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ANALYSIS OF
TOMATO
WHOLESALE MARKETING STRATEGIES

January - February 1992
Harvest Season

PILOT PROJECT FOR
FRUIT AND VEGETABLE MARKETING

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TABLE OF CONTENTS

	PAGE
EXECUTIVE SUMMARY.....	1
INTRODUCTION.....	4
METHODOLOGY.....	5
- Data	
- Calculated variables: prices	
- Volume of tomatoes	
- Statistical methods	
THE WHOLESALE MARKET.....	6
- Market costs	
- Holdover produce	
- Volume of supply	
- Price variability	
MARKETING STRATEGIES	14
- Control of supply to influence prices	
- Quality control as a strategy in weak markets	
CONCLUSIONS.....	20
ANNEX 1: DATA.....	21
RAW DATA AND CALCULATED VARIABLES USED IN THE ANALYSIS, WITH SUMS, AVERAGE VALUE, STANDARD DEVIATION, MAXIMUM AND MINIMUM VALUES	
All data is from ACDI market monitoring and research	
DATA SERIES	
SERIES 1: DAILY ARRIVALS - NUMBER OF CASES ARRIVING IN MARKET EACH DAY...Page 22	
SERIES 2: ESTIMATE OF DAILY SALES OF ARRIVALS - ESTIMATE OF NUMBER OF CASES OF ARRIVALS SOLD EACH DAY...Page 23	
SERIES 3: DAILY TOTALS OF UNSOLD CASES HELD OVER TO THE NEXT DAY - ESTIMATE OF NUMBER OF UNSOLD CASES EACH DAY...Page 24	
SERIES 4: AGGREGATE AND MEDIAN DAILY TOTALS - VOLUME MEASURES FOR THE WHOLE MARKET AND MEDIAN DAILY PRICE FOR ARRIVALS...Page 25	
SERIES 5: DAILY PRICES FOR CASES OF ARRIVALS BY PRODUCER REGION - PRICE OF A CASE OF ARRIVALS...Page 27	

- SERIES 6:** POTENTIAL VALUE OF DAILY ARRIVALS AT THE DAY'S ARRIVAL PRICE, BY PRODUCER REGION - TOTAL POTENTIAL VALUE (ARRIVALS PRICE * NUMBER OF CASES) OF DAILY ARRIVALS ...Page 29
- SERIES 7:** MEAN DAILY ARRIVAL PRICE FOR ALL PRODUCER REGIONS - WEIGHTED AVERAGE OF DAILY PRICES FOR ARRIVALS, INCLUDING AND EXCLUDING PRODUCTION FROM BOUGMENE (Note: Bougmene produce is systematically priced above the rest of the market)...Page 31
- SERIES 8:** DAILY PRICES FOR HOLDOVER CASES - PRICE ON DAY T+1 OF CASES HELD OVER FROM THE PREVIOUS DAY...Page 32
- SERIES 9:** POTENTIAL VALUE OF CASES HELD OVER FROM THE PREVIOUS DAY AT THE CURRENT HOLDOVER PRICE, BY PRODUCER REGION - AGGREGATE VALUE, ON A GIVEN DAY, OF HOLDOVER CASES...Page 33
- SERIES 10:** ESTIMATE OF GROSS INCOME FROM SALES OF ALL CASES ARRIVING ON A GIVEN DAY, BY PRODUCER REGION - AGGREGATE INCOME FROM ALL CASES ARRIVING ON A GIVEN DAY AT THE PRICE THEY ACTUALLY WERE SOLD...Page 34
- SERIES 11:** DAILY MEAN PRICE FOR ALL CASES SOLD THAT DAY - PER CASE AVERAGE OF INCOME GAINED FROM ALL CASES SOLD ON A GIVEN DAY...Page 35
- SERIES 12:** DAILY SUCCESS RATE - AGGREGATE INCOME FROM ALL CASES SOLD ON A GIVEN DAY AS A PERCENTAGE OF THEIR POTENTIAL VALUE, HAD THEY BEEN SOLD AT THE ARRIVALS PRICE ON THE DAY THEY ARRIVED...Page 36
- SERIES 13:** ESTIMATED TOTAL DAILY RETURN - TOTAL INCOME OF CASES FROM THE ARRIVALS OF A GIVEN DAY, FIGURED AT THE PRICE FOR WHICH THEY ACTUALLY SOLD, REDUCED BY:
PER-CASE TRANSPORT COST * NUMBER OF CASES
PER-CASE INTERMEDIARY FEE * NUMBER OF CASES
WHERE THIS APPLIES
PER-CASE STORAGE FEE * NUMBER OF HOLDOVER CASES...Page 37
- SERIES 14:** ESTIMATED AVERAGE PER-CASE DAILY RETURN - TOTAL VALUE OF CASES FROM THE ARRIVALS OF A GIVEN DAY (cf. SERIES 13) DIVIDED BY THE NUMBER OF CASES...Page 39
- SERIES 15:** DAILY NUMBER OF CASES AND PRICE FOR ARRIVALS - FULL SERIES - DAILY PRICES RECORDED OR COMPUTED FOR A CASE OF TOMATOES ARRIVING IN THE MARKET BETWEEN AUGUST 1, 1991 AND FEBRUARY 29, 1992...Page 40

ANNEX 2: DATA.....42
DESCRIPTIVE STATISTICS FOR THE BASIC VARIABLES IN THE STUDY AND
CORRELATIONS BETWEEN SELECTED VARIABLES

DATA SERIES

**SERIES 1: DESCRIPTIVE STATISTICS ON ALL VARIABLES: VARIABLE,
MEAN, STANDARD DEVIATION, MINIMUM, MAXIMUM, N...Page 43**

**SERIES 2: CORRELATIONS: CORRELATIONS BETWEEN PRICE SERIES FOR
ARRIVALS...Page 44**

ANNEX 3: GRAPHS
SELECTED GRAPHS OF RELATIONSHIPS BETWEEN DATA SERIES.....47

**SERIES 1: PRICE AND VOLUME SERIES FOR ARRIVALS: VOLUME AND PRICE
DATA, INCLUDING OBSERVATIONS FROM THE PERIOD AUGUST TO
THE END OF 1991...Page 48**

**SERIES 2: COMPARISON OF DAILY ARRIVALS PRICES AND ACTUAL PRICES
FOR CASES SOLD: ARRIVALS PRICE FOR A GIVEN DAY AND
AVERAGE PRICE OF ALL CASES SOLD FROM THE LOT THAT
ARRIVED THAT DAY (Data series January 18 to February
29, 1992 for Karal, Bougmene & Linia)...Page...52**

**SERIES 3: COMPARISON OF DAILY ARRIVALS PRICES FOR KARAL, LINIA
AND BOUGMENE: DATA SERIES FOR JANUARY 7 TO FEBRUARY 29,
1991...Page 54**

**SERIES 4: COMPARISON OF DAILY ARRIVALS PRICES FOR KARAL WITH
THOSE FOR DOURBALI, MISKINE AND KOUNDOUL: DATA SERIES
FOR JANUARY 7 TO FEBRUARY 29, 1991...Page 56**

ANNEX 4:
OBSERVED PRICES FOR ARRIVALS AND PRICES PREDICTED BY THE
REGRESSION EQUATION IN SECTION III... Page 58

EXECUTIVE SUMMARY

The objective of this report is to evaluate marketing strategies used by tomato producer/traders to increase their wholesale price. One of the strategies proposed by the producers from Karal for their March-May harvest is to limit the supply of fresh tomatoes reaching the N'Djamena market which will force up the wholesale price. The second strategy to be examined is the trade-offs of demanding a high price for tomatoes upon arrival and having to accept a substantially lower price for the "hold-over" cases on the second day versus accepting a relatively lower price on the arrival day and reducing the risk of "holdover" cases the second day.

Most of the price and quantity data was collected during the January-February 1992 tomato harvest season by ACDI market surveyors from the Central Market in N'Djamena. Tomatoes marketed in this period are from Karal and five other growing areas.

Although the January-February harvest season is a minor tomato season for the Karal producers (production from rain depression areas rather than production from the lake recession), it is the major season for the other producing areas. At the height of the harvest season there were frequently 700 - 800 cases being wholesaled at the Central Market.

Regression analysis showed a R^2 of .82 when the regression was run on quantities of a maximum of 550 cases in the market. The equation predicts that price will rise 1,000 CFA a case for every reduction of 160 cases in the market. When the regression was attempted on the full scope of data which had more than 900 cases per day the R^2 dropped to .34. This indicates that at >550 cases the demand curve for fresh tomatoes is highly elastic and beyond that quantity market supply is not a good predictor of prices.

The effectiveness of the cartel of Karal producers strategy to control supplies to raise prices will depend on their ability to hold daily market supplies below 550 cases. To do this they will need well organized, disciplined and have a very large share of the market. Although they had a small share of the January-February market, they claim they will have about 90% of the tomato market share in April and May.

An alternative to raising prices by controlling market supplies is improving the quality of produce offered. Data collected in this harvest period shows that at any given level of supply there is a range of prices for a case of tomatoes which depends primarily on quality. In the January-February season there is not much consumer preference between varieties, but size, color and tomatoes without blemish are highly valued. The wholesale

price also depends on the of maturity of the fruit when it arrives in the market. Even in the relatively cool weather of this period, tomatoes will ripen quickly in the retailer's stall and drop from a first class category (premium price) to third class category (lowest price) within a day.

During the mid-harvest period when there is a large supply of tomatoes in the market producer/traders, with the guidance of the commission agent will establish a price based the relative quality of the tomatoes.

Even in the mid-harvest period when there is a large supply of tomatoes in the market, producer/traders have some flexibility in fixing the price in the high range or the low range. The farmers from Bougmene consistently brought high quality tomatoes to the market and demanded a relatively high price. Even though they only sold 86% of their tomatoes at their arrival price, their day old tomatoes often sold for more than the newly arrived tomatoes from other producing areas which were of poorer quality. Because of the high quality of the produce this was an effective strategy for the Bougmene farmers. The Karal farmers often had the poorest quality tomatoes in the market, but they kept their first day price low and sold out their offering 91% of the time so that they did not have to sell the second day at a highly reduce price. Given the poor quality of tomatoes from Karal in this season, this was the most effective strategy for them. Demanding a high arrival price (first day price) is effective if the quality is good and the tomatoes are not so mature that they will not hold through the second day if necessary. For producers with poor quality tomatoes, the best strategy is to establish a low enough price that all of their supply will clear the market the first day.

The price consciousness of the Karal farmers comes in part from the high marketing costs (especially transportation) that they face as a result of their fields being almost double the distance from the N'Djamena market than the other producers. The cost of purchasing a case of tomatoes in the field in Karal at 750 CFA and transporting it to the N'Djamena Central Market varies from a minimum of 2,100 CFA to 2,250 CFA per case. At mid season the field price for tomatoes in Karal was 500 CFA which would bring down the out of pocket expense to 1,850 CFA per case.

The wholesale marketing of tomatoes is arbitrated by commission agents who have long standing and carefully nurtured relationships with groups of producer/traders and retailers. The commission agent negotiates a price that is acceptable to the producer/trader and is expected to sell most of the cases brought in from the producing areas. This price usually remains in effect the first day, but will be renegotiated downward the second day for cases that are not sold the first day. The

commission agent charges the producer/trader 250 CFA per case for his marketing services.

INTRODUCTION

The objective of this report is to evaluate marketing strategies used by tomato producer/traders to increase their wholesale price. One of the strategies proposed by the producers from Karal for their March-May harvest is to limit the supply of fresh tomatoes reaching the N'Djamena market which will force up the wholesale price. The issue to be examined here is the expected effect of a change of quantity on wholesale price. Regression analysis is used to do this.

The second strategy to be examined is the trade-offs of demanding a high price for tomatoes upon arrival and having to accept a substantially lower price for the "hold-over" cases on the second day versus accepting a relatively lower price on the arrival day and reducing the risk of "holdover" cases the second day. Examples of these alternatives had been adopted by two producers in the January - February season. The tomato producers from Bougmene have adopted the strategy of demanding a high arrival price and the Karal farmers usually accept an arrival price which will move almost all of their tomatoes the first day.

Most of the price and quantity data was collected during the January-February 1992 tomato harvest season by ACDI market surveyors from the Central Market in N'Djamena. Tomatoes marketed in this period are from Karal and five other growing areas.

Section I of the report discusses the data and the methods used to analyze the information. Section II describes the organization of the N'Djamena wholesale fresh tomato market and the factors which influence the price of tomatoes. Section III considers the specific relationship between price and volume of produce in the market using regression analysis to predict wholesale price levels based on the quantity of tomatoes in the market. Section IV discusses the relative merits of the marketing strategies being considered.

SECTION I: METHODOLOGY

Because of the relatively short period of about 60 days on which detailed information was gathered for the regression analysis, one of the assumptions in this study is that consumer demand does not shift. That is, over this period, demand is not influenced by changes in consumer psychology, changes in income levels, substitute goods, etc. An important second assumption is that the daily supply brought to the market by producers is not determined by the spot price in N'Djamena, but by how quickly tomatoes are ripening in the fields and the availability of transport and other production and harvesting considerations.

Data

The data used in this report was collected by a team of ACIDI market surveyors through its Market Information Unit. Since August 1991, ACIDI has collected data on prices and quantities of a number of commodities in N'Djamena's three principal wholesale markets: Central, Millet and Cholera. Between August and the end of December, price and quantity data were collected approximately 3 times a week as part of a program that monitors the prices of selected commodities. Since January 7th, the team of ACIDI surveyors has recorded daily information about the origins, volume and prices of fresh tomatoes in wholesale markets. From January 17th, this data also included information on number and prices of cases of tomatoes held over for sale on a second day, by region. The surveyors have also interviewed principal actors in the market to determine the structure, conventions and processes of fresh tomato wholesale marketing.

Calculated variables: Prices

Four sets of calculated prices are used in the analysis and in the figures:

The median price for arrivals is the price negotiated each day between producer/wholesalers bringing tomatoes from the producing areas and retailers.

The mean price for arrivals is the weighted average of the prices of all cases of tomatoes arriving in the market on a given day.

The mean price for all tomatoes is the weighted daily average price of all cases of tomatoes in the market on a given day: arrivals and hold overs from the previous day.

The mean price of cases sold is the weighted average price of all cases sold from a given day's arrivals. This includes sales on arrival day of new cases at new case

prices, and sales the following day of leftover cases at leftover case prices.

The analysis in this report assumes that a price is negotiated for an arriving load of tomatoes and that it holds until the second day when a new price is negotiated for the remaining cases that did not sell the first day. This is generally true, but in some instances prices may begin to slip late in the day.

Volume of tomatoes

The quantity of tomatoes wholesaled is always measured in "tea case" which usually weigh between 50 kg and 60 kg. In most of the analyses in this study, the measure of volume in the market is "total cases", which is the sum of new arrivals and tomatoes held over from the previous day. For the measure of total sales, holdover cases from the previous day are added to the day's total.

Statistical methods

This study uses two statistical procedures beyond basic descriptives and graphic representations. The relationship between new tomato prices from different areas is viewed in correlations. The relation between price and volume is examined through regression analysis (Section III below).

SECTION II: THE WHOLESALE MARKET

January and February is the peak season for fresh tomato production and marketing in the N'Djamena region. Producers from several areas (including Karal) contribute to this market. From January 7 - February 29, 1992 six regions supplied the following percentages to the market:

Region	Percentage
Karal	9%
Linia	34
Bougmene	27
Dourbali	15
Miskine	8
Koundoul	7
	100%

In this season, almost all fresh tomatoes are wholesaled in N'Djamena through the Central market. The tomatoes are delivered at or nearly at 'market-ready' stage. A retailer can immediately sort the fruit and set a good part of it out for immediate sale. Although producer/traders in most of the six major producing areas had established a 4-5 day transport schedule for harvesting

and transporting tomatoes to market, there did not seem to be a formal attempt to schedule arrivals to smooth out the numbers of cases arriving. However, as the commission agents usually knew when arrivals from their area were expected, there may have been an informal attempt from the different areas to avoid major surpluses.

Tomatoes imported from Nigeria and Cameroun dominate the fresh tomato market during the Chadian rainy season and into November. Small quantities of these tomatoes sell for very high prices: 25 observations between August 1 and November 18 found a maximum of 25 cases in N'Djamena's three principal markets, selling at an average price of just under 14,000 CFA. When local tomatoes ap-

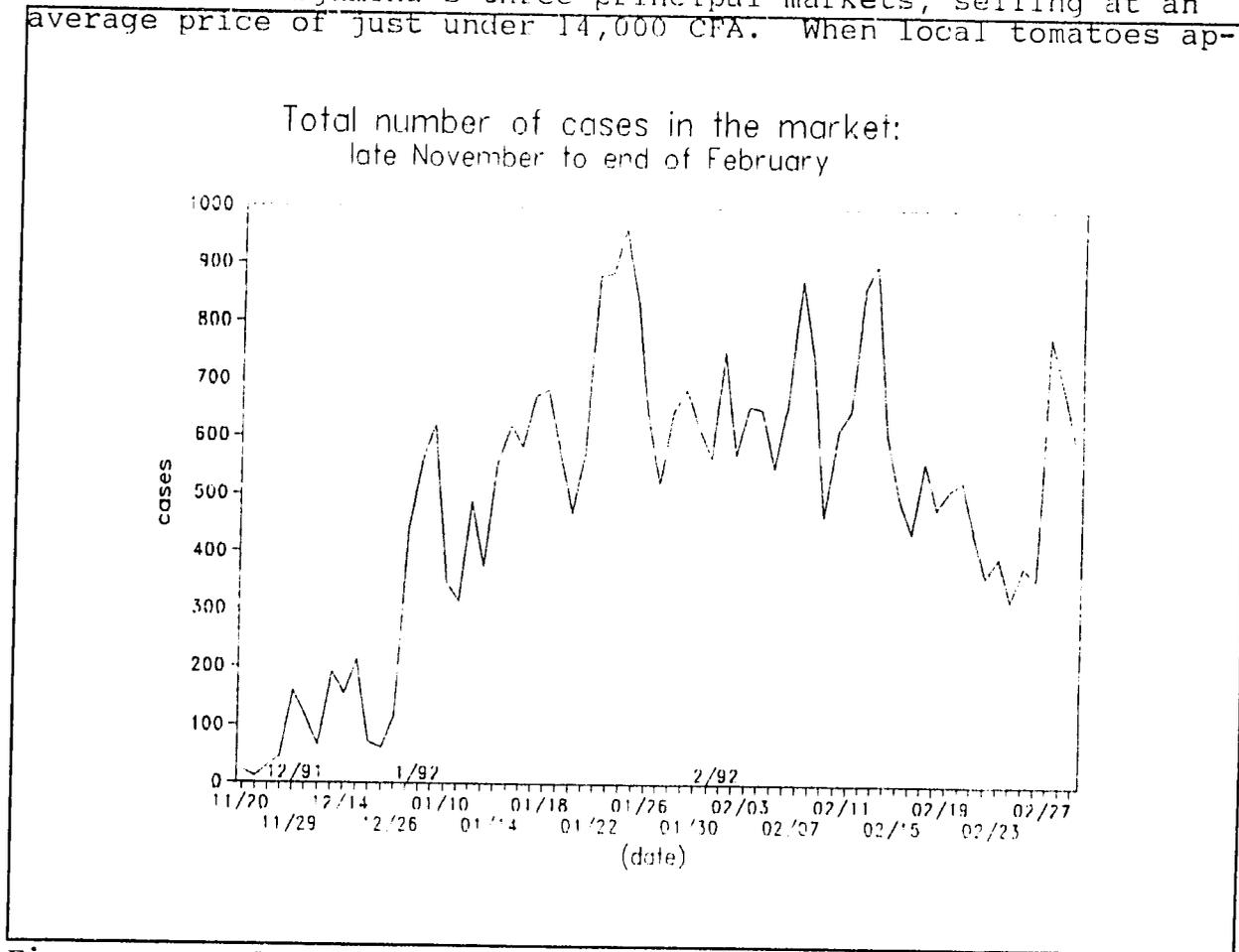


Figure 1: Volume of tomatoes in N'Djamena markets Nov. 1991-Feb. 1992

pear on the market the effect is dramatic. Prices in

1991 dropped from 13,000 CFA a case on November 18 to 5,000 CFA on November 20, even though the reported number of cases on the market only rose from 15 to 21. Subsequently, prices did not rise above 6,000 CFA a case, and the average new case price fell

from over 5,000 CFA in November and December to a low of 2,300 CFA in mid-February. The daily volume of local tomatoes on the market in 1991-92 went from a low of 10 cases in November to a peak of nearly 1,000 cases in late January (Figure 1) and then held at over 500 cases a day before starting to drop off in mid-February.

