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ALBANIA CITRUS: VALUE CHAIN ASSESSMENT

USAID – ALBANIA AGRICULTURE COMPETITIVENESS (AAC) PROGRAM



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CONTENTS

- ABBREVIATIONS IV**
- EXECUTIVE SUMMARY V**
 - INTRODUCTION V
 - END-MARKETS FOR ALBANIAN MANDARIN V
 - THE ALBANIAN MANDARIN VALUE CHAIN VI
 - Vision vii
- 1. INTRODUCTION 1**
 - 1.1 STUDY OBJECTIVE 1
 - 1.2 HISTORY AND ECONOMIC RELEVANCE OF CITRUS IN ALBANIA 1
 - 1.3 FOCUS OF THE STUDY – FRESH MANDARIN 2
- 2. CITRUS PRODUCTION AND TRADE IN ALBANIA 4**
 - 2.1 PRODUCTION 4
 - 2.2 TRADE 6
- 3. END-MARKETS FOR ALBANIAN MANDARIN 8**
 - 3.1 THE DOMESTIC MARKET 8
 - Domestic Consumer Preferences 9
 - Albanian Supermarkets 10
 - 3.2 EXPORT MARKETS 11
 - The Balkan Regional Market 11
 - The CEE Zone Market 12
 - The EU Market 13
 - The Russian Market 14
- 4. THE CITRUS VALUE CHAIN 17**
 - 4.1 VALUE CHAIN MAP 17
 - 4.2 TECHNOLOGY GENERATION 19
 - 4.3 INPUT SUPPLY 19
 - 4.4 PRODUCTION AND HARVEST 20
 - Technology and Agricultural Practices 20
 - 4.5 ASSEMBLY, CLEANING, WAXING, SORTING, PACKING, AND STORAGE 23
 - 4.6 WHOLESALE AND RETAIL DISTRIBUTION 24

4.7 GENDER CONSIDERATIONS.....	25
5. SYSTEMIC CONSTRAINTS AND UPGRADING OPPORTUNITIES	25
5.1 RELATED TO THE BUSINESS ENABLING ENVIRONMENT.....	25
5.2 RELATED TO VERTICAL AND HORIZONTAL LINKAGES AND VALUE CHAIN GOVERNANCE	27
5.3 RELATED TO SUPPORT SERVICES	28
6. VISION AND STRATEGY FOR IMPROVED COMPETITIVENESS AND GROWTH	28
6.1 VISION.....	28
6.2 STRATEGIC ISSUES SYNTHESIS.....	28
6.3 VALUE CHAIN COMPETITIVENESS STRATEGY.....	29
Production Axis of the Competitiveness Strategy	29
Marketing Axis of the Competitiveness Strategy.....	30
7. SUGGESTED ELEMENTS FOR A MANDARIN VALUE CHAIN UPGRADING PLAN UNDER AAC	32
APPENDIX A: LIST OF KEY INFORMANTS.....	38
APPENDIX B: CITRUS PACK HOUSE OPERATIONS (FROM IGOUMENITSA, GREECE)	40
APPENDIX C: POSSIBLE GROWTH PATH FOR THE SARANDA MANDARIN CLUSTER	41
APPENDIX D: PROPOSED DESIGN FOR A PACK HOUSE LINE (BY MAF RODA).....	42
BIBLIOGRAPHY	46

TABLES AND FIGURES

TABLE

1	Albanian Citrus Imports 2004-2008.....	3
2	Citrus Trees, Production and Yield 2000-2008.....	4
3	Citrus Trees, Production, Yield and Orchards by District 2002-2008.....	5
4	Mandarin Production 2008.....	6
5	Mandarin Production in the Saranda Cluster 2009.....	6
6	Albanian Mandarin Imports 2004-2008 (MT).....	7
7	Basic Dimensions of the Mandarin Market in Albania	8
8	Monthly Imports and Wholesale Prices - Domestic and Imported Mandarins 2008.....	9
9	Percentage of consumers indicating the criterion as a reason to buy the product	10
10	Regional Imports of Mandarin 2005-2008.....	12
11	Mandarin Imports in CEE Countries.....	13
12	Top Countries Importing Mandarin from Italy and Greece 2008.....	16
13	Marketing Margins in the Mandarin Value Chain in Albania.	19
14	Investment Cost to Establish a Mandarin Orchard (US\$/ha)	22
15	Gross Margin Analysis for a Mandarin Orchard (LEK/ha).....	23
16	Proposed AAC Activities for Upgrading in the Citrus Value Chain.....	32

