73	1156	493	291	2013
Jan.1992	33.10	771	493	437	137	1837
Feb.1992	107.90	328	437	206	448	1419
Mar.1992	101.70	291	206	672	422	1591

(6) Forecast Equation for Cassava - Cassava Production = $4.1516*R_{t-3} + 6.2274*R_{t-2} + 6.2274*R_{t-1} + 4.1516*R_t$

Where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: KIBUNGO PREDICTED POTATO PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Potato (t-3)	Contr. Prodn Potato (t-2)	Contr. Prodn Potato (t-1)	Contr. Prodn Potato (t)	Predted Prodn Potato
Feb.1990	131.00					
Mar.1990	188.40					
Apr.1990	204.60					
May 1990	41.10					
Jun.1990	0.00					
Jul.1990	0.00					
Aug.1990	6.60					
Sep.1990	76.60	0	0	5	42	48
Oct.1990	60.90	0	5	63	34	102
Nov.1990	119.80	4	63	50	66	183
Dec.1990	99.70	42	50	99	55	247
Jan.1991	50.10	34	99	82	28	243
Feb.1991	105.20	66	82	41	58	248
Mar.1991	113.70	55	41	87	63	246
Apr.1991	143.20	28	87	94	79	287
May 1991	192.30	58	94	113	106	376
Jun.1991	14.30	63	118	159	8	348
Jul.1991	0.30	79	159	12	0	250
Aug.1991	0.00	106	12	0	0	118
Sep.1991	17.70	8	0	0	10	18
Oct.1991	185.60	0	0	15	102	117
Nov.1991	79.10	0	15	153	44	212
Dec.1991	70.10	10	153	65	39	267
Jan.1992	33.10	102	65	58	18	244
Feb.1992	107.90	44	58	27	59	188
Mar.1992	101.70	39	27	89	56	211

(7) Forecast Equation for Potato - Potato Production = $0.55107*R_{t-3} + 0.8266*R_{t-2} + 0.8266*R_{t-1} + 0.55107*R_t$

Where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.

PREFECTURE: KIBUNGO PREDICTED BANANA PRODUCTION IN TONNES

Month/Yr	Rainfall (mm)	Contr. Prodn Banana (t-3)	Contr. Prodn Banana (t-2)	Contr. Prodn Banana (t-1)	Contr. Prodn Banana (t)	Predted Prodn Banana
Feb.1990	131.00					
Mar.1990	188.40					
Apr.1990	204.60					
May 1990	41.10					
Jun.1990	0.00					
Jul.1990	0.00					
Aug.1990	6.60					
Sep.1990	76.60	0	0	980	7582	8562
Oct.1990	60.90	0	980	11374	6028	18382
Nov.1990	119.80	653	11374	9042	11858	32928
Dec.1990	99.[illegible]	7582	9042	17788	9869	44281
Jan.1991	50.[illegible]	6028	17788	14803	4959	43579
Feb.1991	105.2[illegible]	11858	14803	7439	10413	44514
Mar.1991	113.70	9869	7439	15620	11255	44182
Apr.1991	143.20	4959	15620	16882	14175	51[illegible]
May 1991	192.30	10413	16882	21262	19035	67593
Jun.1991	14.30	11255	21262	28553	1415	62485
Jul.1991	0.30	14175	28553	2123	30	44880
Aug.1991	0.00	19035	2123	45	0	21203
Sep.1991	17.70	1415	45	0	1752	3212
Oct.1991	185.60	30	0	2628	18372	21029
Nov.1991	79.10	0	2628	27558	7830	38016
Dec.1991	70.10	1752	27558	11745	6939	47994
Jan.1992	33.10	18372	11745	10408	3276	43801
Feb.1992	107.90	7830	10408	4915	10680	33833
Mar.1992	101.70	6939	4915	16021	10067	37941

(8) Forecast Equation for Banana - Banana Production = $98.985*R_{t-3} + 148.48*R_{t-2} + 148.48*R_{t-1} + 98.985*R_t$

Where:

R_{t-3} is rainfall three months before harvest, R_{t-2} is rainfall two months before harvest, R_{t-1} is rainfall one month before harvest and R_t is rainfall in the harvest month.