There is a relatively strong inverse correlation between price and quantity of tomatoes on the market until the market reaches about 550 cases. As the supply in the market increases beyond that point, there is little correlation between price and quantity.

This indicates that at this point the demand curve is highly elastic and the large quantity of tomatoes in the market at mid-harvest did not prove to be a good predictor of daily new case prices. Daily totals fluctuated widely through the period, with one day's level often 100 cases (and as much as 340 cases for arrivals) above or below the previous day's (figure 2). Prices

Median price for new cases, total new cases and total cases in the market

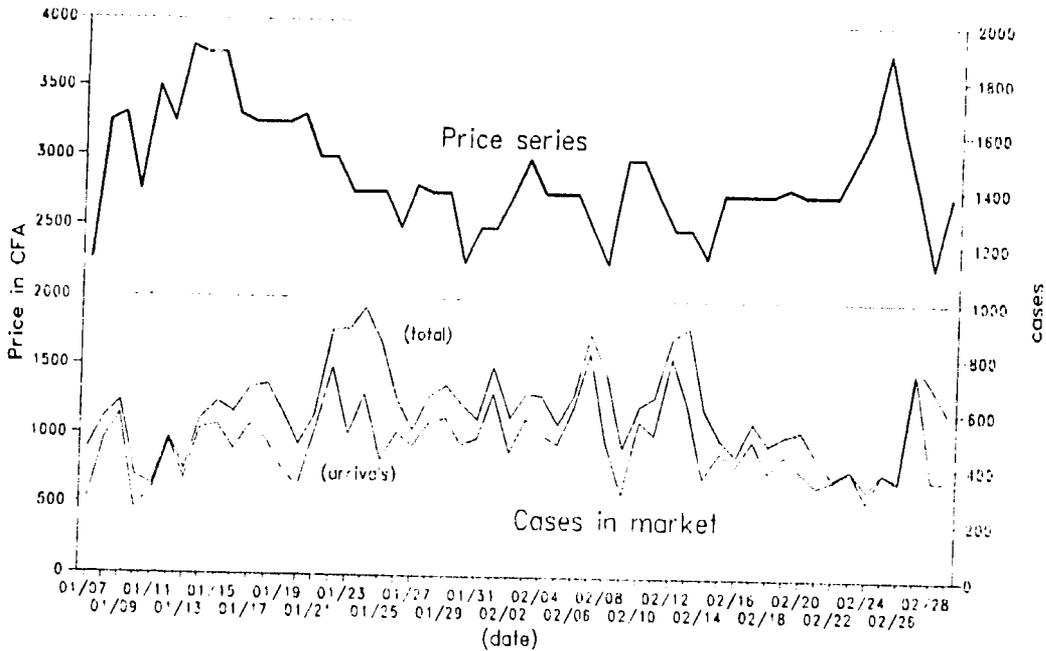


Figure 2 Price and volume of tomatoes in the market, January - February (main season)

figure 2) and sales are much more stable from day to day. One phenomenon which can be seen on these graphs is that both price changes and sales peaks seem to lag a day or so behind major changes in arrival volume.

Given the current level of real demand, and the minimum wholesale price that a producer/trader is willing to accept, the market can generate maximum sales of between 550 and 600 cases a day: of 56 days in January and February, there were eight days which recorded sales of between 550 and 600 cases, and only four went above 600 cases. The peaks tended to occur when there the number of total cases in the market was high, often a day after a large shipment of new tomatoes, and included a high proportion of oldover cases.

Marketing Costs

The following is a breakdown of marketing costs for wholesaling a case of tomatoes from Karal in the Central market in N'Djamena:

Marketing Cost of a Case of Tomatoes from Karal

Farmgate price of case	750 CFA
Transport fee	1,000
Sultan's Fee (Karal)	100
Commission Fee (Mkt)	250
Overnight Storage	50
Tea Case (amortized)	100

Total	2,250 CFA

An informed guess from ACIDI market surveyors is that for areas where irrigation is used the farm gate price for a case of tomatoes is 50% to twice as much as that of Karal. However, the transport fee is usually 500 CFA and there is no Sultan's fee.

Wholesale transactions for highly perishable products such as tomatoes are carried out by a commission agent who acts as an intermediary between the producer/trader and the retailer. Commission agents have long established and carefully nurtured relationships with groups of producers and a clientele of retailers; this is partly built on trust and partly on the skill and knowledge of the market that the individual brings to the role. The commission agent negotiates a price between the producer/traders and retailers on arriving truck loads of tomatoes. This price will remain in effect for most, if not all, of the day of arrival and covers all the cases supplied from a given production zone. The commission agent then supervises all transactions, holds the money and makes change, and mediates any disputes.

In addition, commission agents may provide a number of small services which ease the seller's task. They pay the market site fee (25 CFA a case) and a parking fee of 1,500 CFA per produce truck that they service. Commission agents say that they may waive or reduce their own fee if the market price falls below a minimum level. Many say that they also lend money to clients (producers or transporters) who need it.

As tomato wholesaling in the Central Market is now constituted, the commission agent is an essential intermediary for both the producer/ trader and the retailer. The commission agent:

1. establishes and holds the rights to a particular place in the market, thus providing a physical point of reference for both sellers and buyers

2. is a trusted market expert whom the producer/traders can trust to negotiate the best possible price for them.
3. is trusted by retailers and may provide credit to buy a case of tomatoes if necessary.
4. turns aside potential conflicts between sellers, buyers, market officials and others by acting as an honest broker and by ensuring that all formal obligations and conventions are respected

For these services most intermediaries charge a flat fee of 250 CFA a case, payable by the producer/trader. The Bougmène commission agents charge 300 CFA a case, out of which they pay over night storage fees for cases that did not sell the first day. These intermediaries claim never to waive their fee.

Holdover produce

For a producer or trader with poor timing the margin of profit may be quite small or may be a net loss. In periods when there are a large number of cases coming into the market, producer/traders may have a number of cases which did not sell the day of arrival and they must sell the next day at reduced prices. Sellers negotiate a price for new tomatoes and discount the price deeply for any unsold cases held over for sale the next day. The average drop in price for second-day tomatoes is between 35% and 40% of the initial price. As a perishable commodity, the intrinsic value of tomatoes in a case of holdovers is certainly reduced: a greater proportion of the tomatoes will be overripe, rotten or broken on the second day than on the first.

Producer/traders understand the effect of the volume of supply in the market on their prices, particularly at the height of the season. They know that pricing their tomatoes high will increase the probability that a certain proportion of cases of arrivals will have to be held over for sale the next day. In this regard, some producer/trader groups, such as those from Karal and Koundoul, accept prices in the medium to low range for cases of new arrivals (around 2,500 CFA on average) with the obvious intention of selling out and going home. In fact, Karal sellers sold out one day in two (between January 17th and February 29th) and Koundoul sellers two days in three. Sellers of produce from Bougmène negotiated high prices and consistently had holdover cases. However because of the outstanding quality of their tomatoes, they achieved an overall average price for a case of tomatoes sold that was 400 CFA higher than the second-best (Koundoul) and 500 CFA higher than Karal's. Linia, the largest-volume seller, set prices relatively high and sold a large number of holdover cases at much reduced prices, with an overall per-

Table I: New case prices and actual selling prices, by region

	Karal	Lirin	Bougouere	Dourballi	Viskine	Koundoul
Arrivals price	2479.7	2680.2	2776.1	2412.5	2728.1	2559.2
Actual price	2255.8	2246.6	2830.3	2064.7	2351.0	2465.9
% success	91.0%	83.8%	86.4%	85.6%	86.2%	96.4%

Arrivals price: Average daily price set on a new case
 Actual price: Weighted average of the price of all cases sold

% success: Sum of actual prices of cases sold divided by sum of all cases valued at the arrivals price for the day they arrived

Data: ACDI market surveys for 41 days between January 17 and February 29 1992

case result not significantly different than that for produce from Karal (Table 1).

Volume of supply

At the height of the producing season (mid-January through the middle of February) a large number of new cases of tomatoes arrived in the market each day, often more than the market would clear in a day at the arrival price. Producers knew that the market was weak, but as they do not have a tradition of drying tomatoes, they had little choice but to send produce to market or let their tomatoes rot in the fields. In the main production period (January 7th to February 29th) 100 cases or more were left over at the end of the arrival day on 26 days out of 53 - almost one day out of two. On average 18.5% of cases went unsold each day. Cases were leftover at the end of every day until February 22nd, when the influx of tomatoes was already slowing.

Throughout the main production period, the three-day average of arrivals is fairly constant in spite of some important day to day fluctuations. There is no evidence that farmers from the different producing areas consciously attempt to regulate the arrivals or limit the quantity supplied on any one day, but the intimate marketing of the traders and intermediaries may allow them to make adjustments if they see that the market is particularly weak or strong. If there is a hypothetical market demand limit of 550 cases, the three-day average exceeded this total on only 8 days of 52 for which it was calculated. It is known that producers in Bougmène restrict marketed volume by sorting their produce and only selling part of it on the fresh market - this is what allows them to demand higher prices - and that other producers control the schedule of pickups of produce by transporters.

Price variability

For 54 dates between January 7th and February 29th, the range for median daily prices of arrivals was 1,750 CFA to 4,300 CFA a case. On average, however, the difference between high and low prices during this period was an even 1,000 CFA, off a high price of 3,400 CFA. The low price averaged 71% of the high price, and never dropped below 53% in that period.

For the longer series of prices after November 20th, the high price was 7,250 CFA (Nov. 22) and dropped fairly quickly below 6,000 on December 8, below 5,000 on December 22, and to a plateau around 4,000 by Christmas. Prices over 5,000 CFA per case did not apply to volumes over 200 cases, and prices over 4,000 CFA per case were generated when volumes were less than 100 cases. In short, prices above 4,300 CFA a case reflect a set of conditions particular to the very early stages of the production season.

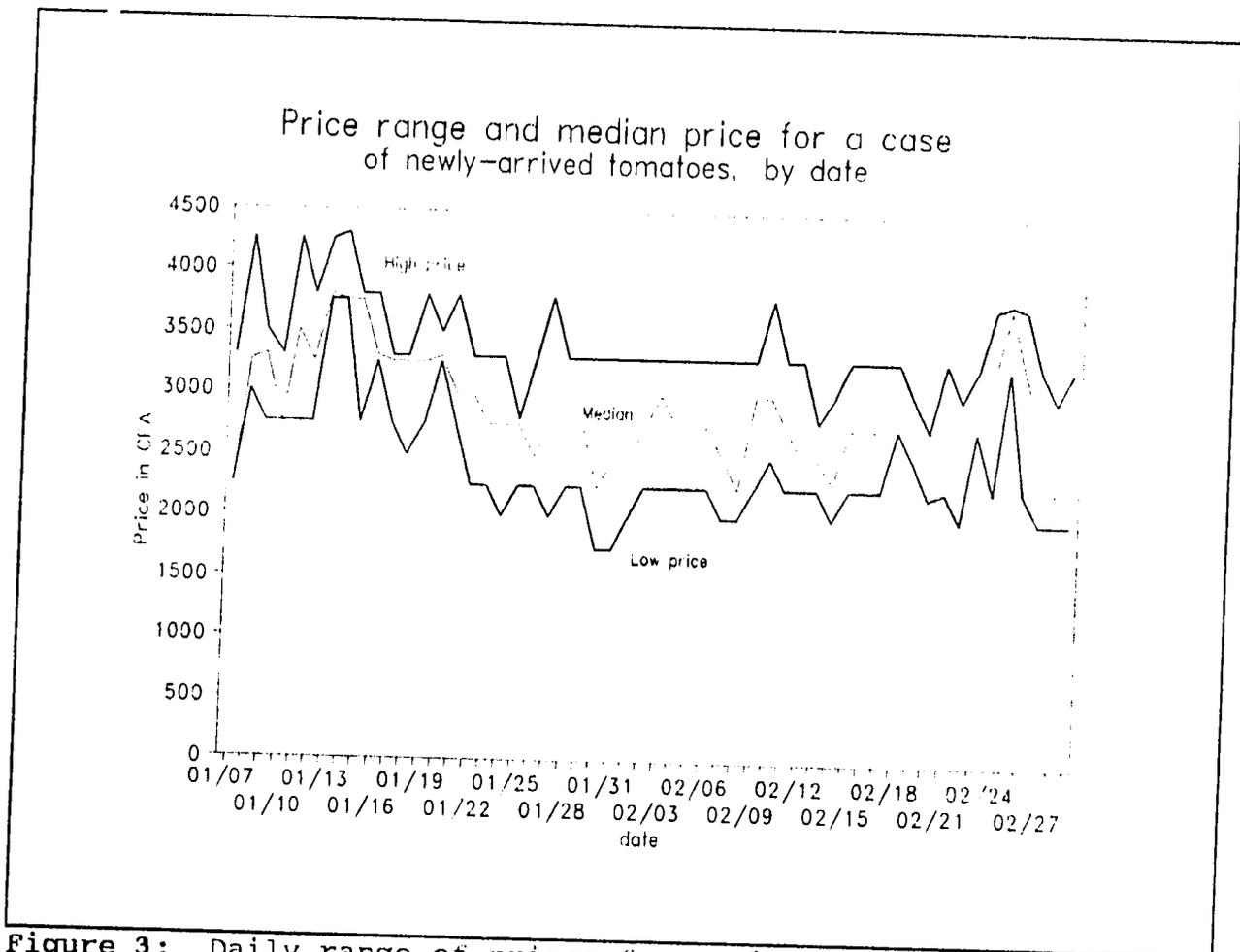


Figure 3: Daily range of prices for arrivals

The range 4,300 CFA - 1,750 CFA then circumscribes the prices for the main production season. These parameters hold for most of the season; maximum price after January 15th was 3,800 CFA. The modal maximum through the main season is 3,300 CFA; the modal minimum 2,250 CFA. As figure 4 shows, during the peak season the gap between high and low daily prices is at its greatest. The daily high price, generally the price for tomatoes from Bougmene, stays fairly constant while the daily low price is somewhat more variable.

SECTION IV: MARKETING STRATEGIES

Control of Supply to Influence Prices

Under what conditions could the Karal producers influence higher prices for tomatoes by controlling the number of cases of tomatoes entering the market? The short answer is that they would have to insure a maximum total supply of tomatoes in the market of around 550 cases a day. Up to that point, the volume of tomatoes reaching the market is a fairly reliable predictor of what prices will be. After that point and up to 1,000, there is very little correlation between price and quantity.

The graphs and analysis in figures 4 through 6, prices are median prices for arrivals and volume is the total number of cases of tomatoes in the market. Several measures of volume were tried in the analysis - number of arrivals in the daily market, three-day average of arrivals, number of cases sold and number of holdover cases - but total volume shows the strongest relationship to price. Only the price of newly arrived cases was considered. Mean price gives a slightly better R^2 than median price, but the latter is easier to interpret.

In the time period covered by this study median price never fell below 2,250 CFA a case. Also, the volume to price relationship virtually disappeared during the peak period of production when total number of cases in the market ranged from 550 to close to 1,000. The graphs in figures 5 and 6 show clearly that the price/volume relationship is tied to periods in the market cycle: it holds as the market moves toward the peak period and then seems to be re-establishing itself as the peak is past.

Prices for arrivals should be more responsive to volume when the relationship between arrivals and volume is most direct, i.e. when there are proportionately few or no holdovers in the market. In fact, the correlation between arrivals prices and volume is higher when holdovers are 10% or less of total volume (R^2 of .34) than at other times (virtually no correlation), although the data series is short and the relationship is not definitive. In figure 2 one can see that price response comes a day or two after peaks and valleys in volume throughout, but seems to be quickest early and late in the series when there are the fewest

holdovers. (Correlating price with volume of the day or two days before did not, however, produce significant results).

The price series in figure 6 is instructive when evaluating just how responsive median price is, during the peak season, to volume. For a period of over a month starting on January 20th, during which the median price has dropped down to just above the hypothetical minimum, this measure is not very responsive to downward pressure from volume or any other influence. For a period equal to more than half the major harvest period the median price per case of arrivals was confined to a range of 2,250 CFA to 3,000 CFA. Total volume in that same period ranges from less than 500 cases to close to 1000 cases.

A number of the cases which appear incongruous in the price/volume graph in figure 4 fall nicely into the time-series trend described by figure 6. This seems more true of the early-season period, when over two weeks (Jan. 12-20) prices stuck to a trend regardless of volume, than the period in late February when two days of high volume brought prices back to the minimum.

If the regression statistics in figure 4 are indicative of reality then producers can, under the right conditions, expect to influence price by controlling volume. Starting at a volume of around 550 cases, the price should go up on average 250 CFA/case for every 40 cases withheld from the market, or 1,000 CFA for 160 cases held back.

This prediction is subject to other influences of which the most important is quality. At every level of volume there is a considerable difference between data points - as much as 1,000 CFA. Also, the price recorded at a volume of 970 cases is the same as the lowest price recorded at 350 cases.