FIGURE

1	The Mandarin Value Chain	vi
2	Main Citrus Production Areas in Albania.....	4
3	EU Imports of Mandarins in Volume and Unit Price 2000-2008.....	13
4	Russian Imports of Mandarins in Volume and Unit Price 2000-2008.....	15
5	The Mandarin Value Chain	18
6	Competitive Mandarin Value Chain.....	29

ABBREVIATIONS

AAC	Albania Agriculture Competitiveness Program
AUT	Agricultural University of Tirana
CEFTA	Central European Free Trade Agreement
CIHEAM	International Centre for Advanced Mediterranean Agronomic Studies
FFV	Fresh Fruits and Vegetables
GoA	Government of Albania
MIS	Market Information System
MT	Metric Tons
ROI	Return On Investment
TTC	Technology Transfer Center
USAID	U.S. Agency for International Development
VAT	Value Added Tax

EXECUTIVE SUMMARY

INTRODUCTION

This study has three objectives: (1) to provide a more detailed analysis of the citrus value chain in Albania, identifying key strategic issues that constrain growth; (2) to develop a vision and a competitiveness strategy for the citrus value chain; and (3) to draft an initial citrus commodity development plan based on the analysis and strategy, with suggested Albania Agriculture Competitiveness (AAC) program interventions.

In this study we focus mostly on the fresh mandarin value chain because only for mandarins is there any regular commercial sale of local citrus fruits. Mandarin is also the key growth segment in citrus markets worldwide. A new group of over 200 farmers in the Saranda District has emerged and are the first to take on mandarin production on a commercial basis. Their 2009 production is estimated at 1,500MT. Total mandarin production for 2009 is estimated at 2,500MT. Good profit margins and vast market growth opportunities fuel growth. This potential can be realized with the right value chain strategies and commitment from all stakeholders in the sub-sector.

END-MARKETS FOR ALBANIAN MANDARIN

Italy, Greece, Turkey, and Spain supply Albania and the northern Balkan regional markets mostly with unsorted, un-waxed, leaves-on mandarins packaged in palletized plastic crates of 8-10kg (96-crate pallets of around 1MT). It represents the lower quality, but also lower-priced output from pack houses in the listed countries that ship their higher quality products to more discriminating markets (Northern and Western Europe, and Russia). Leaving the leaves on is a signal of freshness. The chosen presentation format thus plays into the main consumer wants: affordability and freshness. Based on key informant interviews, these consumer preferences and product/packaging characteristics are common throughout the Balkan region, including Albania. These preferences represent the main initial market targets for the Albanian mandarin value chain actors, in its current incipient stage of development.

Albania's mandarin market is estimated at 11,000MT or roughly \$11 million at wholesale price in 2009. The overall size of the regional market is 33,000MT. The Serbian market seems to be the most interesting one to target, given its size, higher growth rate, and relatively high prices. Other target markets that appear attractive for potential Albanian mandarin exporters are its direct neighbors, Macedonia (fast growth), Montenegro (high prices), and Kosovo (ethnic connections).



Photo 1: Close-up of bright orange mandarins at a market in Tirana.

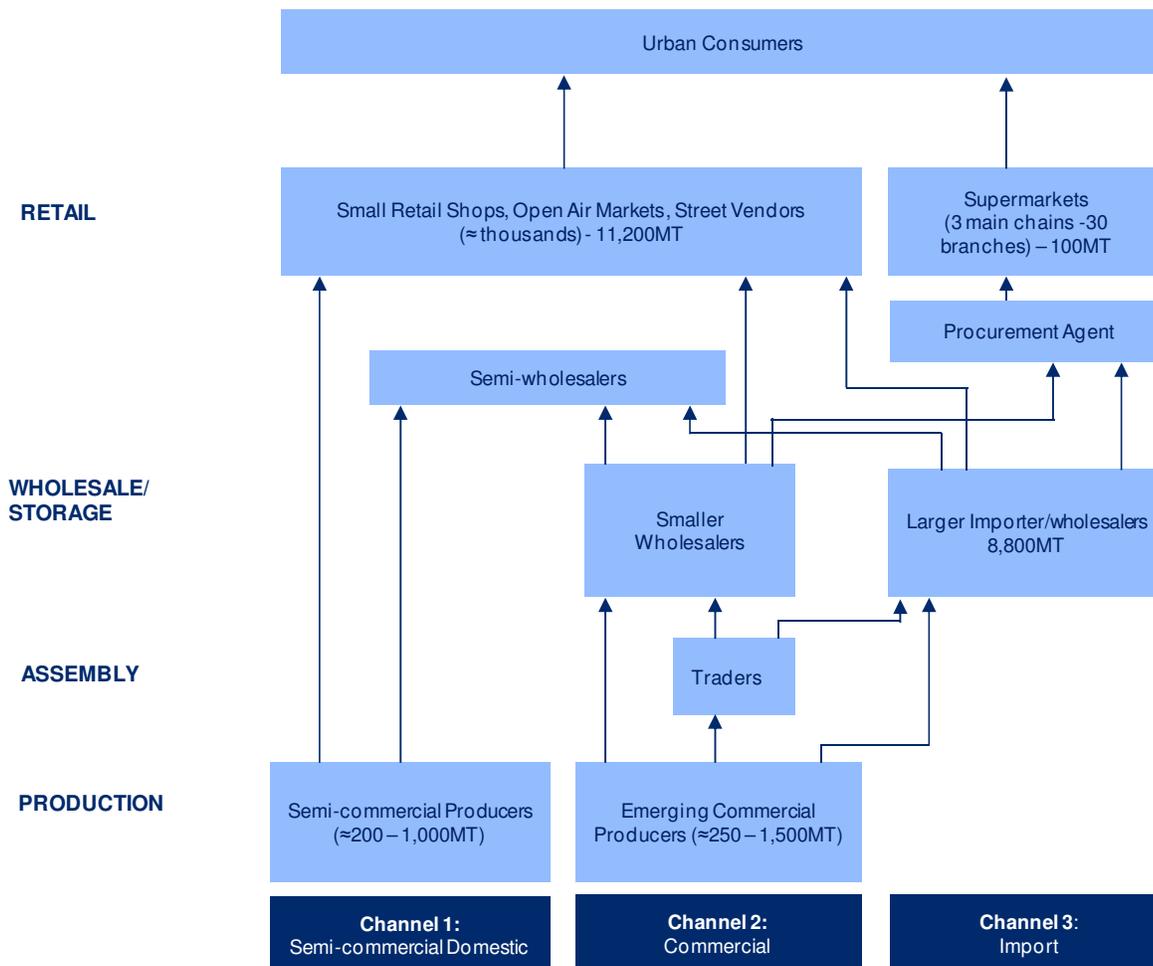
Although important to partner with now with an eye to future potential, domestic supermarkets do not represent a significant market for mandarins at this point (100MT). The emergence of regional supermarkets with deep pockets in the Balkans may offer interesting opportunities, because they cater to a more discriminating shopper and because these supermarket chains will increasingly implement regional procurement mechanisms.

High-end markets (European Union [EU] and Russia) are not realistic targets until a modern pack house can be established. Of these high-end markets, Russia appears to offer the most interesting opportunities due to a combination of large size and fast growth.

THE ALBANIAN MANDARIN VALUE CHAIN

The Albanian mandarin value chain is relatively simple in structure, with three channels: a static semi-commercial domestic channel, a growing commercial domestic channel, and a dominant but shrinking import channel.

FIGURE 1: THE MANDARIN VALUE CHAIN



The mandarin value chain in Albania has several key characteristics:

- I. Almost no research on citrus.
- II. The Greek connection. Farmers largely copy practices from counterparts in Greece.
- III. Limited volumes, marketed during a small window (November-December).

- IV. Farmers are very driven, willing to adapt to the latest technologies and market demands.
- V. Orchard investment cost of roughly \$30,000/ha. Gross margin for growers: around LEK16/kg.
- VI. No pack house operation.
- VII. Retail and wholesale are very fragmented. Importer-wholesaler is leverage point.
- VIII. New planting subsidies provided great stimulus, but farmers unlikely to get paid.
- IX. VAT and import tariffs provide protection for the market, but it can be competitive without those measures.
- X. No land markets. Orchard investment only on owned land.
- XI. Weak wholesale market infrastructure and regulation hinders value chain development.