Assuming that at less than 550 cases of tomatoes in the market quantity is a fair predictor of price, and further avoiding the question of whether producers can in fact consistently hold back 160 cases daily from a market that averages about 500 cases a day, the question still remains: is it worth it? The answer depends somewhat on the objectives the sellers are trying to achieve, and how they go about it.

Within the general price and quantity parameters described in the data, the seller who sets out from a base market of 200 cases of tomatoes priced at 2,300 CFA/case can expect to benefit from a reduction in volume. When producers and sellers are faced with a large volume of tomatoes - market supply on the order of 500 cases a day or more - the advantages of restricting the number of cases coming into the market is evident.

It is difficult to imagine that a group of producers or sellers

Regression: Median price of a case of new arrivals and total cases in mkt

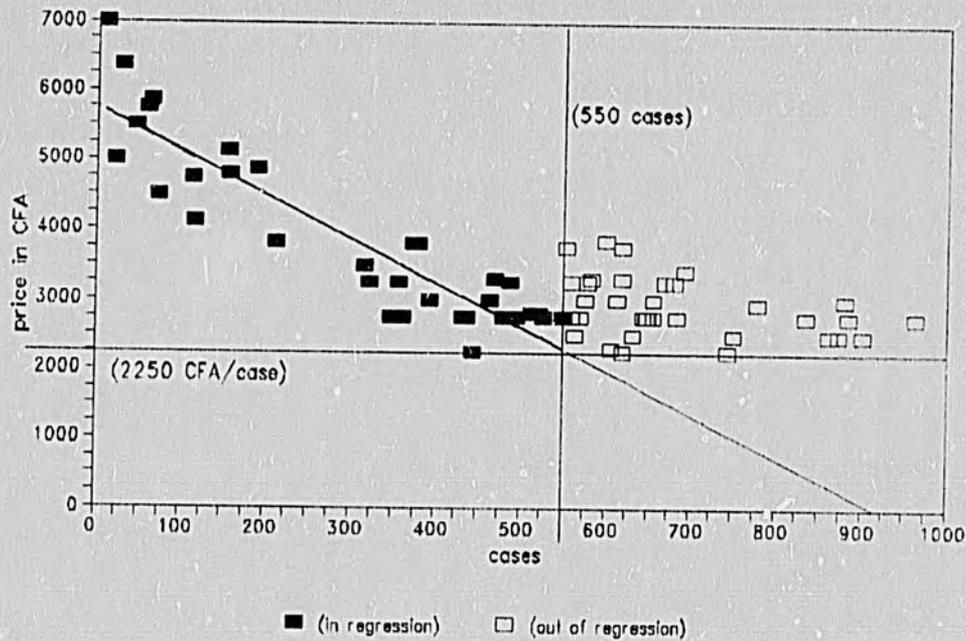


Figure 4 : Quantity of produce in market as predictor of price

Regression Output: Median price of a case of newly-arrived tomatoes (Y) on total number of cases in the market (X)

$Y = 5750.941 + (-6.2794)X$ R Squared: 0.821034

Constant	5750.941	Std Err of Y Est	519.0602
No. of Observations	33	Degrees of Freedom	31
X Coefficient(a)	-6.2794	Std Err of Coef.	0.52655

Total number of cases is the sum of all arrivals plus all holdover cases in the market on a given day.

The regression line and R^2 above is based on 33 observations (daily prices) in which there were 550 cases or fewer in the market (range: 10 to 549).

Regression of price on volume for the 14 dates not included above gives an equation of $Y = 3754.12 + (-1.246)X$ with an R^2 of .12.

A regression line with equation $Y = 5935.61 + (-3.3481)X$, with R^2 of .62 (65 df), fits the entire series of dates.

Total number of cases of tomatoes in the market each day: 11/91 - 2/92



Figure 5: Volume by date

Median price of a case of new arrivals by date of arrival: 11/91 - 2/92

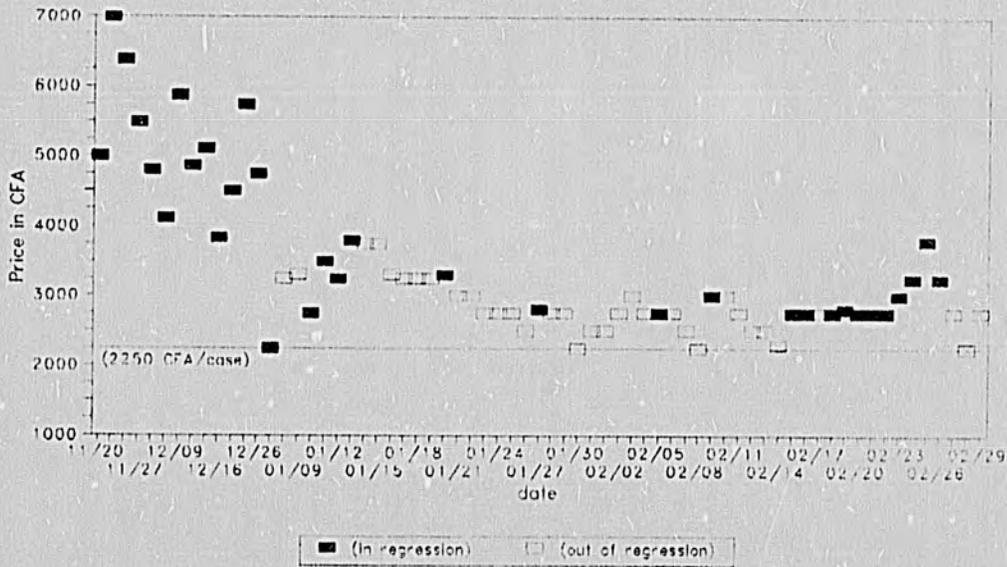


Figure 6: Price by date

would be able to mount and sustain an effective program to limit supply to the market, or that they would even consider doing so, unless they were tightly organized and disciplined, totally dominant in the market in a given period, and perhaps even willing and able to impose their authority on possible interlopers. Moreover, they would have to generate sufficient volume of production to make a restraint program worthwhile. No group has met even the minimum of these qualifications during the period for which data has been collected this year. Linia was the most important producing area during the main season of January-February, but even Linia only accounted for 40% of total volume and only produced 400 or more cases on two dates out of 57 (no other producing area even approached this volume). Even if the basic prerequisites are met, though, any group organized to set such a program in motion would face the classic dilemma of the cartel: failure induces members to quit, and success induces members to cheat.

An additional problem with the idea of raising prices by reducing volume is that it makes the assumption that the market is in the demand curve's relatively inelastic portion, whereas it is in the highly elastic portion. In this situation, producer/trader total revenue from tomatoes at the arrivals price will certainly drop faster than supply even as the price increases unless some other action is taken to ensure that the increased price represents real value to the buyer; for example, quality control that would translate into better prices in the retail market.

The data from the main production period show that the market cleared an average of 471 cases of tomatoes a day at an average price of just under 2,600 CFA a case. This breaks down to 351 cases of arrivals a day at an average price of 2,900 CFA and 119 cases of holdovers at an average price of 1,650 CFA. In our model, 2,900 CFA a case implies around 430 cases in the market, while we would expect only 350 to sell at that price. At 250 cases the price would be closer to 3,750 CFA. The record suggests that the market clearing price, including arrivals and holdover cases, is about 2,000 CFA a case at 500 cases and rises to around 3,000 CFA at 300 cases. This is, however, a very rough estimate and does not include any information on what happens when the number of cases in the market drops below 300.

Quality Control as a Strategy in weak Markets

From the analysis above it is clear that there is no guarantee that a program restricting supply would have the desired effect of raising prices a given amount. Nor is reduction of volume the only way to increase profit levels. No doubt there is a general tendency which links lower volumes with higher prices, as shown in figure 4. At any given level of volume, however, there is a range of prices for a case of produce - as much as 1,000 CFA for median price alone, and up to 1,800 CFA for real prices set on

tomatoes from different regions. (Note, however, that within the periods that the regression works best price ranges tend to be more restricted than during the height of the production season. This means that there are mechanisms, certainly based in part or whole on quality control, which could push the price up without forcing sellers to reduce volume. Taken a step further, it means that producers could attain extra profit without the problems associated with an imposed program of limitations of sales. Conversely, a program of volume restriction applied to poor quality tomatoes would certainly raise prices less than predicted.

Although the individual producer/trader cannot control the quantity of tomatoes in the market and thus have some influence on price, he can influence the price of his tomatoes through quality control. Quality characteristics include the color, shape, and size of tomato. At this season there does not seem to be much consumer preference for one variety or another, but the proportion broken, rotten, misshapen, wormy, or otherwise unattractive fruit does affect the retail price. The degree of ripeness and mix of ripe and ripening fruit is also important to the retailer. The retailer, comparing a set of similarly priced cases, will be looking for the case that will provide the fruit of highest value, with least waste, and that will hold its value best through the market day.

When the quality is good, a producer region such as Bougmene, which works to maintain a reputation for quality tomatoes, sellers can consistently set a price well above the market average for cases of arrivals. If excellent tomatoes are held over for a second day and maintain their quality, these will command premium prices on the holdover market and may even exceed the price of some new tomatoes. If an individual has an exceptional shipment of superior tomatoes, the negotiated price for that batch will be set above the overall average or if it is a mix of excellent and mediocre cases, the price may be mediocre but the cases with good tomatoes will be sold first.

While the range within which the median price falls is constricted during the height of the season, the gap between low and high prices for arrivals widens (figure 3). This reflects the strategy of Bougmène producers who believe, with some justification, that their higher-grade tomatoes will sell no matter what the total volume of tomatoes in the market. In a high-volume market buyers do distinguish between cases of high-grade produce, which hold their value even to the second day and arrivals at the lower end of the scale which compete more directly with holdovers.

CONCLUSIONS

1. The January - February harvest season supplies a wholesale tomato market that is highly competitive with prices sensitive to quantity and quality at different points on the demand curve. Several hundred farmers from six major producing areas compete with each other to supply the majority of retailers in N'Djamena. Prices are negotiated by the commission agents from each of the producing areas, without any formal attempt by the producer/traders control prices through oligopolistic associations or retailers through oligopsonistic associations.
2. A regression analysis based on the January - February harvest season data shows that the influence of the supply of tomatoes in the market on the arrival price will be effective only if supply can be limited to less than 550 cases daily. The price - quantity correlation for supplies greater than this is very low. The Karal Producer's proposed strategy of operating a cartel to limit supplies to the point that wholesale prices will be significantly affected will depend on their share of market and the discipline that they can maintain within the cartel.
3. A broad range of prices at all but the lowest supply level indicates that quality is generally the dominate factor in wholesale prices.
4. The effectiveness of producer/ trader pricing strategies for tomatoes arriving on the market depends primarily on the quality of their produce and, very importantly, on the expected "market life" of the tomatoes offered. Even large, well shaped and colored tomatoes that are over mature (over ripe) when they arrive will command a substantially lower price from retailers. Producer/traders with good quality tomatoes that have a have a two day market life can maximize revenue by demanding a high arrival price and be assured that any second day holdover tomatoes will command a price above the cost of production and marketing. For producer/traders with second quality tomatoes which have a relatively short market life, the best strategy is to set the arrival price low enough that all or almost all of their tomatoes will clear the market the first day. Second day holdovers are likely to sell below the cost of production and marketing.

SERIES 1: DAILY ARRIVALS

NUMBER OF CASES ARRIVING IN MARKET EACH DAY FROM:

KARCAIS - Karaï
LINCAIS - Linia
BOUGCAIS - Bcugmène
DOURCAIS - Dourballi
MISCAIS - Miskine
KOUNCAIS - Koundoul
DAGCAIS - Dagormassa
AUTRCAIS - other regions

DATE	KARCAIS	LINCAIS	BOUGCAIS	DOURCAIS	MISCAIS	KOUNCAIS	DAGCAIS	AUTRCAIS
01/07	16	124	42	80				
01/08	76	187	163		52			
01/09	53	225	161	35	51	47		
01/10		120	75	34				
01/11	27	107	39	30	37	15	6	34
01/12	54	197	95	93	13	23		
01/13	48	104	103		65	21		
01/14	25	198	123	88	47	38		
01/15		202	126	74	90	44		
01/16	50	148	152	59	29	9		
01/17	49	176	172	86	15	38		
01/18	34	187	118	56	65	21		
01/19	45	94	68	131		35		
01/20	63	101	100		26	21		
01/21	11	163	163	104	7	45		
01/22	20	313	166	114	91	40		
01/23	72	86	125	134	32	54		
01/24	70	179	205	93	47	57		
01/25	13	169	144		31	56		
01/26	67	235	119	46	16	27		
01/27	23	74	112	121	72	64		
01/28	20	214	117	121	32	45		
01/29	89	170	120	87	55	46		
01/30	42	134	119	119	20	38		
01/31	18	118	192	103	16	40	7	
02/01	64	226	121	148	52	44		
02/02		255	67	74		48		
02/03		149	236	108	32	36	6	
02/04	104	182	116	54	25	30		
02/05	81	207	72	87		29		
02/06	14	225	248	46	29	24	26	
02/07	55	405	142	123	28	40	14	
02/08		241	83	80	44	40		
02/09	59	138	38	33		27		
02/10	29	159	100	197	24	26		26
02/11	56	214	124	71		14		32
02/12	43	367	138	128	56	33		26
02/13	27	383	27	100		48		34
02/14	12	93	20	122	62	20		28
02/15	43	266	32	37	33	18		20
02/16	47	168	73	118				
02/17	53	214	40	144	15	9		18
02/18	10	221	106	45				
02/19	27	238	22	106	31	18		
02/20	23	191		113	35			22
02/21		200	34	81		16		
02/22	64	199		51	12	13		12
02/23		255	22	58	31	27		
02/24		138		97	10	15		22
02/25	24	293	43					19
02/26	18	212		66	12	24		15
02/27	11	567		98	43			22
02/28	66	136	20	40	24	31		40
02/29	36	183	40	38		21		36
=====								
Sum	1951	10770	5083	4271	1507	1479	59	406
Average	42.41	199.44	103.73	87.11	36.76	32.15	11.80	25.38
Std Dev	23.21	86.48	56.87	36.42	20.58	13.66	7.70	7.79
Maximum	104	567	248	197	91	64	26	40
Minimum	10	74	20	30	7	9	6	12
N	46	54	49	49	41	46	5	16

SERIES 2: ESTIMATE OF DAILY SALES OF ARRIVALS

Assumption of estimate: that all holdover cases are sold on the second day.

Estimate is total sales less holdovers. (No data before January 17)

01/07

01/08

01/09 ESTIMATE OF NUMBER OF CASES OF ARRIVALS SOLD EACH DAY FROM:

01/10

01/11 KARNEW - Kara

MISNEW - Miskine

01/12 LINNEW - Linia

KOUNNEW - Koundoul

01/13 BOUGNEW - Bougmène

DAGNEW - Dagormassa

01/14 DOURNEW - Dourball

01/15

	KARNEW	LINNEW	BOUGNEW	DOURNEW	MISNEW	KOUNNEW	DAGNEW
01/16							
01/17	17	97	138	34	15	34	
01/18		15	73	0	37	10	
01/19		0	25	50	0	23	
01/20	19	18	65		16	16	
01/21	1	71	124	65	7	45	
01/22	20	0	75	7	87	36	
01/23	72	0	18	0	18	45	
01/24	70	0	85	0	29	34	
01/25	8	0	63		20	35	
01/26	56	161	76	4	11	24	
01/27	17	22	48	97	66	64	
01/28	20	113	74	80	16	33	
01/29	66	49	74	42	39	31	
01/30	19	28	74	83	14	35	
01/31	0	49	142	80	14	40	3
02/01	26	161	77	99	30	44	
02/02		156	65	6		48	
02/03	0	57	207	27	22	24	6
02/04	99	100	87	0	3	16	
02/05	76	148	72	55		21	
02/06	14	182	214	19	29	16	26
02/07	43	268	44	58	16	40	14
02/08		60	0	0	14	40	
02/09	59	13	18	0		27	
02/10	29	25	67	190	14	24	
02/11	56	123	61	30		10	
02/12	38	222	52	27	38	33	
02/13	13	79	0	0		48	
02/14	3	0	0	61	62	20	
02/15	40	206	23	33	33	18	
02/16	39	100	65	104			
02/17	40	126	32	88	15	9	
02/18		142	73	3			
02/19	22	122	0	96	21	18	
02/20	23	54	0	75	6		
02/21	0	142	32	51		16	
02/22	64	194		51	9	13	
02/23	0	235	13	58	20	27	
02/24	0	118		97	0	15	
02/25	24	293	33				
02/26	18	178		62	12	24	
02/27	9	277	0	33	25	0	
02/28	53	0	5	0	0	31	
02/29	25	24	25	0	0	21	

Sum	1198	3303	2343	1613	701	990	49
Average	30.72	89.27	65.08	46.09	24.17	29.12	12.25
Std Dev	25.10	72.48	50.22	42.31	19.28	13.07	8.90
Maximum	99	268	214	190	87	64	26
Minimum	0	0	0	0	0	9	3
N	39	37	36	35	29	34	4

SERIES 3: DAILY TOTALS OF UNSOLD CASES HELD OVER TO THE NEXT DAY

01/07 (No data before January 17)

01/08

01/09 ESTIMATE OF NUMBER OF UNSOLD CASES EACH DAY FROM:

01/10

01/11 KARINV - Karal MISINV - Miskine
 01/12 LININV - Linia KOUNINV - Koundoul
 01/13 BOUGINV - Bougmène DAGINV - Dagormassa
 01/14 DOURINV - Dourball

01/15

	KARINV	LININV	BOUGINV	DOURINV	MISINV	KOUNINV	DAGINV
01/16	32	79	34	52	0	4	
01/17	21	93	11	46	28	7	
01/18	34	43	32	35	10	5	
01/19	10	40	3	10			
01/20	0	72	36	29	0	0	
01/21	0	242	55	78	4	4	
01/22	0	127	52	118	10	5	
01/23	0	183	68	145	8	18	
01/24	5	64	13	34	3	3	
01/25	6	10	30	8	2	0	
01/26	0	42	34	16	4	0	
01/27	0	59	9	25	12	12	
01/28	23	62	37	20	4	3	
01/29	0	44	8	16	2	0	
01/30	18	25	42	7	0	0	4
01/31	20	40	2	42	22	0	
02/01		59	0	26	2	0	
02/02		33	29	55	8	14	0
02/03	5	49	0	5	14	0	
02/04	0	10	0	27		8	
02/05	0	33	34	0	0	0	0
02/06	12	104	64	65	12	0	0
02/07		77	20	53	18	0	
02/08	0	48	0	0	3	0	
02/09	0	86	33	7	7	4	
02/10		5	30	34	3		
02/11	5	140	56	67	15		
02/12	9	164	20	57			
02/13		33	9	4			
02/14	3	27					
02/15	5	41	8	14			
02/16	8	47		42			
02/17	5	32	33				
02/18		84	39	10	10		
02/19		53		30	19		
02/20		5	2		3		
02/21							
02/22		20	9		11		
02/23							
02/24			10				
02/25		34		4			
02/26	2	256		61	18		
02/27	11	159	15	41	21		
02/28							
02/29							