VISION

By 2020, a vibrant cluster of some 400 mandarin growers and two or three consolidators with modern pack house operations in the Xarre-Mursi-Konispol valley in Saranda District will produce 14,000MT of mandarins from 400ha over a four-month window (late October – early February) and supply it at competitive prices and quality to a broad range of markets. These markets will include 7,000MT sold in the domestic market (market share of 70%), 5,000MT sold in the Balkan region, including through the leading regional supermarket chains, and 2,000MT to a high-end market such as Russia.

Value Chain Competitiveness Strategy and Upgrading Plan

This vision has five key assumptions: (1) an annual expansion in acreage of 6%; (2) farmers achieving average yields of 110kg per tree for mature trees; (3) harvests can be spread out over the entire winter period; (4) consolidators invest in modern pack houses and succeed in entering various markets; and (5) farmers will sell the majority of their harvest through pack house operators. Assumption (1) is realistic, but the other assumptions are not as straightforward and the proposed competitiveness strategy aims to underpin them through a production and a consumption axis.

Production Axis of the Competitiveness Strategy

This part of the strategy aims to establish a large, consistent-quality supply of mandarins throughout the season, and has four components. The first two components are needed to help assure that trees achieve average yields of 110kg/tree at full maturity throughout the life of the orchard. The last two components are needed to extend the harvest season, which in turn is needed for three reasons: (1) it is the only way to substitute imports during this time period; (2) it is needed to even out production over time to provide for a steady flow of mandarin through a pack house; (3) to capture the high price months (October, January, February).

(i) Build Farmer Capacity

Farmers in the target area are very committed to their farms, eager to invest in state-of-the-art technologies and to follow best practices, but they mostly learn by copying and trial and error. Support here is limited to some inadequate grower manuals and a few isolated trainings by Technology Transfer Center (TTC) Vlora. **Possible activities:** training, study tours on pruning, irrigation, fertigation, recognizing diseases, pesticide applications, and harvesting; development of financial orchard

management records to assess profitability and productivity; facilitating financing access for the expansion of orchards; development of a practical mandarin growers' manual and instructional videos in the Albanian language.

(ii) Establish a Better Agronomic Support Service

Efficient and effective agronomic support services are critical for modern mandarin orchard management. Currently, these services are provided by an extension officer of the Department of Agriculture and informal advice from the growers' Greek counterparts. There are no private agronomists providing such services in Saranda district. In 2009, this weakness was exposed when a disease outbreak could not be contained. Improved agronomic services would also facilitate access to cutting-edge research on mandarin production. **Possible activities:** strengthen capacity of Department of Agriculture extension officers or (using a strategic grant) facilitate the establishment of private agronomist services, possibly linked to nursery operations; strengthening links with TTC Vlora through a new, more elaborate mandarin research program characterized by experiments on private farms in Saranda and linkages between TTC Vlora and leading citrus research institutes in the Mediterranean.

(iii) Introduce New Mandarin Varieties that Extend the Season

A careful selection of three or four mandarin cultivars per orchard can yield fresh fruit for a four- to five-month ripening period. By introducing farmers to new varieties and the advantages of planting them, they can be helped to move away from the current reliance on the same 1-2 clementine varieties. New introductions can come through new seedlings or grafting on existing trees. **Possible activities:** roundtables with farmers, nursery operators, TTC Vlora, Agricultural University of Tirana (AUT), a private agronomist, wholesalers, and a consolidator; strategic grants to help with the introduction of these new varieties at the farm.

(iv) Improve and Expand Post-Harvest Handling Techniques

Extending the season for existing as well as new varieties also implies a set of more advanced storage and post-harvest handling techniques that improve storage life as well as quality and ripening, such as cold storage usage, heat treatments (hot water dip), fungicide treatments, applying growth regulators (ethylene for degreening), and radiation. **Possible activities:** training sessions by international experts, demonstrations, field visits to other production areas; strategic grants to reduce risk and stimulate trials.

Marketing Axis of the Competitiveness Strategy

This part of the strategy aims to facilitate an efficient flow of the mandarin production from Saranda to various markets throughout an extended season through three components.

(i) Facilitate Establishment of a Consolidator Operated Pack House

The emergence of a modern pack house is a main condition for the competitiveness of the mandarin cluster in Saranda. This pack house would cater to the needs of new buyers, mainly the large wholesaler/importers who currently handle 90% of the mandarin volumes in Albania. Only a consolidator-operated pack house that can sell large volumes of palletized crates of quality sorted, well-packaged product upon order (one to two day order cycle time) can offer a product that can compete with the ease of importing. A potential investor has already been identified. **Possible activities:**

- Develop a business plan based on a thorough design and feasibility study, taking a step-wise expansion from a simple sorting facility initially to a fully-fledged pack house by 2014;
- Facilitate financing of the facility combining the entrepreneurs' equity with a strategic grant from the AAC program, a commercial bank loan, and co-financing from other donors;
- Facilitate the establishment of the pack house and the initiation of operations;
- Assist in determining the best packaging for various markets in terms of quality preservation, cost, environmental impact, branding, market acceptance (plastic crates vs. cardboard boxes);
- Include higher quality mandarin in AAC's Taste of Albania branding and promotion strategy.

(ii) Facilitate Long-Term Grower – Consolidator Linkages

The operational efficiency of the consolidator and the pack house are determined in part by the product flow going through them, and hence assuring sufficiently large supplies (around 50% of total production), spread out over time in line with pack house capacity and volumes demanded in the market will be critical. **Possible activities:** working with both the consolidators and the individual growers to develop a common understanding of the market and related best practices such as harvesting (pre-harvest intervals for spraying, timing related to ripeness, harvest and post-harvest treatment required to avoid damage); brokering a long term partnership that deals with price-discovery (using the AAC Market Information System [MIS]), price determination (a small premium for farmers to incentivize them to cater to more demanding clients), supply mechanisms (minimum volumes, short order cycles), and planning (tracking harvestable volumes).

(iii) Facilitate Long-Term Consolidator – Market Linkages

Downstream the value chain, new market linkages need to be forged between the consolidators and various demanding buyers who currently buy no or very little domestic mandarins. This can be achieved only when the linkage results in transactions that are profitable for the farmer, the consolidator, and the importer. These profits can be derived from exploiting: (a) the gap between Albanian farm-gate prices and CIF import prices which are subject to VAT and import tariffs, (b) economies of scale in domestic transportation and lower transaction costs per kg concerning the small wholesalers due to higher volumes, (c) reduced post-harvest losses through improved handling, and (d), the higher quality of local mandarins (since no siphoning off of high quality mandarin). **Possible activities:** analyzing new buyers' needs in terms of product and delivery format in greater detail; facilitating the pack house operations needed to cater to these needs (for example, sorting), and being a neutral third party facilitating the initial deals between consolidators and buyer. Four types of buyers/markets should be targeted:

- *Large importer/wholesalers in the local market:* these are the main initial target market, where local producers have price and quality advantages over imports (700MT by 2012);
- *Local quality retailers:* direct delivery to Albanian/Balkan regional supermarkets and other high-quality retail markets such as New Bazar in Tirana. This would add value by sorting. Piggy-back on AAC's current relationship with supermarkets (50MT by 2012);
- *Balkan regional traders/wholesalers:* these are nearby markets that can be supplied with the same product as the importers in Albania, while exploiting transportation cost advantages and ethnic links. Promising markets in here are Serbia, Kosovo, Macedonia, and Montenegro. Participation in trade missions and trade shows (300MT 2012)

- *Importers in high-end markets:* These markets are both more rewarding and more difficult to enter. It will require the presents of a fully fledged pack house with modern packing line equipment. Key market options here are Russia or piggy-back on the Greek distribution system into the EU markets. (trial shipments of 20MT containers in 2012).

1. INTRODUCTION

1.1 STUDY OBJECTIVE

By building producer capacities, market linkages, and market information systems, the AAC program aims to stimulate competitiveness and growth in Albania's agricultural sector. One strategic value chain identified for AAC program support is the citrus value chain (U.S. Agency for International Development [USAID] 2009). Citrus was selected due to excellent market prospects, potentially competitive producers, opportunities for growth, and entry points for impactful AAC program interventions. This study has three objectives: (1) provide a more detailed analysis of the citrus value chain in Albania, identifying key strategic issues constraining growth; (2) develop a vision and a competitiveness strategy for the citrus value chain; and (3) draft an initial citrus commodity development plan based on the analysis and strategy, with suggested AAC program interventions.