	Sum	Average	Std Dev	Maximum	Minimum	N
KARINV	221	7.89	9.80	34	0	28
LININV	2355	65.42	50.78	242	5	36
BOUGINV	843	25.55	19.62	68	0	33
DOURINV	1177	35.67	32.11	145	0	33
MISINV	223	7.96	7.22	28	0	28
KOUNINV	87	3.63	4.91	18	0	24
DAGINV	4	1.00	1.73	4	0	4

SERIES 4: AGGREGATE AND MEDIAN DAILY TOTALS

- NEWCAIS - Daily totals of arrivals in market
- TOTCAIS - Daily totals of all cases in market
- TOTNEW - Daily totals of new cases sold (see Series 2)
- TOTINV - Daily totals of unsold cases held over to the next day
- TOTSOLD - Daily totals of cases sold
- MEDPRIX - Daily median price for arrivals
- CAMIONS - Daily number of trucks bringing tomatoes to market

	NEWCAIS	TOTCAIS	TOTNEW	TOTINV	TOTSOLO	MEDPRIA	CAMIONS
01/07	262	444		81	262	2250	8
01/08	478	559		47	512	3250	17
01/09	572	619		118	501	3300	18
01/10	229	347		21	326	2750	7
01/11	295	316		12	304	3500	11
01/12	475	467		33	454	3250	14
01/13	341	374		35	339	3800	15
01/14	519	554		83	471	3750	19
01/15	536	619		136	483	3750	20
01/16	447	583		134	449	3300	15
01/17	536	670	335	201	469	3250	18
01/18	481	682	135	206	476	3250	19
01/19	373	579	98	159	420	3250	9
01/20	311	470	134	63	407	3300	12
01/21	513	576	313	137	439	3000	18
01/22	744	851	225	383	498	3000	26
01/23	503	886	153	312	574	2750	17
01/24	651	963	218	422	541	2750	24
01/25	413	835	126	122	695	2750	14
01/26	510	632	332	56	562	2500	16
01/27	466	522	314	96	418	2800	14
01/28	549	645	336	117	526	2750	19
01/29	567	684	301	149	510	2750	20
01/30	472	621	253	70	526	2250	16
01/31	494	564	328	96	468	2500	17
02/01	655	751	437	126	625	2500	21
02/02	444	570	275	87	483	2750	16
02/03	569	656	343	139	517	3000	20
02/04	511	650	305	73	577	2750	20
02/05	476	549	372	45	504	2750	16
02/06	612	657	500	67	590	2750	21
02/07	807	874	483	257	617	2500	25
02/08	488	745	114	168	577	2250	18
02/09	295	463	117	51	411	3000	9
02/10	563	614	375	137	477	3000	18
02/11	511	648	312	72	576	2750	18
02/12	791	863	436	283	580	2500	25
02/13	619	902	174	250	652	2500	16
02/14	357	607	174	46	561	2300	12
02/15	449	495	373	30	465	2750	16
02/16	406	436	308	68	368	2750	13
02/17	493	561	328	97	464	2750	16
02/18	382	479	218	70	409	2750	13
02/19	442	512	279	143	369	2800	15
02/20	384	527	178	102	425	2750	13
02/21	331	433	241	10	423	2750	10
02/22	351	361	343	0	361	2750	14
02/23	393	393	353	40	353	3000	16
02/24	282	323	252	0	322	3250	11
02/25	379	379	369	10	369	3750	4
02/26	347	357	309	38	319	3250	15
02/27	741	779	366	337	442	2750	22
02/28	357	694	139	247	447	2250	15
02/29	354	601				2750	13
=====							
Sum	25526	31990	12054	5282	24913		864
Average	472.70	592.41	280.50	115.53	470.06	2530.74	16.00
Std Dev	130.19	158.92	102.48	97.44	94.29	389.93	4.50
Maximum	807	963	500	422	695	3800	26
Minimum	229	316	98	0	262	2250	4
N	54	54	43	53	53	54	54

SERIES 5: DAILY PRICES FOR CASES OF ARRIVALS BY PRODUCER REGION

PRICE OF A CASE OF ARRIVALS FROM:

KARPRIX - Karaï
LINPRIX - Lina
BOUGPRIX - Bougmène
DOURPRIX - Dourbali
MISPRIX - Miskine
KOUNPRIX - Koundoul
DAGPRIX - Dagormassa
AUTRPRIX - Other producer regions

	KARPRIX	LINPRIX	BOUGPRIX	DOURPRIX	MISPRIX	KOUNPRIX	DAGPRIX	AUTRPRIX
01/07	2250	2250	3300	2250				
01/08	3000	3250	3300		4250			
01/09	2750	3250	3300	3250	3500	3250		
01/10		2750	3300	2750				
01/11	2750	3500	3500	3250	3750	3250	4250	3750
01/12	3250	3000	3800	3250	2750	3000		
01/13	3750	4000	3800		4250	4000		
01/14	3750	3750	4300	3750	4300	3750		
01/15		2750	3800	2750	3750	3750		
01/16	3250	3250	3800	3250	3300	3250		
01/17	2750	3250	3300	2750	2750	2750		
01/18	2500	3250	3300	2500	3250	2500		
01/19	3250	2750	3800	2750		3250		
01/20	3250	3500	3300		3500	3250		
01/21	2750	2750	3800	2750	3000	2750		
01/22	2250	2250	3300	2250	3000	3000		
01/23	2250	2250	3300	2250	2750	2250		
01/24	2250	2000	3300	2250	2750	2750		
01/25	2250	2250	2800		2750	2750		
01/26	2250	2250	3300	2250	2500	2500		
01/27	2500	2500	3800	2500	2800	2000		
01/28	2250	2750	3300	2500	3250	3250		
01/29	2250	2500	3300	2250	2750	2500		
01/30	2250	1750	3300	2000	2750	2750		
01/31	1750	2500	3300	2250	2750	2750	2750	
02/01	2000	2750	3300	2250	3000	2250		
02/02		2500	3300	2250		2750		
02/03		2250	3300	2250	2250	2250	2250	
02/04	2250	2250	3300	2250	2750	2500		
02/05	2750	2250	3300	2250		2250		
02/06	2250	2750	3300	2250	2750	2500	2250	
02/07	2000	2500	3300	2000	2250	2250	2250	
02/08		2250	3300	2250	2250	2000		
02/09	2250	3000	3300	2250		2250		
02/10	2750	3000	3800	2750	2750	2750		2500
02/11	2250	2750	3300	2250		3000		2500
02/12	2250	2750	3300	2250	2500	2500		2750
02/13	2250	2500	2800	2250		2750		2500
02/14	2250	2500	3000	2250	2250	2000		2300
02/15	2250	3000	3300	2250	2750	2500		2400
02/16	2250	2500	3300	2250				
02/17	3250	2500	3300	2500	2750	2250		2500
02/18	2750	2750	3300	2750				
02/19	2750	2750	2800	2750	3000	2500		
02/20	2250	2750		2250	2250			2200
02/21		2750	3300	2250		2250		
02/22	2750	2750		3000	2750	2750		2000
02/23		3250	2800	2750	2750	3000		
02/24		3750		3000	3250	2250		3000
02/25	3750	3750	3800					3250
02/26	3250	3750		3500	2250	3250		3250
02/27	2000	2750		2750	2750			3250
02/28	2000	2250	3000	2250	2250	2000		3000
02/29	3250	2750	2500	2000		2250		3000
=====								
Sum	2479.73	2680.233	3276.316	2412.5	2728.125	2559.211	2375	2693.333
Average	2592.39	2782.41	3340.94	2525.51	2924.39	2701.09	2750.00	2759.38
Std Dev	506.37	490.76	319.50	407.97	540.11	482.35	774.60	459.35
Maximum	3750	4000	4300	3750	4300	4000	4250	3750
Minimum	1750	1750	2500	2000	2250	2000	2250	2000
N	46	54	49	49	41	46	5	16

SERIES 6: POTENTIAL VALUE OF DAILY ARRIVALS AT THE DAY'S ARRIVAL PRICE, BY
PRODUCER REGION

TOTAL POTENTIAL VALUE (ARRIVALS PRICE * NUMBER OF CASES) OF DAILY ARRIVALS
FROM:

- KARNEWP - Kara
- LINNEWP - Lina
- BOUGNEWP - Bougmène
- DOURNEWP - Dourbali
- MISNEWP - Miskine
- KOUNNEWP - Koundoul
- DAGNEWP - Dagormassa
- AUTRNEWP - Other producer regions

	KARNEWP	LINNEWP	BOUGNEWP	DOURNEWP	MISNEWP	KOUNNEWP	DAGNEWP	AUTRNEWP
01/07	36000	279000	138600	180000				
01/08	228000	607750	537900		221000			
01/09	145750	731250	531300	113750	178500	152750		
01/10		330000	247500	93500			25500	127500
01/11	74250	374500	136500	97500	138750	48750		
01/12	175500	591000	361000	302150	35750	69000		
01/13	180000	416000	391400		276250	84000		
01/14	93750	742500	528900	330000	202100	142500		
01/15		555500	478800	203500	337500	165000		
01/16	162500	481000	577600	191750	95700	29250		
01/17	46750	315250	455400	93500	41250	93500		
01/18	0	48750	240900	0	120250	25000		
01/19	0	0	95000	137500		74750		
01/20	61750	63000	214500		56000	52000		
01/21	2750	195250	471200	179750	21000	123750		
01/22	45000	0	247500	15750	261000	108000		
01/23	162000	0	59400		49500	101250		
01/24	157500	0	280500		79750	93500		
01/25	18000	0	176400		55000	96250		
01/26	126000	362250	250800	9000	27500	60000		
01/27	42500	55000	182400	242500	184800	128000		
01/28	45000	310750	244200	200000	52000	107250		
01/29	148500	122500	244200	94500	107250	77500		
01/30	42750	49000	244200	166000	38500	96250		
01/31		122500	468600	180000	39500	110000	8250	
02/01	52000	442750	254100	222750	90000	99000		
02/02		390000	214500	13500		132000		
02/03		128250	683100	60750	49500	54000	13500	
02/04	222750	225000	287100	0	8250	40000		
02/05	209000	333000	237600	123750		47250		
02/06	31500	500500	706200	42750	79750	40000	58500	
02/07	86000	670000	145200	16000	36000	90000	31500	
02/08		135000	0	0	31500	80000		
02/09	132750	39000	59400	0		60750		
02/10	79750	75000	254600	522500	38500	66000	65000	
02/11	126000	338250	201300	67500		30000	80000	
02/12	85500	610500	171600	60750	95000	82500	71500	
02/13	29250	197500	0	0		132000	85000	
02/14	6750	0	0	137250	139500	40000	64400	
02/15	90000	618000	75900	74250	90750	45000	46000	
02/16	87750	250000	214500	234000				
02/17	130000	315000	105600	220000	41250	20250	45000	
02/18	0	390500	240900	8250				
02/19	60500	335500		264000	53000	45000		
02/20	51750	148500		164250	13500		48400	
02/21		390500	105600	114750		38000		
02/22	178000	533500	0	153000	24750	35750	24000	
02/23	0	763750	36400	159500	55000	81000	0	
02/24	0	442500	0	291000	0	33750	66000	
02/25	90000	1098750	125400	0	0	0	61750	
02/26	58500	667500	0	217000	27000	78000	48750	
02/27	18000	761750	0	90750	58750	0	71500	
02/28	106000	0	15000	0	0	62000	120000	
02/29	81250	66000	62500	0	0	47250	108000	
Sum	4005250	17619250	12001200	6188000	3569850	3515750	137250	1134800
Avg	85218.09	326282.41	230792.31	126916.67	63019.77	73244.79	27450.00	66752.94
St Dev	63958.67	256915.20	184300.50	126351.30	79134.40	38702.74	17592.90	31233.59
Maximum	228000	1098750	706200	522500	337500	165000	58500	127500
Minimum	0	0	0	0	0	0	8250	0
N	47	54	52	48	43	48	5	17

SERIES 7: MEAN DAILY ARRIVAL PRICE FOR ALL PRODUCER REGIONS

WEIGHTED AVERAGE OF DAILY PRICES FOR ARRIVALS		DATE	AVGNEWPLB	AVGNEWP
		01/07	2250.0	2418.3
		01/08	3354.8	3336.1
Average calculated as:		01/09	3216.5	3240.0
		01/10	2750.0	2930.1
$\Sigma(n*p)/N$ where		01/11	3463.9	3468.6
n = number of cases from a region		01/12	3088.2	3230.5
p = price for those cases		01/13	4017.9	3952.1
N = total number of arrivals in mkt		01/14	3815.3	3930.2
		01/15	3076.8	3246.8
		01/16	3254.9	3440.3
		01/17	2996.2	3121.3
		01/18	3129.0	3221.5
AVGNEWPLB	Average excluding arrivals and price for Bougmène tomatoes	01/19	2907.5	3135.2
		01/20	3373.2	3337.7
		01/21	2759.3	3171.6
AVGNEW	Average for all producer regions	01/22	2865.0	3010.0
		01/23	2316.7	2432.4
		01/24	2486.8	2803.9
		01/25	2686.5	2743.3
		01/26	2284.2	2516.7
		01/27	2454.1	2659.9
		01/28	2729.0	2854.8
		01/29	2424.0	2639.4
		01/30	2192.7	2516.6
		01/31	2469.1	2828.8
		02/01	2518.1	2655.2
		02/02	2550.0	2727.3
		02/03	2250.0	2383.7
		02/04	2275.2	2567.5
		02/05	2376.7	2555.4
		02/06	2632.9	2918.4
		02/07	2345.1	2432.1
		02/08	2162.3	2162.3
		02/09	2348.5	2494.9
		02/10	3002.7	3023.6
		02/11	2930.4	3010.9
		02/12	2809.4	2871.6
		02/13	3169.6	3169.6
		02/14	2656.8	2665.4
		02/15	2927.3	2961.6
		02/16	2352.3	2557.8
		02/17	2775.2	2829.4
		02/18	2750.0	2930.0
		02/19	2752.7	2752.6
		02/20	2733.3	2733.3
		02/21	2589.7	2684.0
		02/22	2861.0	2861.0
		02/23	3115.4	3103.8
		02/24	3622.8	3622.8
		02/25	3944.3	3931.1
		02/26	3730.4	3730.4
		02/27	2938.2	2938.2
		02/28	3428.6	3404.5
		02/29	4321.4	3842.1
		=====		
Average			2874.68	2985.32
Std Dev			501.28	417.45
Maximum			4321.429	3952.053
Minimum			2162.281	2162.281
N			54	54

SERIES 8: DAILY PRICES FOR HOLDOVER CASES

PRICE ON DAY T+1 OF CASES HELD OVER FROM THE PREVIOUS DAY (No data until

January 18)

Daily prices for holdover cases from:
 01/07 KINVP - Karal
 01/08 LINVP - Lina
 01/09 BINVP - Boumene
 01/10 DINVP - Dourbali
 01/11 MINVP - Miskine
 01/12 KOUNINVP - Koundoul
 01/13 DAGINVP - Dagormassa

AVGINVP - weighted daily average of all prices for holdovers in the market

Average calculated as:
 $\Sigma(n*p)/N$ where
 n = number of cases from a region
 p = price for those cases
 N = total number of arrivals in mkt

Date	KINVP	LINVP	BINVP	DINVP	MINVP	KOUNINVP	DAGINVP	AVGINVP
01/16								
01/17	1750	1750	1800	1750		1750		1758.5
01/18	1500	1500	2000	1500	2750	1500		1696.6
01/19	2250	2250	2250	2250	2250	2250		2250.0
01/20	1750	1750	2000	1750		1750		1761.9
01/21		1750	2250	1750				1881.4
01/22		1250	1750	1750	1750	1500		1431.5
01/23		1250	1800	1500	1750	1500		1456.3
01/24		1750	1800	1250	1750	1250		1564.9
01/25	1250	1250	1800	1250	1250	1250		1308.6
01/26	1250	1500	2300	1250	1250			1857.1
01/27		1250	2300	1250	1250			1621.9
01/28		1500	1300	1250	1500	1500		1431.2
01/29	1750	1500	1800	1750	1250	1250		1634.9
01/30		1500	1800	1250	2250			1498.6
01/31	1750	1250	2250	1250			1750	1802.1
02/01	1500	1250	1800	1500	1500			1425.4
02/02		1500		1750	1500			1574.7
02/03		1500	2300	1500	1500	1250		1641.7
02/04	1250	1250		1750	1500			1332.2
02/05		1500		1750		1500		1650.0
02/06		1750	1800					1775.4
02/07	1250	1500	2300	1750	1250			1739.1
02/08		1750	1800	1500	1500			1650.3
02/09		1750		1500	1750			1750.0
02/10		1500	2300	1250	1500	1250		1672.6
02/11		1250	2300	1250	1500			1697.9
02/12	1250	1500	1800	1250	1500			1554.9
02/13	1500	1500	1800	1500				1524.0
02/14		1750	1800	1500				1607.6
02/15	1500	1750		1500				1725.0
02/16		1750	1800	1750				1627.2
02/17	1750	1750	1800	1750				1617.9
02/18	1500	1500	1750					2001.4
02/19		1750	2800	1500	1500			1458.3
02/20		2000		1500	2250			1760.0
02/21		1750	1800		1750			
02/22								
02/23		2750	2800		1750			2486.3
02/24								
02/25			1800					1800.0
02/26		1250		1250				1302.6
02/27	1750	1750		1750	1750			1659.5
02/28	1250	1250	2500	1250	1250			1118.4
02/29								

Average	1541.67	1587.50	2007.58	1522.06	1638.89	1500.00	1750.00	1652.70
Std Dev	431.21	298.70	326.16	245.31	362.18	277.35	0.00	422.95
Maximum	2250	2750	2500	2300	2750	2250	1750	2486.25
Minimum	1250.00	1250.00	1300.00	1250.00	1250.00	1250.00	1750.00	1118.42
N	18	40	35	34	27	13	1	40

SERIES 9: POTENTIAL VALUE OF CASES HELD OVER FROM THE PREVIOUS DAY AT THE CURRENT HOLDOVER PRICE, BY PRODUCER REGION

(No data before January 18)

01/07 TOTAL POTENTIAL VALUE (HOLDOVERS PRICE * NUMBER OF CASES) OF CASES
 01/08 HELD OVER, FROM:
 01/09 KARINVV - Kara
 01/10 LININVV - Lina
 01/11 BOUGINVV - Bougmene
 01/12 DOURINVV - Dourball
 01/13 MININVV - Miskine
 01/14 KOUNINVV - Koundoul
 01/15 DAGINVV - Dagormassa

	KARINVV	LININVV	BOUGINVV	DOURINVV	MININVV	KOUNINVV	DAGINVV
01/17						7000	
01/18	56000	138250	61200	91000			
01/19	31500	139500	22000	69000	77000	10500	
01/20	76500	96750	72000	78750	22500	11250	
01/21	17500	70000	5000	17500			
01/22		126000	81000	50750			
01/23		302500	96250	136500	7000	6000	
01/24		158750	93600	177000	17500	7500	
01/25		320250	122400	181250	14000	22500	
01/26	6250	80000	23400	42500	3750	3750	
01/27	7500	15000	69000	10000	2500		
01/28		52500	78200	20000	5000		
01/29		88500	11700	31250	18000	18000	
01/30	40250	93000	66600	35000	5000	3750	
01/31		66000	14400	20000	4500		
02/01	31500	31250	94500	8750			7000
02/02	30000	50000	3600	63000	33000		
02/03		88500		45500	3000		
02/04		49500	56700	82500	12000	17500	
02/05	6250	61250		8750	21000		
02/06		15000		47250		12000	
02/07		57750	61200				
02/08	15000	156000	147200	113750	15000		
02/09		134750	36000	79500	27000		
02/10		84000			5250		
02/11		129000	75900	8750	10500	5000	
02/12		6250	69000	42500	4800		
02/13	6250	210000	100800	100500	22500		
02/14	13500	246000	36000	85500			
02/15		57750	16200				
02/16	4500	47250					
02/17		71750	14400	24500			
02/18	14000	82250	0	75600		0	
02/19	7500	48000	57750				
02/20		147000	109200	15000	15000		
02/21		106000			42750		
02/22		8750	3600		5250		
02/23							
02/24		55000	25200		19250		
02/25							
02/26			18000				
02/27		42500		7000			
02/28	3500	448000		76250	31500		
02/29	13750	198750	37500		26250		

Sum	381250	4379250	1790500	1845100	470500	124750	7000
Avg	21180.56	109481.25	54257.58	59519.35	17425.93	9596.15	7000.00
St Dev	19405.72	90610.42	38241.75	46216.29	15676.65	6291.43	0.00
Maximum	76500	448000	147200	181250	77000	22500	7000
Minimum	3500	6250	0	7000	2500	0	7000
N	18	40	33	31	27	13	1

SERIES 10: ESTIMATE OF GROSS INCOME FROM SALES OF ALL CASES ARRIVING ON A GIVEN DAY, BY PRODUCER REGION

(No data before January 18)

01/07 TOTAL VALUE OF ARRIVALS SOLD AT THE ARRIVAL PRICE ON THE DAY OF
 01/08 ARRIVAL, PLUS HOLDOVERS SOLD AT THE HOLDOVER PRICE THE NEXT DAY.

- 01/09 KARVAL - Karal
- 01/10 LINVAL - Linia
- 01/11 BOUGVAL - Bougmene
- 01/12 DOURVAL - Dourbali
- 01/13 MINVAL - Miskine
- 01/14 KOUNVAL - koundoul
- 01/15 DAGVAL - Dagormassa

	KARVAL	LINVAL	BOUGVAL	DOURVAL	MINVAL	KOUNVAL	DAGVAL
01/17							
01/18	56000	187000	102100	91000	120250	32000	
01/19	31500	139500	117000	206500	77000	85250	
01/20	138250	159750	265500	78750	78500	63250	
01/21	20250	265250	477200	196250	21000	123750	
01/22	45000	126000	328500	66500	261000	108000	
01/23	162000	302500	155650	136500	56500	107250	
01/24	157500	158750	374100	177000	97250	101000	
01/25	18000	320250	198800	181250	69000	118750	
01/26	132250	442250	274200	51500	31250	63750	
01/27	50000	70000	251400	252500	187300	128000	
01/28	45000	363250	322400	220000	57000	107250	
01/29	148500	211000	255900	125750	125250	95500	
01/30	83000	142000	310800	201000	43500	100000	
01/31		188500	483000	200000	43000	110000	8250
02/01	83500	474000	343600	231500	90000	99000	7000
02/02	30000	440000	218100	76500	33000	102000	
02/03		216750	583100	106250	52500	54000	13500
02/04	222750	274500	353800	62500	20250	57500	
02/05	215250	394250	237600	102500	21000	47250	
02/06	31500	515500	706200	90000	79750	52000	58500
02/07	86000	727750	106400	116000	36000	90000	31500
02/08		281000	147200	113750	46500	80000	
02/09	132750	173750	173750	79500	27000	60750	
02/10	79750	159000	154600	522500	43750	66000	
02/11	126000	467250	277200	76250	10500	35000	
02/12	85500	616750	240600	103250	99500	82500	
02/13	35500	407500	100800	100500	22500	132000	
02/14	20250	246000	36000	222750	133000	10000	
02/15	90000	675750	30100	74250	90750	45000	
02/16	92250	297000	114500	214000			
02/17	130000	386750	11000	244500	41250	20250	
02/18	14000	472750	240900	83850			
02/19	68000	383500	57750	264000	63000	45000	
02/20	51750	295500	109200	179250	28500		
02/21		496500	105600	114750	42750	36000	
02/22	176000	542250	3500	153000	30000	35750	
02/23		763750		159500	55000	81000	
02/24		497500	25200	291000	19250	33750	
02/25	90000	1098750					
02/26	58500	667500	18000	217000	27000	78000	
02/27	18000	804250		97750	68750		
02/28	109500	448000		76250	31500	62000	
02/29	95000	264750	100000		26250	47250	

Sum	3229000	16574750	9230000	6427350	2513550	2855750	118750
AVG	87270.27	385459.30	236666.67	156784.63	62338.75	75151.32	23750.00
St Dev	55044.62	214599.95	159658.27	86882.04	49123.44	31835.59	19460.22
Maximum	222750	1098750	706200	522500	261000	132000	58500
Minimum	14000	70000	3600	51500	10500	20250	7000
N	37	43	39	41	40	38	5

SERIES 11: DAILY MEAN PRICE FOR ALL CASES SOLD THAT DAY

(No data before January 18)

01/07	WEIGHTED AVERAGE OF DAILY	AVGCINC:	Average across all
01/08	PRICES OF ALL CASES SOLD FROM:		producers
01/09	KARCINC - Kara		Average calculated as:
01/10	LINCINC - Linta		$\frac{\sum(n \cdot p) + \sum(n \cdot p')}{N}$ where
01/11	BOUGCINC - Bougmane		n = number of arrivals cases sold
01/12	DOURCINC - Dourballi		n' = number of holdover cases sold
01/13	MINCINC - Miskine		p = day's price for arrivals
01/14	KOUNCINC - Koundoul		p' = day's price for holdovers
01/15	DAGCINC - Dagormassa		N = total number of cases sold

01/16	KARCINC	LINCINC	BOUGCINC	DOURCINC	MINCINC	KOUNCINC	DAGCINC	AVGCINC
01/17	1750.0	1989.4	2823.4	1750.0	3250.0	2285.7		2308.1
01/18	1500.0	1500.0	3250.0	2151.0	2750.0	2841.7		2332.1
01/19	2608.5	2618.9	2953.6	2250.0	3019.2	3011.9		2743.7
01/20	1840.9	2389.6	3757.5	2616.7	3000.0	2750.0		2725.8
01/21	2250.0	1750.0	2959.5	1847.2	3000.0	3000.0		2467.8
01/22	2250.0	1250.0	2132.2	1750.0	2568.2	2158.8		2023.2
01/23	2250.0	1250.0	2730.7	1500.0	2493.6	2589.7		2135.7
01/24	2250.0	1750.0	2280.9	1250.0	2464.3	2240.6		2039.3
01/25	2168.0	1965.6	3080.9	1355.3	2232.1	2361.1		2193.8
01/26	2173.9	2187.5	3223.1	2404.8	2754.4	2000.0		2457.3
01/27	2250.0	2343.5	2985.2	2291.7	2850.0	3250.0		2661.7
01/28	2250.0	1953.7	3083.1	1876.9	2455.9	2220.9		2306.8
01/29	1976.2	1577.3	2800.0	1951.5	2416.7	2631.6		2225.6
01/30		2026.3	3220.0	2083.3	2687.5	2750.0	2750.0	2586.3
01/31	1897.7	2548.4	2929.4	2184.0	3000.0	2250.0		2468.2
02/01	1500.0	2244.9	3255.2	1593.5	1500.0	2750.0		2140.6
02/02		1868.5	3300.0	2004.7	2187.5	2250.0	2250.0	2310.1
02/03	2250.0	2063.9	3050.0	1500.0	1840.9	1916.7		2103.6
02/04	2657.4	2001.3	3300.0	2208.3	1500.0	2250.0		2319.5
02/05	2250.0	2584.9	3500.0	1956.5	2750.0	2166.7	2250.0	2479.7
02/06	2000.0	2417.5	2646.2	2000.0	2250.0	2250.0	2250.0	2259.1
02/07		1774.4	2300.0	1750.0	1788.5	2000.0		1922.6
02/08	2250.0	1930.6	2510.5	1500.0	1500.0	2250.0		1990.2
02/09	2750.0	2178.1	3800.0	2750.0	2573.5	2750.0		2800.3
02/10	2250.0	2235.6	2948.9	2060.8	1500.0	2500.0		2249.2
02/11	2250.0	2717.0	2934.1	1592.6	2426.8	2500.0		2420.1
02/12	1972.2	1860.7	1800.0	1500.0	1500.0	2750.0		1897.2
02/13	1687.5	1500.0	1800.0	1587.7	2250.0	2000.0		1854.2
02/14	2250.0	2827.4	2876.1	2006.5	2750.0	2500.0		2535.4
02/15	2196.4	2340.6	3300.0	2250.0				2521.7
02/16	2888.9	2315.9	3000.0	2397.1	2750.0	2250.0		2600.3
02/17	1750.0	2501.3	3300.0	1863.3				2353.7
02/18	2518.5	2490.3	1750.0	2750.0	3000.0	2500.0		2501.5
02/19	2250.0	2141.3	2800.0	2159.6	1781.3			2226.4
02/20		2545.1	3300.0	1416.7	2250.0	2250.0		2352.6
02/21	2750.0	2724.9	1800.0	3000.0	2500.0	2750.0		2527.5
02/22		3250.0		2750.0	2750.0	3000.0		2937.5
02/23		3605.1	2800.0	3000.0	1750.0	2250.0		2681.0
02/24	3750.0	3750.0						3750.0
02/25	3250.0	3750.0	1800.0	3500.0	2250.0	3250.0		2966.7
02/26	2000.0	2586.0		2641.9	2750.0			2494.5
02/27	1990.9	1750.0		1250.0	1750.0	2000.0		1748.2
02/28	2638.9	1446.7	2500.0		1250.0	2250.0		2017.1

Sum	2254.89	2316.53	2922.74	2065.34	2473.97	2459.73		
Average	2255.84	2246.61	2830.32	2064.68	2351.01	2465.93	2375.00	2388.27
Std Dev	443.18	589.02	526.84	509.14	527.53	350.98	216.51	352.46
Maximum	3750	3750	3500	3500	3250	3250	2750	3750
Minimum	1500	1250	1750	1250	1250	1916.667	2250	1748.182
N	37	43	39	41	40	38	4	43

SERIES 12: DAILY SUCCESS RATE

(No data before January 17)

01/07 VALUE OF ALL CASES ARRIVING IN A GIVEN DAY AT THEIR ACTUAL SALES PRICE
 01/08 AS A PERCENT OF THEIR POTENTIAL VALUE AT THE ARRIVALS PRICE, FROM:

- 01/09 KARREUS - Karal
- 01/10 LINREUS - Linia
- 01/11 BOUGREUS - Bougmène
- 01/12 DOURREUS - Dourbali
- 01/13 MINREUS - Miskine
- 01/14 KOUNREUS - Koundoul

	KARREUS	LINREUS	BOUGREUS	DOURREUS	MINREUS	KOUNREUS
01/16						
01/17	70.0%	61.2%	85.6%	70.0%	100.0%	91.4%
01/18	46.2%	54.5%	85.5%	78.2%		87.4%
01/19	80.3%	74.8%	89.5%		86.3%	92.7%
01/20	66.9%	86.9%	96.9%	95.2%	100.0%	100.0%
01/21	100.0%	77.8%	89.7%	82.1%	100.0%	100.0%
01/22	100.0%	55.6%	64.1%	77.8%	93.4%	97.3%
01/23	100.0%	62.5%	81.7%	66.7%	90.7%	94.2%
01/24	100.0%	77.8%	81.5%		89.6%	81.5%
01/25	96.4%	87.4%	93.4%	60.2%	89.3%	94.4%
01/26	87.0%	87.5%	94.8%	96.2%	98.4%	100.0%
01/27	100.0%	85.2%	90.5%	91.7%	87.7%	100.0%
01/28	100.0%	78.1%	93.4%	83.4%	89.5%	88.8%
01/29	87.8%	90.2%	84.5%	97.6%	87.9%	95.7%
01/30		81.1%	97.6%	92.6%	97.7%	100.0%
01/31	94.9%	92.7%	88.8%	97.1%	100.0%	100.0%
02/01		89.6%	98.6%	70.8%		100.0%
02/02		83.0%	100.0%	89.1%	97.2%	100.0%
02/03	100.0%	91.7%	92.4%	66.7%	66.9%	76.7%
02/04	96.6%	88.9%	100.0%	95.1%		100.0%
02/05	100.0%	97.6%	100.0%	67.0%	100.0%	86.7%
02/06	100.0%	96.7%	80.2%	100.0%	100.0%	100.0%
02/07		78.9%	69.7%	77.8%	79.5%	100.0%
02/08	100.0%	64.4%	76.1%			100.0%
02/09	100.0%	72.6%	100.0%	100.0%	93.6%	100.0%
02/10	100.0%	81.3%	89.4%	91.6%		83.3%
02/11	100.0%	98.8%	88.9%	75.2%	97.1%	100.0%
02/12	87.7%	74.4%	64.3%	66.7%		100.0%
02/13	75.0%	60.0%	60.0%	83.9%	100.0%	100.0%
02/14	100.0%	94.2%	87.2%	89.2%	100.0%	100.0%
02/15	97.6%	93.6%	100.0%	100.0%		
02/16	88.9%	92.6%	90.9%	95.9%	100.0%	100.0%
02/17	63.6%	91.0%	100.0%	67.8%		
02/18	91.6%	90.6%	92.5%	100.0%	100.0%	100.0%
02/19	100.0%	77.9%		96.0%	79.2%	
02/20		92.6%	100.0%	63.0%		100.0%
02/21	100.0%	99.1%		100.0%	90.9%	100.0%
02/22		100.0%		100.0%	100.0%	100.0%
02/23		96.1%		100.0%	53.8%	100.0%
02/24	100.0%	100.0%				
02/25	100.0%	100.0%		100.0%	100.0%	100.0%
02/26	100.0%	94.0%		96.1%	100.0%	
02/27	99.5%	77.8%		55.6%	77.8%	100.0%
02/28	81.2%	52.6%	100.0%			100.0%
=====						
Average	89.5%	83.3%	87.8%	85.8%	92.1%	96.6%
Std Dev	19.6%	13.3%	11.7%	13.6%	10.7%	6.1%
Maximum	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Minimum	46.2%	52.6%	60.0%	55.6%	53.8%	76.7%
N	36	43	35	36	32	38

SERIES 13: ESTIMATED TOTAL DAILY RETURN

THE ESTIMATE IS THE TOTAL VALUE OF CASES FROM THE ARRIVALS OF A GIVEN DAY, FIGURED AT THE PRICE FOR WHICH THEY ACTUALLY SOLD, REDUCED BY:

1. PER-CASE TRANSPORT COST * NUMBER OF CASES
2. PER-CASE INTERMEDIARY FEE * NUMBER OF CASES WHERE THIS APPLIES
3. PER-CASE STORAGE FEE * NUMBER OF HOLDOVER CASES

- KARREND - Daily profit for Karal tomatoes. Transport cost is 1000 CFA; intermediary fee of 250 CFA is applied only to cases sold the first day; 50 CFA storage fee
- LINREND - Daily profit for Linia tomatoes. Transport cost is 500 CFA; intermediary fee of 250 CFA is applied only to cases sold the first day; 50 CFA storage fee
- BOUGREND - Daily profit for Bougmene tomatoes. Transport cost is 500 CFA; intermediary fee of 300 CFA applies to all cases; no storage expense is attributed to the seller
- DOURREND - Daily profit for Dourbali tomatoes. Transport cost is 900 CFA; intermediary fee of 250 CFA is applied only to cases sold the first day; 50 CFA storage fee
- MINREND - Daily profit for Miskine tomatoes. Transport cost is 400 CFA; intermediary fee of 250 CFA is applied only to cases sold the first day; 50 CFA storage fee
- KOUNREND - Daily profit for Koundoul tomatoes. Transport cost is 500 CFA; intermediary fee of 250 CFA is applied only to cases sold the first day; 50 CFA storage fee
- DAGREND - Daily profit for Dagomassa tomatoes. Transport cost is 500 CFA; intermediary fee of 250 CFA is applied only to all cases; 50 CFA storage fee

(No data before January 17)

01/07
 01/08
 01/09
 01/10
 01/11
 01/12
 01/13
 01/14
 01/15
 01/16

	KARREND	LINREND	BOUGREND	DOURREND	MINREND	KOUNREND	DAGREND
01/17							
01/18	22400	132300	216500	36400	96200	22300	
01/19	9450	88350	38200	95700	64400	64150	
01/20	78800	122600	208900	42000	63600	48500	
01/21	8500	190000	375600	104500	16450	90000	
01/22	20000	86400	239700	27300	204450	81000	
01/23	72000	169400	97250	54600	43000	71300	
01/24	70000	88900	264500	53100	73900	72750	
01/25	8000	219600	194000	29000	52400	82600	
01/26	57000	286300	203000	10800	22750	44100	
01/27	22450	48000	189000	122850	143500	80000	
01/28	20000	255400	236000	103200	44800	82500	
01/29	66000	141800	189500	47000	94500	65650	
01/30	35100	86900	222000	76250	32600	72100	
01/31		127550	363000	83200	33000	80000	6000
02/01	32100	339500	253400	100400	70500	66000	
02/02		301000	164500	24900	23100	96000	
02/03		141950	517500	45200	37300	36000	9000
02/04	99000	181350	261000	24750	14700	37800	
02/05	115000	256300	180000	58500	14700	31500	
02/06	14000	373500	535000	37900	60900	35600	39000
02/07	32250	508600	144000	43500	25600	60000	21000
02/08		188800	96000	45500	32000	50000	
02/09	59000	121650	65000	23850	18900	40500	
02/10	43500	113850	201000	285000	33300	48000	
02/11	56000	327700	202000	31400	7350	25300	
02/12	38000	447500	175000	33800	73450	57750	
02/13	14000	271250	56000	30150	15750	96000	
02/14	7050	155800	20000	86650	99200	25000	
02/15	40000	503100	66500	28800	69300	31500	
02/16	40350	207400	162500	104000			
02/17	74750	269700	88000	119800	31500	13500	
02/18	5600	340400	182500				
02/19	35250	274400	31350	144000	49350	31500	
02/20	23000	208800	78000	77500	20100		
02/21		360850		19500	34200	24000	
02/22	96000	394000	2000	89250	22800	26000	
02/23		587500		87000	42000	60750	
02/24		398000	18000	169750	14300	22500	
02/25	60000	879000					
02/26	36000	534000	10000	139500	19200	60000	
02/27	6750	577800		52300	52500		
02/28	41150	307200		12200	23400	38750	
02/29							