The study follows USAID's value chain analysis methodology (for example, Neven 2009) and is based on secondary and primary information. The primary information is based on key informant interviews and small surveys of farmers (60), consumers (200) and retailers (30). Field visits to retail and wholesale markets in Tirana, Fier and Lushnja, farms in Saranda, and a citrus pack house operation in Greece completed the picture. Data was collected in the period September – October 2009.

1.2 HISTORY AND ECONOMIC RELEVANCE OF CITRUS IN ALBANIA

Citrus ("agrumet") orchards grew strongly in communist post-war Albania (1944-1991), from a national total of less than 100,000 trees to more than 1 million by 1990. Around 90% of these citrus trees were part of large terraced orchards (planted in industrial blocks) in the Vlora and Saranda Districts. Yields remained low—never more than 20kg per tree on average, due to sub-optimal agricultural practices. Citrus fruit was produced on three types of farms: state farms, cooperative farms, and (up to 1976) private farms (Agolli 2000). The land reform law of 1991 initiated a privatization process that turned these large state and cooperative citrus farms (an estimated 3,000ha in the aggregate¹) into thousands of small plots that were part of multi-plot, privately-owned farms of on average 1.2 ha. Most of these farms became essentially unspecialized agricultural family units producing a wide range of crops for household consumption.

After 1990, with the public irrigation and marketing systems non-functional, most of the new owners simply abandoned the difficult to work on terraced citrus orchards, leading to a massive destruction of citrus trees (died, burned, cut down). Between 1990 and 1998, the number of citrus trees was reduced from more than 1 million to 335,000, especially in the key production district of Saranda near the Greek border, where around 500,000 citrus trees disappeared (Agolli 2000). The citrus sub-sector reached a low point in terms of size and performance in 1998, right after the 1997 financial collapse of the country.

¹ Author's estimate based on key informant data and government statistics: assuming 1 million trees and 350 trees per ha, implies a rounded total acreage of 3,000ha. This is small relative to the overall acreage under fruit trees, estimated at 124,000ha in 2000 (Agolli 2000).

Between 1998 and 2008, driven by new plantings and improved practices, aggregated citrus output nearly quadrupled to around 8,400MT, or 85% of the 1990 volume (according to government statistics). Mostly planted for home consumption in small numbers on scattered farms, citrus trees emerged in a far greater number of districts than before 1991 (from eight districts in 1990 to 19 districts in 2008). More importantly however, some of the new production has come from a new group of emerging farmers in the Saranda District who have taken on mandarin production on a commercial basis and already represent 20% of national citrus production, and nearly 100% of the commercial citrus production.



Garden Citrus Production.



Modern Citrus Orchards.



Remnants of Old Citrus Terraces

These emerging commercial farmers in Saranda District provide the seedling from which the revival of Albania's citrus sub-sector can be grown. This growth would be fueled by good profit margins and vast market potential. A preliminary profitability analysis indicated that at competitive farm-gate prices, gross margins of 40-60% can be achieved in mandarin production in Albania. Market growth opportunities exist in both the domestic and export market. With the right value chain strategies and commitment from all stakeholders in the sub-sector, this growth potential can be realized.

1.3 FOCUS OF THE STUDY – FRESH MANDARIN²

Although oranges are roughly twice as important as mandarins in terms of imported volume (Table 1), we will in this study mostly focus on the fresh mandarin value chain for the following four reasons. *First*, although oranges are the most commonly cultivated citrus varieties (Agolli 2000), only for mandarins, and to a far lesser degree lemons is there any regular commercial sale of local citrus fruits. For all citrus, but certainly for oranges, production is consumed mostly by the producer or sold ad hoc in commercially insignificant quantities. The latter holds even in the aggregate, as according to citrus importers operating at the main wholesale markets, local mandarins, lemons, and oranges represent very roughly 20%, 5%, and less than 1% of domestic urban consumption.