Sum	1458450	11614000	6596400	2801000	1890950	1970900	75000
Average	41670.00	276523.81	176281.54	70025.00	48455.90	53267.57	18750.00
Std Dev	28460.03	170490.81	123265.54	52332.93	38487.90	23266.76	12968.71
Maximum	115000	879000	535000	285000	204450	96000	39000
Minimum	5600	48000	2000	10800	7350	13500	6000
N	35	42	37	40	39	37	4

SERIES 14: ESTIMATED AVERAGE PER-CASE DAILY RETURN
 THE ESTIMATE IS THE TOTAL VALUE OF CASES FROM THE ARRIVALS OF A GIVEN DAY (cf.
 SERIES 13) DIVIDED BY THE NUMBER OF CASES,

Date	KARPROF	LINPROF	BOUGPROF	DOURPROF	MINPROF	KOUNPROF	DAGPROF
01/07							
01/08							
01/09							
01/10							
01/11							
01/12							
01/13							
01/14							
01/15							
01/16							
01/17	KARPROF	LINPROF	BOUGPROF	DOURPROF	MINPROF	KOUNPROF	DAGPROF
01/18	700.0	1407.4	2023.4	700.0	2600.0	1592.9	
01/19	450.0	950.0	2450.0	996.9	2300.0	2138.3	
01/20	1486.8	2009.8	2153.6	1200.0	2446.2	2309.5	
01/21	772.7	1711.7	2957.5	1393.3	2350.0	2000.0	
01/22	1000.0	1200.0	2159.5	758.3	2350.0	2250.0	
01/23	1000.0	700.0	1332.2	700.0	1954.5	1455.1	
01/24	1000.0	700.0	1930.7	450.0	1894.9	1865.4	
01/25	1000.0	1200.0	1480.9	200.0	1871.4	1558.5	
01/26	934.4	1272.4	2260.9	284.2	1625.0	1633.3	
01/27	976.1	1500.0	2423.1	1170.0	2110.3	1250.0	
01/28	1000.0	1647.7	2185.2	1075.0	2240.0	2500.0	
01/29	1000.0	1313.0	2283.1	701.5	1852.9	1526.7	
01/30	835.7	965.6	2000.0	740.3	1811.1	1897.4	
01/31		1371.5	2420.0	866.7	2062.5	2000.0	2000.0
02/01	729.5	1825.3	2129.4	947.2	2350.0	1500.0	
02/02		1535.7	2455.2	518.8	1050.0	2000.0	
02/03		1220.3	2500.0	852.8	1554.2	1500.0	1500.0
02/04	1000.0	1363.5	2250.0	450.0	1336.4	1260.0	
02/05	1419.8	1301.0	2500.0	975.0	1050.0	1500.0	
02/06	1000.0	1945.3	2500.0	823.9	2100.0	1483.3	1500.0
02/07	750.0	1689.7	1846.2	750.0	1600.0	1500.0	1500.0
02/08		1151.2	1500.0	700.0	1230.8	1250.0	
02/09	1000.0	1351.7	1710.5	450.0	1050.0	1500.0	
02/10	1500.0	1559.6	3000.0	1500.0	1958.8	2000.0	
02/11	1000.0	1567.9	2148.9	848.6	1050.0	1807.1	
02/12	1000.0	1971.4	2134.1	554.1	1791.5	1750.0	
02/13	777.8	1238.6	1000.0	450.0	1050.0	2000.0	
02/14	587.5	950.0	1000.0	734.3	1600.0	1250.0	
02/15	1000.0	2105.0	2078.1	778.4	2100.0	1750.0	
02/16	960.7	1633.1	2500.0	1000.0			
02/17	1661.1	1615.0	2200.0	1174.5	2100.0	1500.0	
02/18	700.0	1801.1	2500.0				
02/19	1305.6	1781.8	950.0	1500.0	2350.0	1750.0	
02/20	1000.0	1513.0	2000.0	933.7	1256.3		
02/21		1850.5		240.7	1800.0	1500.0	
02/22	1500.0	1979.9	1000.0	1750.0	1900.0	2000.0	
02/23		2500.0		1500.0	2100.0	2250.0	
02/24		2884.1	2000.0	1750.0	1300.0	1500.0	
02/25	2500.0	3000.0					
02/26	2000.0	3000.0	1000.0	2250.0	1600.0	2500.0	
02/27	750.0	1857.9		1413.5	2100.0		
02/28	748.2	1200.0		200.0	1300.0	1250.0	
02/29							

	Average	1058.45	1603.37	2026.55	907.05	1798.63	1737.23	1625.00
Std Dev	400.81	530.37	532.57	455.53	446.08	349.48	216.51	
Maximum	2500	3000	3000	2250	2600	2500	2000	
Minimum	450	700	950	200	1050	1250	1500	
N	35	42	37	40	39	37	4	

SERIES 15: DAILY NUMBER OF CASES AND PRICE FOR ARRIVALS - FULL SERIES

DAILY PRICES RECORDED OR COMPUTED FOR A CASE OF TOMATOES ARRIVING IN THE MARKET BETWEEN AUGUST 1, 1991 AND FEBRUARY 29, 1992

- N - Total number of cases arriving in N'Djamena markets on the date indicated
- PRICE - Recorded price: a single price is recorded in the data for each day that measures were taken between August 1 and November 18, 1991
- MEDIAN - Median value for the price array recorded on the day indicated
- AVERAGE - Weighted average of all prices for arrivals in the market on the day indicated. Average calculated as:

$$\frac{\sum(n*p)}{N} \text{ where}$$

n = number of cases from a region
p = price for those cases
N = total number of arrivals in mkt

DATE	N	PRICE	DATE	N	MEDIAN	AVERAGE
08/01	12	18000	01/13	374	3800	3952
08/02	8	19000	01/14	554	3750	3930
08/03	22	18000	01/15	619	3750	3247
08/05	13	15750	01/16	583	3300	3440
08/07	5	21200	01/17	670	3250	3121
08/15	25	16000	01/18	682	3250	3221
08/19	9	16000	01/19	579	3250	3135
08/23	13	15200	01/20	470	3300	3338
08/26	22	15200	01/21	576	3000	3172
08/31	13	12000	01/22	881	3000	3010
10/04	13	13000	01/23	886	2750	2432
10/07	10	10200	01/24	963	2750	2804
10/09	17	10000	01/25	835	2750	2743
10/11	20	10000	01/26	632	2500	2517
10/15	22	9725	01/27	522	2800	2660
10/17	15	11000	01/28	645	2750	2855
10/19	10	13000	01/29	684	2750	2639
10/23	10	13000	01/30	621	2250	2517
10/25	8	13000	01/31	564	2500	2829
10/30	18	13000	02/01	751	2500	2656
11/06	7	13000	02/02	570	2750	2727
11/08	11	13500	02/03	656	3000	2884
11/11	6	12500	02/04	650	2750	2568
11/13	8	13500	02/05	549	2750	2555
11/16	10	13500	02/06	657	2750	2918
11/18	15	13000	02/07	674	2500	2432
			02/08	745	2250	2162
			02/09	463	3000	2495
			02/10	614	3000	3024
			02/11	648	2750	3011
			02/12	863	2500	2872
			02/13	902	2500	3170
			02/14	607	2300	2665
			02/15	495	2750	2962
			02/16	436	2750	2558
			02/17	561	2750	2829
			02/18	479	2750	2930
			02/19	512	2800	2753
			02/20	527	2750	2731
			02/21	433	2750	2684
			02/22	361	2750	2861
			02/23	393	3000	3104
			02/24	322	3250	3623
			02/25	379	3800	3931
			02/26	357	3250	3730
			02/27	779	2750	2938
			02/28	594	2250	3404
			02/29	601	2750	3842

Observations:	93 total	67 from 11/20
Average values:	361 cases/day	6294 CFA/case using median price 6344 CFA/case using average price
Maximum value:	963 cases/day	21200 CFA/case
Minimum value:	5 cases/day	2250 CFA/case using median price 2162 CFA/case using average price

ANNEX 2: DESCRIPTIVE STATISTICS AND CORRELATIONS ON THE DATA

DESCRIPTIVE STATISTICS FOR THE BASIC VARIABLES IN THE STUDY AND CORRELATIONS BETWEEN
SELECTED VARIABLES

Statistical procedures executed with SPSS-PC.

SERIES 1: DESCRIPTIVE STATISTICS ON ALL VARIABLES

Variable	Mean	Std Dev	Minimum	Maximum	N
KARCAIS	42.41	23.47	10.0	104.0	46
LINCAIS	199.44	87.30	74.0	567.0	54
BOUGCAIS	103.73	57.46	20.0	248.0	49
DOURCAIS	87.16	36.79	30.0	197.0	49
MISCAIS	36.76	20.84	7.0	91.0	41
KOUNCAIS	32.15	13.81	9.0	64.0	46
DAGCAIS	11.80	8.61	6.0	26.0	5
AUTRCAIS	25.38	8.05	12.0	40.0	16
KARINV	7.80	9.71	.0	34.0	30
LININV	70.60	59.89	5.0	256.0	40
BOUGINV	24.36	19.48	.0	68.0	36
DOURINV	35.64	31.93	.0	145.0	36
MISINV	8.81	7.56	.0	28.0	31
KOUNINV	3.63	5.01	.0	18.0	24
DAGINV	1.00	2.00	.0	4.0	4
NEWCAIS	472.70	131.41	229.0	807.0	54
TOTCAIS	592.41	160.41	316.0	963.0	54
TOTNEW	280.56	103.70	98.0	500.0	43
TOTINV	118.53	98.37	.0	422.0	53
TOTSOLD	470.06	95.20	262.0	695.0	53
MEDPRIX	2890.74	393.59	2250	3800	54
KARPRIX	2592.39	511.96	1750.0	3750.0	46
LINPRIX	2782.41	495.37	1750.0	4000.0	54
BOUGPRIX	3346.94	322.81	2500.0	4300.0	49
DOURPRIX	2525.51	412.20	2000.0	3750.0	49
MISPRIX	2924.39	546.82	2250.0	4300.0	41
KOUNPRIX	2701.09	487.68	2000.0	4000.0	46
DAGPRIX	2750.00	866.03	2250.0	4250.0	5
AUTRPRIX	2759.37	474.42	2000.0	3750.0	16
AVGNEWP	2985.32	421.37	2162.3	3952.1	54
KARCINC	2255.84	449.30	1500.0	3750.0	37
LINCINC	2246.61	595.99	1250.0	3750.0	43
BOUGCINC	2830.32	533.72	1750.0	3800.0	39
DOURCINC	2064.68	515.46	1250.0	3500.0	41
MINCINC	2351.01	534.25	1250.0	3250.0	40
KOUNCINC	2465.93	355.69	1916.7	3250.0	35
DAGCINC	2375.00	250.00	2250.0	2750.0	4
AVGCINC	2388.27	356.63	1745.2	3750.0	43

SERIES 2: CORRELATIONS

CORRELATIONS BETWEEN PRICE SERIES FOR ARRIVALS

	KARPRIX	LINPRIX	BOUGPRIX	DOURPRIX	MISPRIX	KOUNPRIX	DAGPRIX	AUTRPRIX	AVGNEXP	MEDPRIX
LINPRIX	.7057 (46) P: .000									
BOUGPRIX	.4956 (42) P: .000	.4049 (49) P: .002								
DOURPRIX	.7252 (41) P: .000	.7743 (49) P: .000	.5861 (44) P: .000							
MISPRIX	.6147 (36) P: .000	.6036 (41) P: .000	.4527 (35) P: .001	.5922 (37) P: .000						
KOUNPRIX	.5984 (39) P: .000	.5458 (46) P: .000	.4896 (43) P: .000	.6551 (43) P: .000	.7636 (38) P: .000					
DAGPRIX	.7475 (4) P: .126	.9005 (5) P: .019	.9622 (5) P: .003	.9622 (5) P: .004	.9428 (5) P: .008	.9488 (5) P: .007				
AUTRPRIX	.2979 (15) P: .140	.5578 (16) P: .012	.1249 (11) P: .253	.4658 (15) P: .040	.4820 (12) P: .056	.3167 (13) P: .146	.			
AVGNEXP	.7515 (46) P: .000	.7774 (54) P: .000	.2369 (49) P: .019	.6573 (45) P: .000	.6372 (41) P: .000	.6051 (46) P: .000	.2471 (5) P: .035	.7166 (16) P: .001		
MEDPRIX	.7958 (46) P: .000	.7866 (54) P: .000	.5850 (45) P: .000	.7495 (49) P: .000	.7634 (41) P: .000	.7452 (46) P: .000	.7763 (5) P: .001	.6760 (15) P: .000	.7039 (54) P: .000	

(Coefficient / (Cases) / 1-tailed Significance)

“.” is printed if a coefficient cannot be computed

CORRELATIONS BETWEEN PRICE SERIES FOR ARRIVALS AND VOLUME MEASURES

	NEWCAIS	TOTCAIS	TOTNEW	TOTINV	TOTSOLD
KARPRIX	-.3934 (46) P= .003	-.5331 (46) P= .000	-.0788 (37) P= .322	-.3932 (45) P= .004	-.4641 (45) P= .001
LINPRIX	-.3074 (54) P= .012	-.5602 (54) P= .000	.1120 (43) P= .237	-.4013 (53) P= .001	-.4954 (53) P= .000
BOUGPRIX	.0481 (49) P= .371	-.2518 (49) P= .040	.2015 (38) P= .113	-.1615 (48) P= .136	-.2802 (48) P= .027
DOURPRIX	-.2212 (49) P= .063	-.4602 (49) P= .000	.0186 (40) P= .455	-.2657 (48) P= .034	-.4954 (48) P= .000
MISPRIX	-.1808 (41) P= .129	-.3210 (41) P= .020	-.0569 (33) P= .377	-.2415 (41) P= .064	-.2879 (41) P= .034
KOUNPRIX	-.0642 (46) P= .336	-.2482 (46) P= .048	-.0194 (38) P= .454	-.1222 (45) P= .212	-.3071 (45) P= .020
DAGPRIX	-.8563 (5) P= .032	-.8872 (5) P= .022	-.6295 (4) P= .185	-.6684 (5) P= .109	-.9451 (5) P= .008
AUTRPRIX	-.1187 (16) P= .331	-.2219 (16) P= .204	.1544 (14) P= .299	.0657 (15) P= .408	-.4928 (15) P= .031
AVGNEWP	-.2289 (54) P= .048	-.3486 (54) P= .005	.0001 (43) P= .500	-.1831 (53) P= .095	-.3886 (53) P= .002
MEDPRIX	-.1701 (54) P= .109	-.3877 (54) P= .002	-.0166 (43) P= .458	-.2205 (53) P= .056	-.3840 (53) P= .002

CORRELATIONS BETWEEN AVERAGE PRICE FOR ALL CASES SOLD AND VOLUME MEASURES

	NEWCAIS	TOTCAIS	TOTNEW	TOTINV	TOTSOLD
KARCINC	-.1942 (37) P= .125	-.3925 (37) P= .008	.2861 (36) P= .045	-.2820 (36) P= .048	-.3578 (36) P= .016
LINCINC	-.1643 (43) P= .146	-.6064 (43) P= .000	.4904 (42) P= .000	-.4839 (42) P= .001	-.5461 (42) P= .000
BOUGCINC	.1756 (39) P= .143	-.0985 (39) P= .275	.3302 (38) P= .021	-.0949 (38) P= .285	-.0761 (38) P= .325
DOURCINC	-.1539 (41) P= .168	-.5513 (41) P= .000	.3561 (41) P= .011	-.2920 (41) P= .032	-.6300 (41) P= .000
MINCINC	.2608 (40) P= .052	.0966 (40) P= .364	.1887 (39) P= .125	.1915 (39) P= .121	-.1361 (39) P= .204
KOUNCINC	.0163 (38) P= .461	-.1871 (38) P= .130	.0557 (37) P= .372	.0199 (37) P= .453	-.3520 (37) P= .016
DAGCINC	-.6315 (4) P= .184	-.6269 (4) P= .187	-.6295 (4) P= .185	-.3490 (4) P= .326	-.7839 (4) P= .108
AVGCINC	-.0712 (43) P= .325	-.5223 (43) P= .000	.4767 (42) P= .001	-.3346 (42) P= .015	-.5582 (42) P= .000

(Coefficient / (Cases) / 1-tailed Significance)

" ." is printed if a coefficient cannot be computed

ANNEX 3: GRAPHS

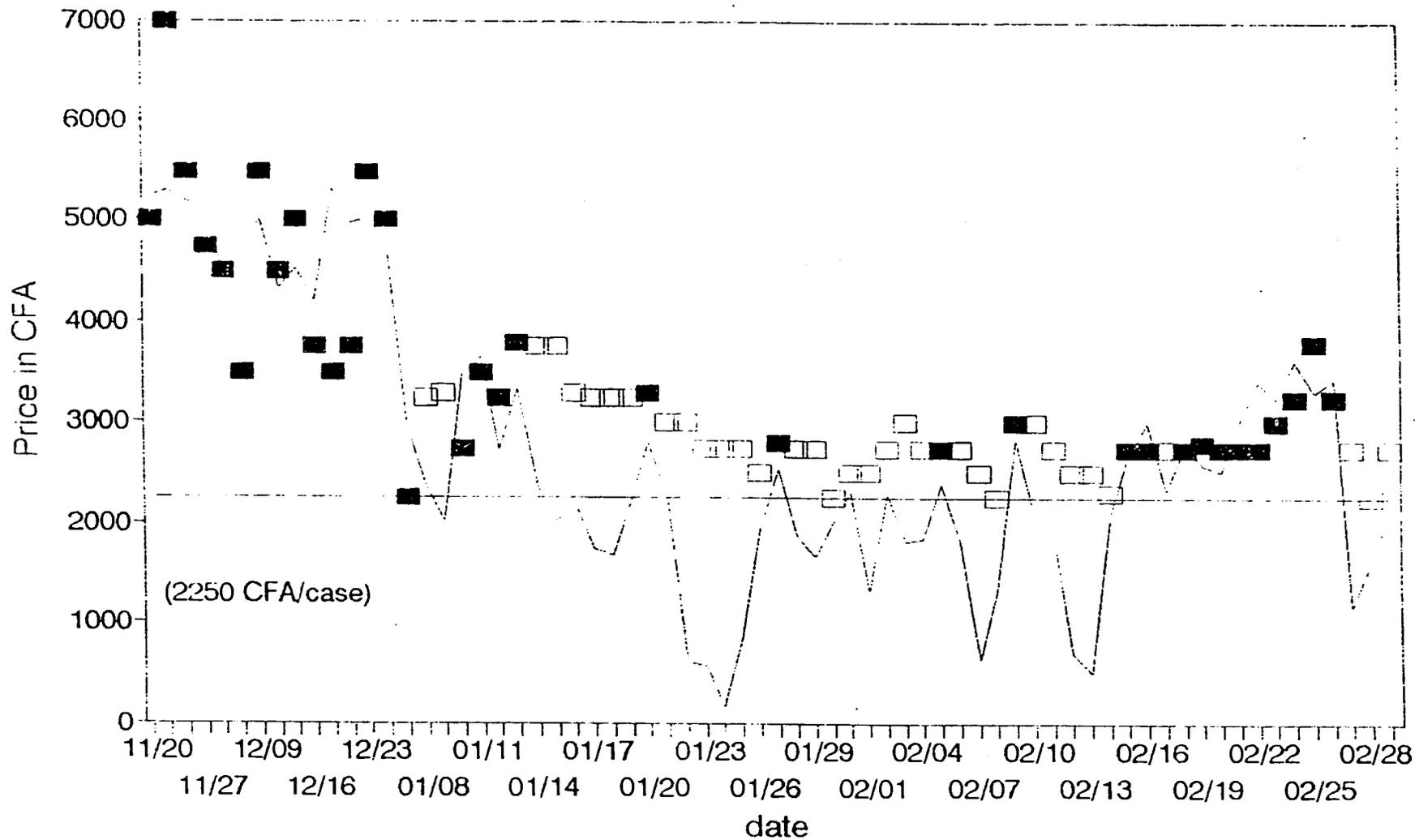
SELECTED GRAPHS OF RELATIONSHIPS BETWEEN DATA SERIES

SERIES 1: LONG PRICE AND VOLUME SERIES FOR ARRIVALS

VOLUME AND PRICE DATA INCLUDING OBSERVATIONS FROM THE PERIOD AUGUST TO THE END OF 1991

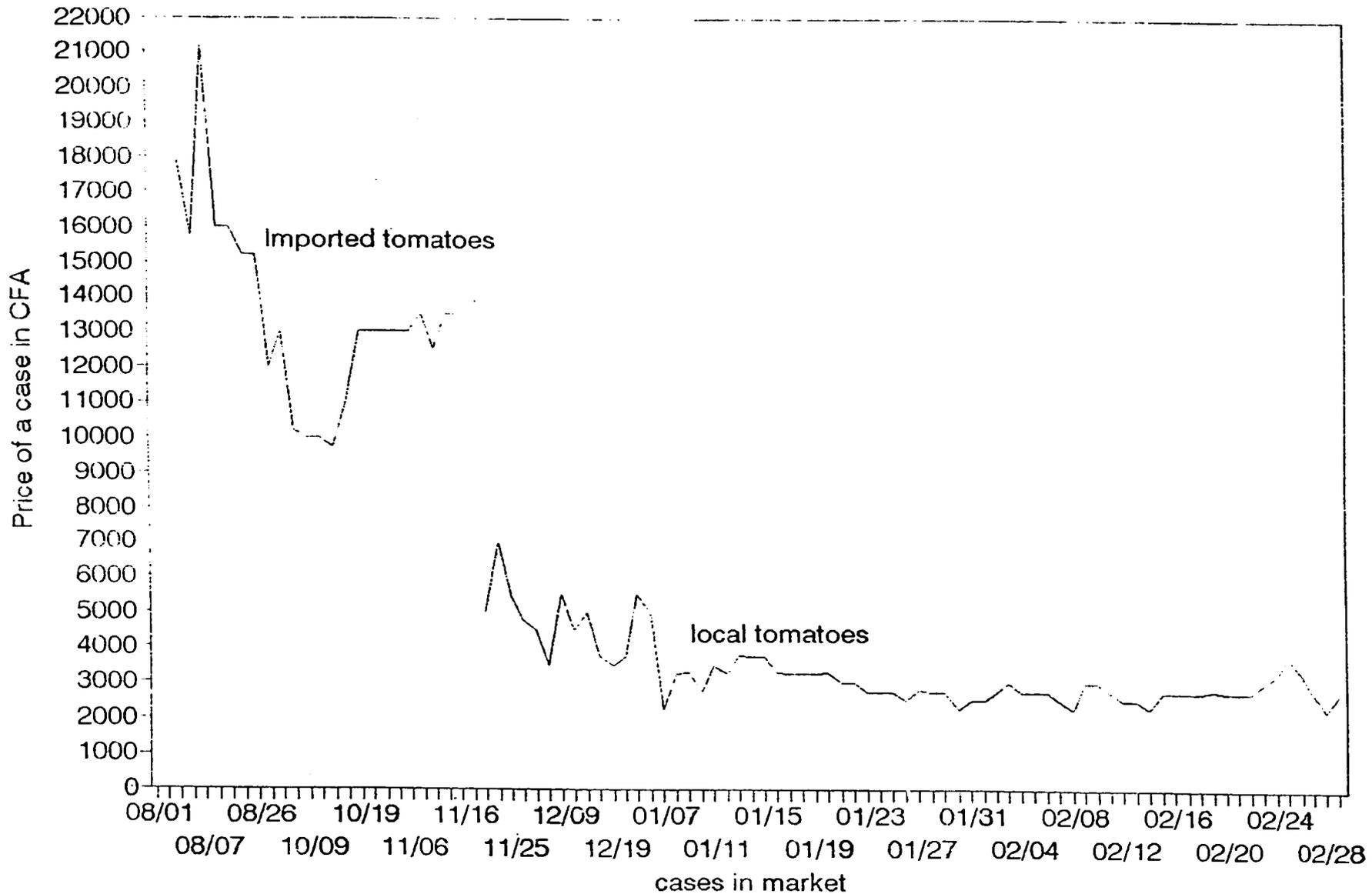
1. ACTUAL AND PREDICTED MEDIAN PRICE OF A CASE OF ARRIVALS, BY DATE (11/91 TO 2/92). Data relating to the regression in figure 5; the graph is the same as figure 6, with the predicted price superimposed
2. PRICE OF A CASE OF NEW ARRIVALS BY DATE OF ARRIVAL (8/91 TO 2/92). A single observed price is plotted for dates before November 20, 1991; the median price is used thereafter
3. RELATIONSHIP BETWEEN QUANTITY AND PRICE - FULL PRICE SERIES (8/91 TO 2/92). Price (Y axis) plotted against volume (X axis) for the entire series of observations. A single observed price is plotted for dates before November 20, 1991; the median price is used thereafter

Actual and predicted median price of a case of arrivals, by date (11/91-2/92)

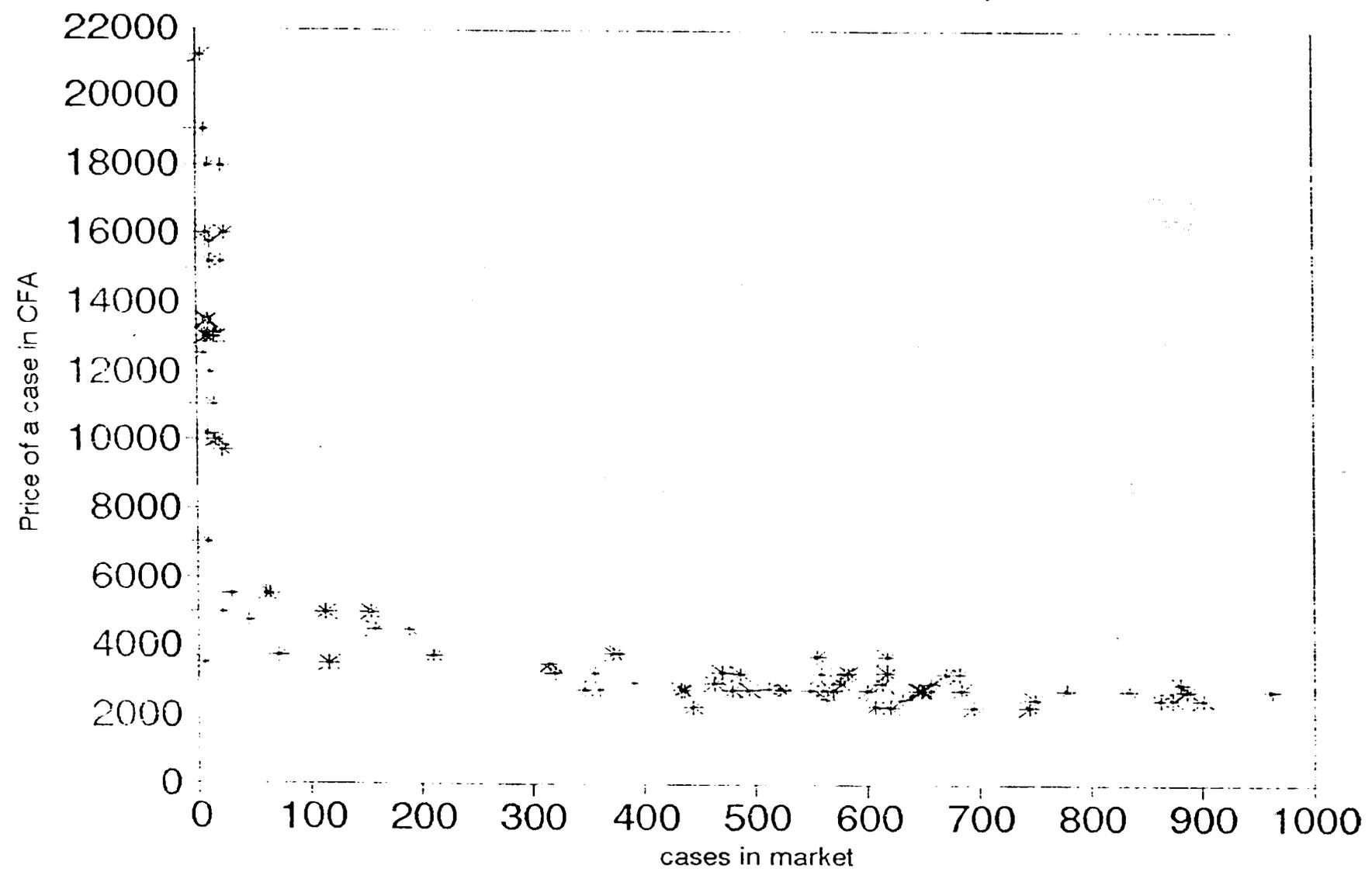


■ (in regression) □ (out of regression) — Predicted value

Price of a case of new arrivals by date of arrival: August '91 to February '92



- full price series (8/91 - 2/92)



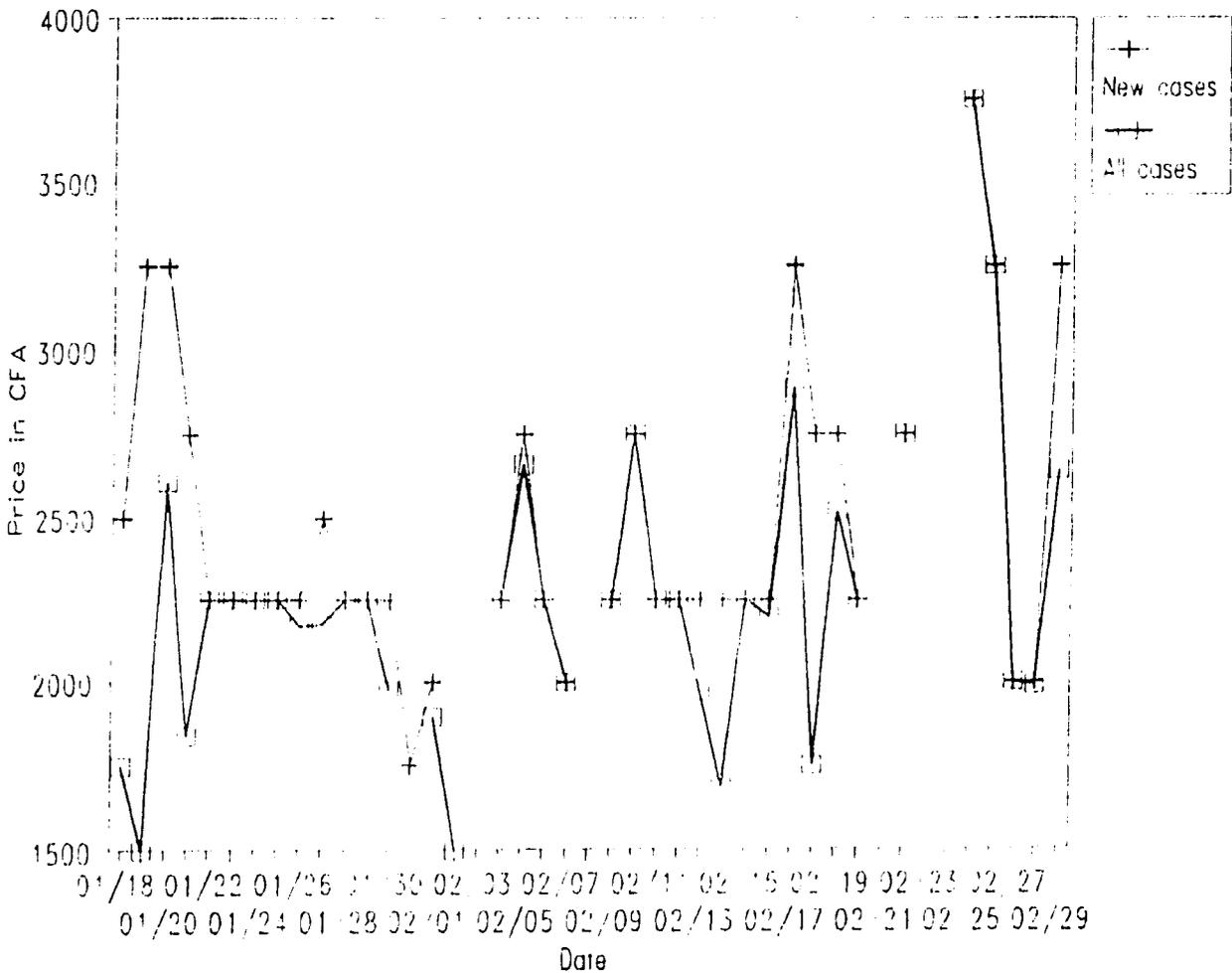
SERIES 2: COMPARISON OF DAILY ARRIVALS PRICES AND ACTUAL PRICES FOR CASES SOLD

ARRIVALS PRICE FOR A GIVEN DAY AND AVERAGE PRICE OF ALL CASES SOLD FROM THE LOT THAT ARRIVED ON THAT DAY

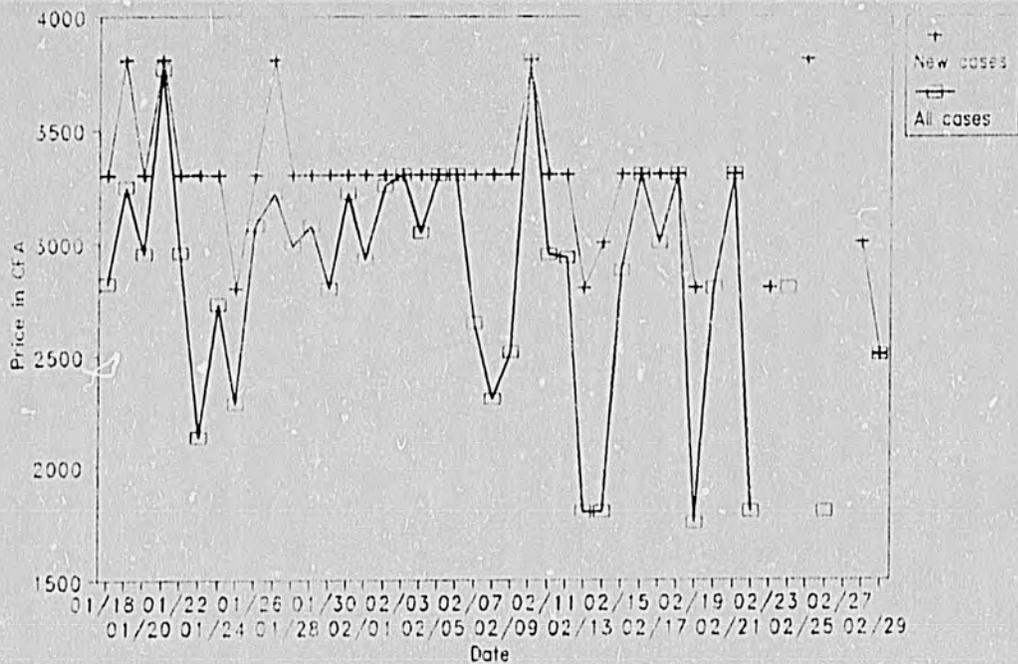
Data series January 18 to February 29, 1992. for:

KARAL
BOUGMENE
LINIA

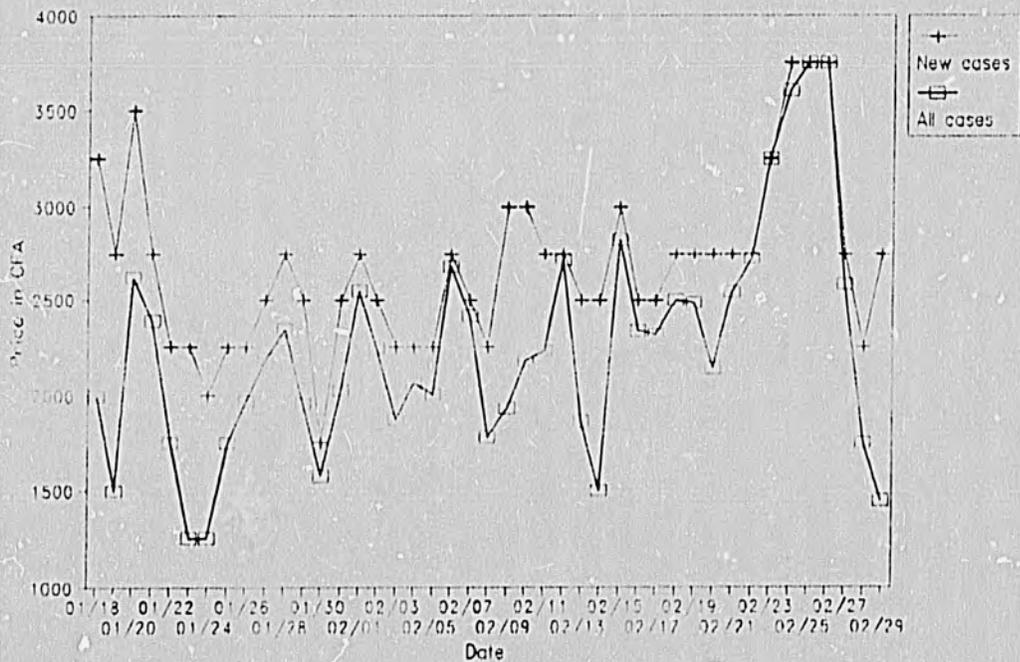
Karal: daily new case price and daily average price for all cases sold