Second, within fresh citrus, mandarins, and especially Clementine varieties, have been the growing variety in markets worldwide, mainly because they are more easily consumed, (smaller and easy to peel³). For

² Mandarin (*Citrus Reticulata*) refers to all of the loose skinned, cold-hardy citrus varieties (Fake 2004). Tangerine is a marketing term referring to the more commercially important mandarin varieties and primarily used in the US. The term finds its roots in the fact that the first imports of mandarins into the Mediterranean area came in through the port of Tangiers. Other marketing terms used for mandarins are soft citrus and easy peelers. There are two main groups of commercial mandarin varieties: satsumas (*C. unshiu*) and clementines. Both are typically seedless and easy to peel, but satsumas are easier to peel, slightly more flattened and of a less deep orange than clementines.

³ UNCTAD – Citrus Fruit Market Information. www.unctad.org/infocomm.

oranges and grapefruits, consumers are largely shifting to buying juice rather than buying the fresh fruit. The only other citrus fruit showing some growth, but at a smaller level, is lime.

Third, mandarins are more sensitive in transportation and thus more of a local and seasonal item, relative to the more sturdy oranges and lemons which are transported globally year-round. This implies a greater competitive advantage for local mandarin production as compared with other citrus fruits.

Fourth, we focus on the fresh market because tangerines are mostly consumed fresh, and for citrus fruit more broadly, the commercial processing of fruits into juice is done so efficiently by firms in other countries and exported to Albania, that profitable local juice production at a commercial scale is unrealistic. The same probably holds for canned mandarin sections as well, where a country such as China will quickly become the global leader.

TABLE 1: ALBANIAN CITRUS IMPORTS 2004-2008

	2004	2005	2006	2007	2008	Growth Rate p.a.
Oranges						
CIF Value (\$'000)	5,621	7,155	8,660	11,058	12,152	22%
Volume (MT)	11,812	15,789	18,565	21,232	20,770	15%
Price (\$/MT)	476	453	466	521	585	
Lemons						
CIF Value (\$'000)	1,240	1,412	2,393	1,998	1,646	10%
Volume (MT)	1,987	2,268	3,538	2,757	1,965	2%
Price (\$/MT)	624	623	676	725	838	
Mandarins						
CIF Value (\$'000)	3,661	5,556	5,505	5,892	5,593	9%
Volume (MT)	6,909	10,780	10,368	9,980	8,838	4%
Price (\$/MT)	530	515	531	590	633	
All Citrus						
CIF Value (\$'000)	10,867	14,171	16,586	19,046	19,575	16%
Volume (MT)	21,305	28,921	32,522	34,140	31,867	10%

Source: ITC Trade Map (direct data, not mirror data). Product codes used: 080510 Oranges, 080520 Mandarins, 080550 lemons, 0805 Citrus.

2. CITRUS PRODUCTION AND TRADE IN ALBANIA

2.1 PRODUCTION

According to official government statistics, the performance of the sub-sector dropped from 820,000 citrus trees in production, average yields of 12kg per tree in production, and a production of 10,000MT in 1990, to a record low of 275,000 trees in production, yields of 8kg per tree in production, and a production of 2,200MT in 1998 (Ministry of Agriculture and Food 2003). Since 2000, the sub-sector has made a steady recovery, with more significant increases in production and yield in 2007 and 2008 (Table 2). In 2008, there were, according to official statistics, 630,000 citrus trees across 86,000 farms, of which 450,000 trees were in production, yielding 18.6kg per tree and 8,400MT in total.

TABLE 2: CITRUS TREES, PRODUCTION AND YIELD 2000-2008

	2000	2001	2002	2003	2004	2005	2006	2007	2008
No. of Trees ('000)	391	422	453	489	521	550	528	577	630
No. of Trees in Production ('000)	305	302	322	363	394	421	341	410	453
Production (MT)	2,600	2,800	3,441	4,363	4,900	5,199	5,626	6,725	8,437
Yield (kg/tree)*	8.8	9.3	10.7	12.0	12.6	12.3	16.5	16.0	18.6
No. of Farms w/ Citrus	Na	Na	Na	Na	Na	67,078	62,350	82,271	86,278

Source: Statistical Yearbooks 2000 through 2008. * For trees in production.

Most of the citrus in Albania today is produced in small garden settings throughout Albania's Southern coastal area from the Durrës District to Saranda District (Figure 2). The average number of trees per farm is seven, according to government statistics. Citrus trees are not evenly distributed through this area, with the Fier, Lushnja (Fier Region), and Saranda districts (Vlore Region) being the key concentration points, each producing between 1,000 and 2,000MT, and combined representing roughly 50% of production (Table 2). According to the key informants interviewed for this study, the only commercial citrus production in Albania is mandarin production in Saranda district, in particular in the area around Xarre, Mursi, and Konispol at the Albanian-Greek border.