Bougumene: daily new case price and daily average price for all cases sold



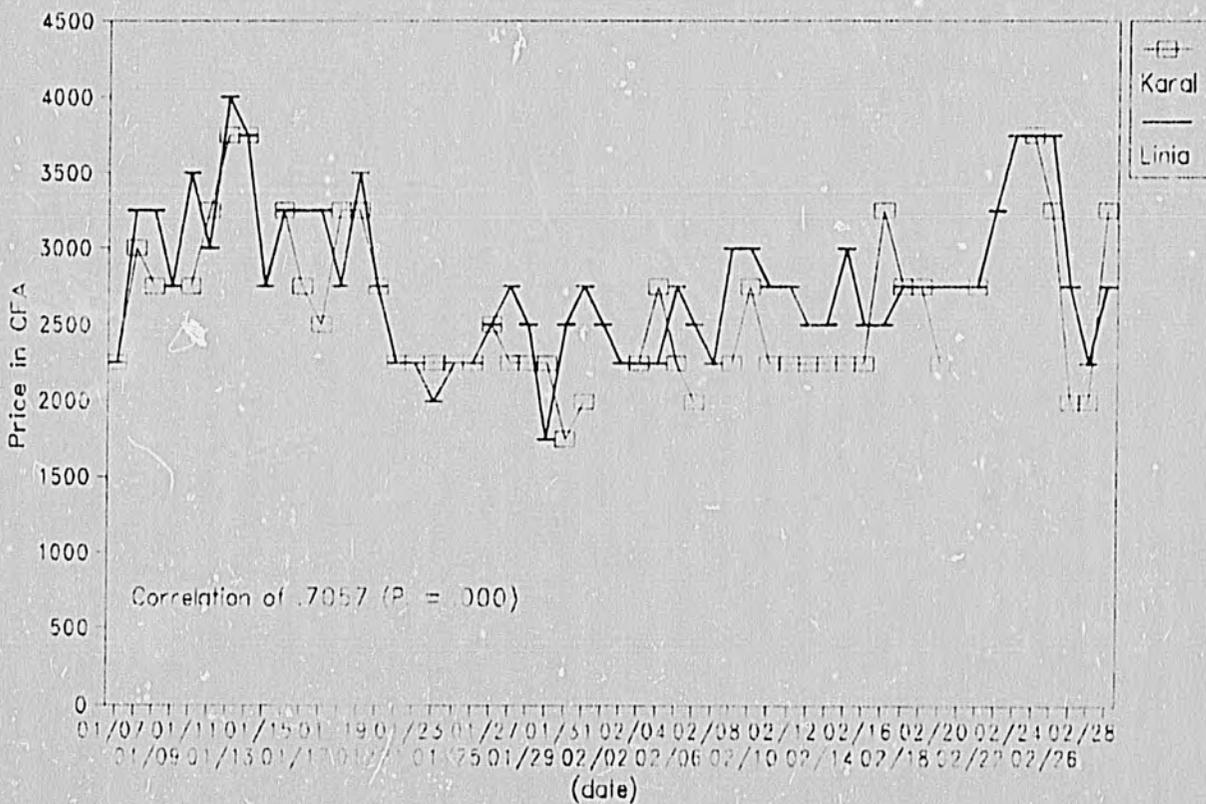
Linia: daily new case price and daily average price for all cases sold



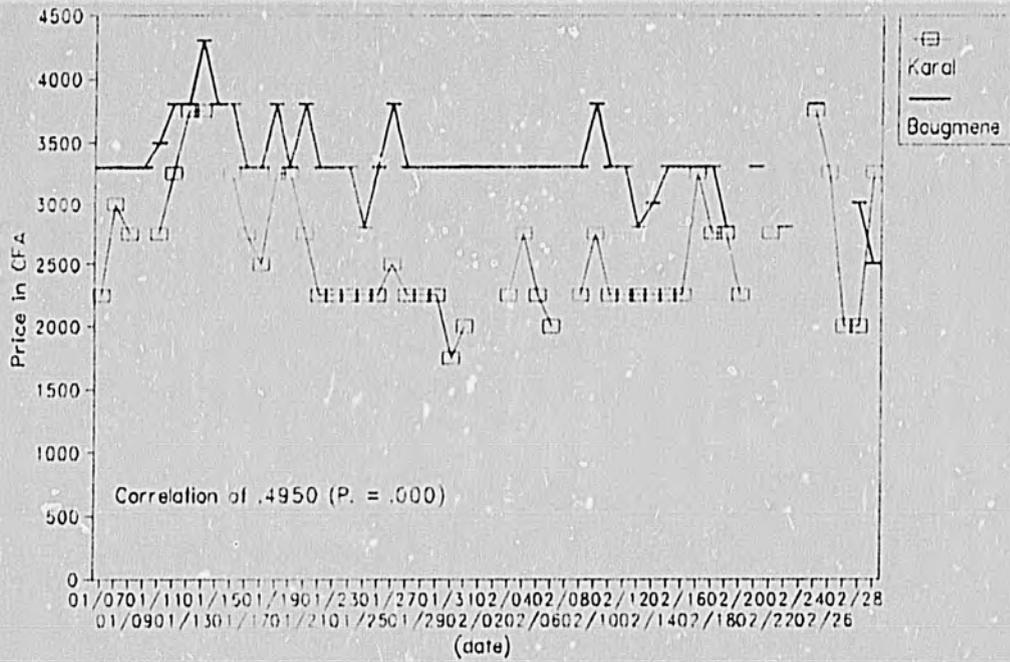
SERIES 3: COMPARISON OF DAILY ARRIVALS PRICES FOR KARAL, LINIA AND BOUGMENE

Data series for January 7 to February 29, 1991

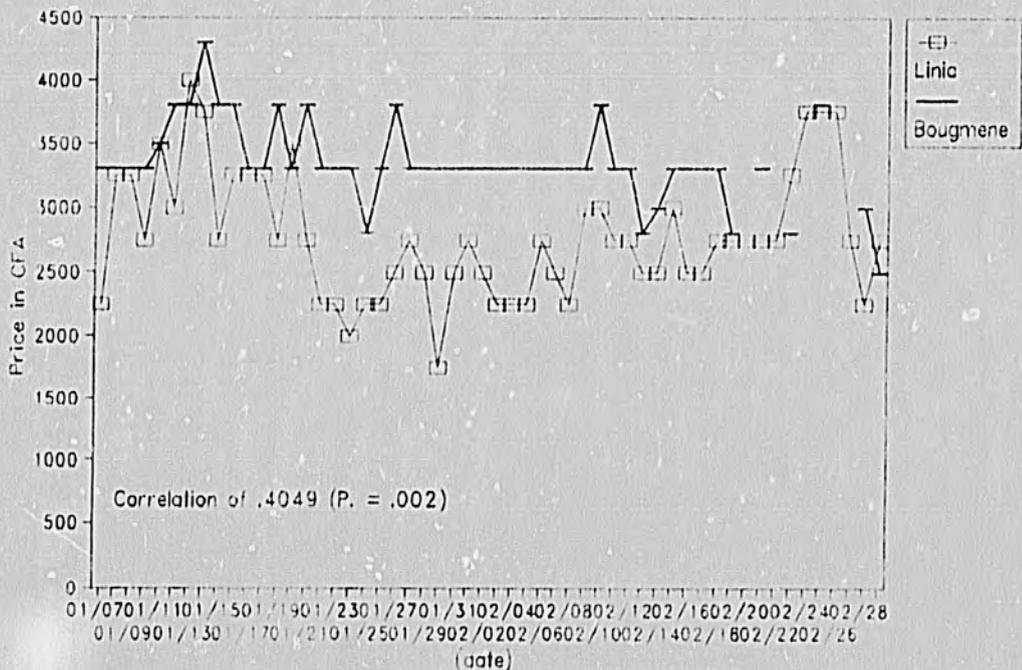
Daily prices for a case of new tomatoes
Karal and Linia



Daily prices for a case of new tomatoes Karai and Bougmene



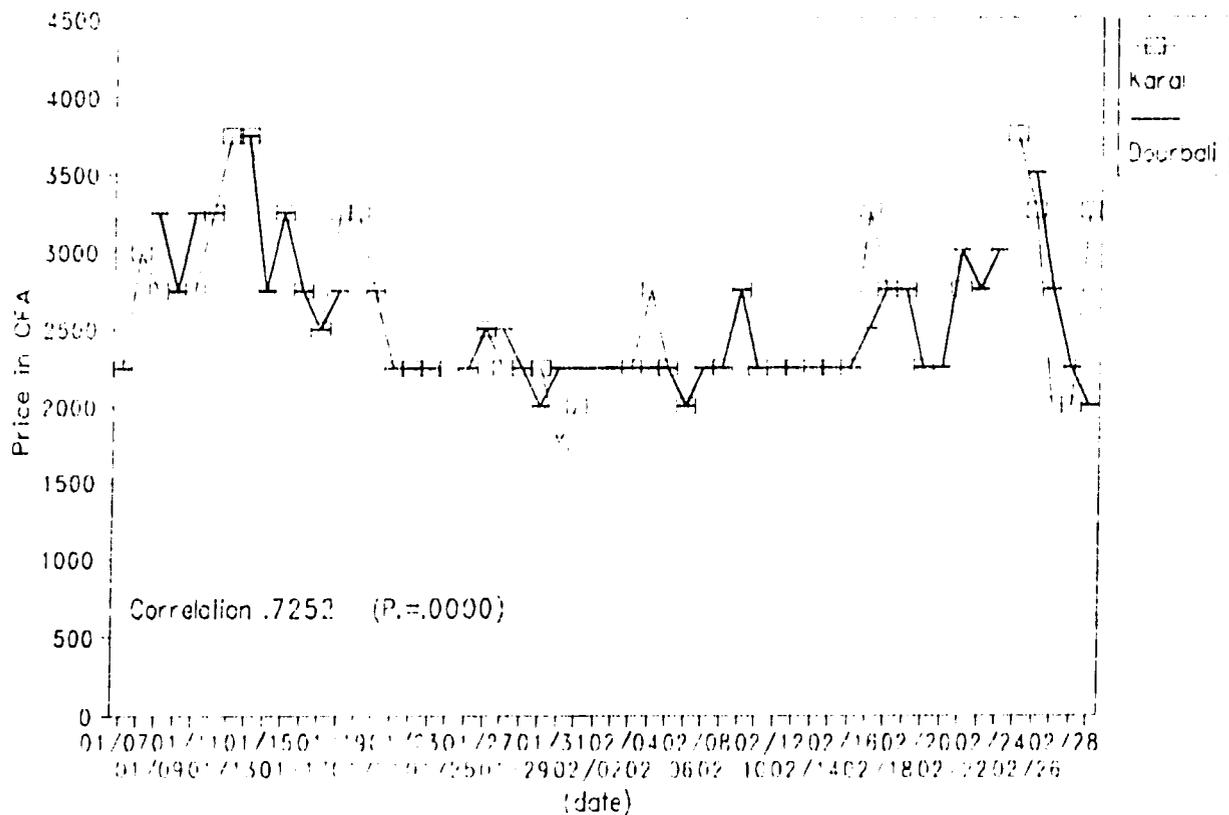
Daily prices for a case of new tomatoes Linic and Bougmene



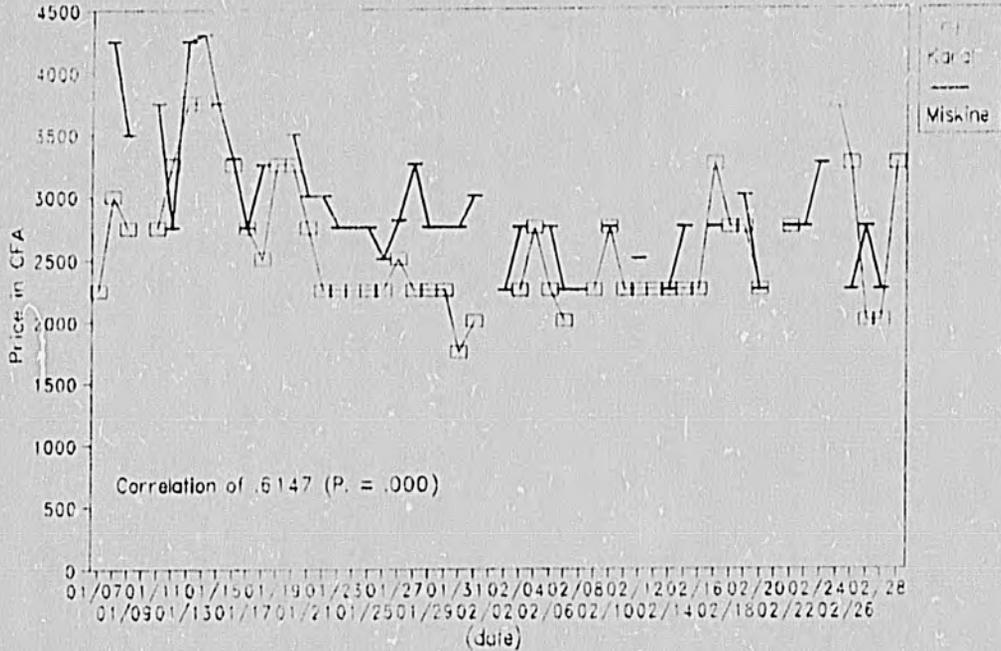
SERIES 4: COMPARISON OF DAILY ARRIVALS PRICES FOR KARAL WITH THOSE FOR DOURBALI, MISKINE AND KOUNDOU

Data series for January 1 to February 29, 1997

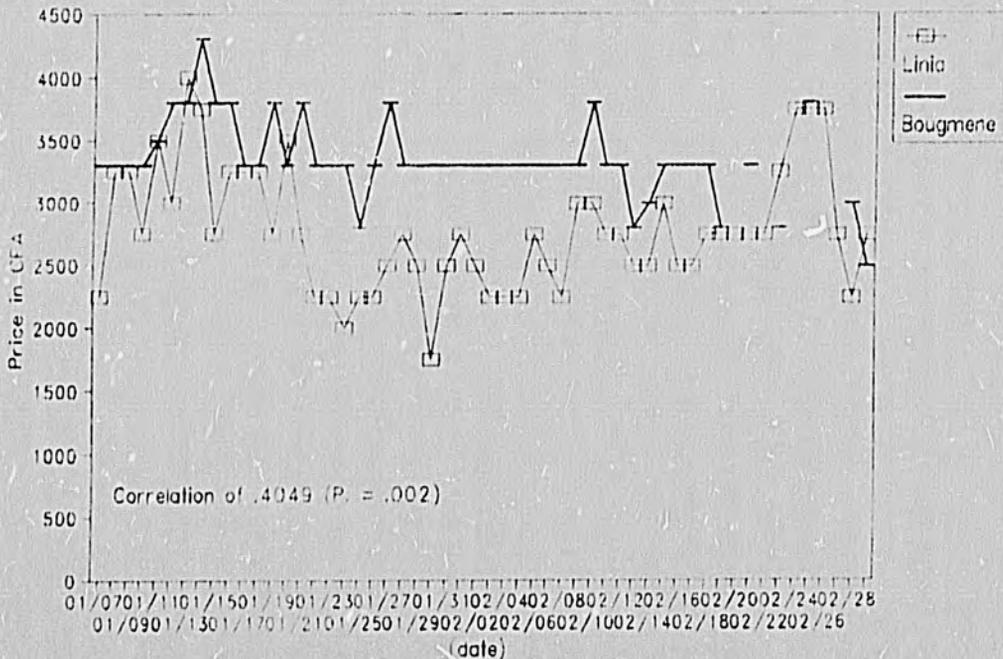
Daily prices for a case of new tomatoes
Karal and Dourbali



Daily prices for a case of new tomatoes
Karaï and Miskine



Daily prices for a case of new tomatoes
Linik and Bougmene



ANNEX 4: OBSERVED PRICES FOR ARRIVALS AND PRICES PREDICTED BY THE REGRESSION EQUATION IN SECTION III

OBSERVED MEAN AND MEDIAN PRICES FOR A CASE OF ARRIVALS AT OBSERVED LEVELS OF TOTAL NUMBER OF CASES OF TOMATOES IN THE MARKET, BETWEEN 100 AND 650 CASES, AND PREDICTED PRICES FOR THOSE LEVELS.

PREDICTED PRICES FOR 50 CASE INTERVALS BETWEEN 100 AND 650 CASES

N of Cases	Mean Price	Median Price	Predicted Price	N of Cases	Predicted Price
114	4928	2250	5111		
116	3543	4125	5098	100	5202
155	5242	5125	4846	.....	.....
158	4530	4800	4826	150	4878
190	5218	4875	4619	.....	.....
212	3528	3833	4477	200	4554
316	3469	3250	3803	.....	.....
322	3623	3800	3765	250	4231
347	2930	3500	3603	.....	.....
357	3730	2750	3538	300	3907
361	2861	3000	3512	.....	.....
374	3952	3750	3428	350	3583
379	3931	3250	3395	.....	.....
393	3104	3250	3305	400	3260
433	2684	2750	3046	.....	.....
436	2558	2750	3026	450	2936
444	2418	3250	2975	.....	.....
463	2495	3000	2852	500	2612
470	3338	3000	2806	.....	.....
479	2930	2800	2749	550	2288
487	3231	3800	2696	.....	.....
495	2962	2750	2644	600	1965
512	2753	2750	2534	.....	.....
522	2660	2750	2470	650	1641
527	2733	2750	2437		
549	2555	2750	2295		
554	3930	3750	2263		
559	3336	3300	2230		
561	2829	2750	2217		
564	2829	2500	2192		
570	2727	3000	2159		
576	3172	3000	2120		
579	3135	3300	2101		
583	3440	3250	2075		
607	2665	2750	1919		
614	3024	2750	1874		
619	3247	3300	1842		
619	3240	2750	1842		
621	2517	2500	1829		
632	2517	2800	1758		
645	2855	2750	1673		
648	3011	2500	1654		
650	2568	2750	1641		