FIGURE 2: MAIN CITRUS PRODUCTION AREAS IN ALBANIA



Table 3 further reveals the interesting dynamics in the Vlore region, where between 2002 and 2008 there was a 30% reduction in the number of citrus trees (the only region to post a reduction) while overall production increased with 86% due to a nearly tripling of yields from seven to 18 kg per tree. In the other main citrus producing region, Fier, production increased even more, with 159%, but this growth was driven by expansion of the orchard acreage (no. of trees in production) as average yields decreased with 15% . For the other regions, some extreme growth rates were observed in some cases, but these are mostly related to changes from a small base value. They do not play a significant role in the commercial value chains for citrus in Albania.

TABLE 3: CITRUS TREES, PRODUCTION, YIELD AND ORCHARDS BY DISTRICT, 2002-2008

Region	No. of Trees ('000)			Production (MT)			Yield (kg/tree)*			No. of Farms with Citrus in 2008
	2002	2008	% Growth	2002	2008	% Growth	2002	2008	% Growth	
Berat	21	63	200%	165	921	458%	15	23.4	56%	7,019
Diber	0	0	N/A	0	0	N/A	N/A	Na	N/A	0
Durres	25	48	92%	256	573	124%	14.2	15.8	11%	13,686
Elbasan	33	56	70%	282	714	153%	16.6	18.8	13%	5,116
Fier	106	215	103%	1099	2,842	159%	23.4	19.9	-15%	25,930
Gjirokaster	0	1	N/A	14	19	36%	N/A	28.8	N/A	190
Korce	0	0	N/A	0	0	N/A	N/A	Na	N/A	0
Kukes	0	0	N/A	0	0	N/A	N/A	Na	N/A	0
Lezhe	5	12	140%	38	56	47%	19	7.9	-58%	5,844
Shkoder	3	20	567%	5	143	2760%	5	15.7	214%	7,268
Tirane	25	49	96%	166	544	228%	12.8	17.2	34%	9160
Vlore	235	166	-29%	1416	2,627	86%	6.7	17.8	166%	12,067
TOTAL	453	630	39%	3441	8,437	145%	10.8	18.6	72%	86,280

Source: Statistical Yearbooks 2000 through 2008. * For trees in production.

There are no official statistics on the share of mandarin production in overall citrus production as described in table 1 above. However, the AAC program estimated the national mandarin production in 2008 was 2,600MT (Table 4), or 30% of the overall citrus production. An estimated 210 semi-commercial growers scattered in the Vlora, Fier, Lushnja, and Berat Districts, and 174 commercial growers in the Saranda District existed in 2008. We classify the Saranda growers as commercial and the other growers as semi-commercial because only the former are expected to develop modern citrus supply chains due to their clustering and high level of investment in production (for example, drip irrigation).

TABLE 4: MANDARIN PRODUCTION 2008⁴

District	Area (ha)	Trees	Commercial Trees	Garden Trees	Production (MT)	Est. # of Commercial Growers ⁵
Saranda	122	61,000	61,000	0	1,360	174
Vlora	43	21,400	12,300	9,100	460	60
Fier	50	24,600	10,500	14,100	350	50
Lushnja	41	20,400	16,000	4,400	340	80
Berat	12	6,000	4,000	2,000	90	20
Total	268	133,400	103,800	29,600	2,600	384

Source: Adapted by the author from data provided by Konstandin Koco, Citrus Specialist AAC Program.

For the Xarre-Mursi-Konispol mandarin cluster in Saranda district, the AAC program's citrus specialist (a mandarin grower himself) estimates the 2009 production of mandarin at 1,830 MT. Based on the fact that there was a disease problem earlier in the 2009 season and comments from key informants, the author here estimates the 2009 production from this cluster more conservatively at 1,500MT. Table 5 provides a more detailed overview. In 2009, the production area in this cluster increased with 60% as 41,000 trees were planted on 81ha (500 trees per ha). This jump in acreage was largely driven by a subsidy stimulus plan from the Ministry of Agriculture (see section 5.1). In 2009, there were 218 farmers with an average farm size of 1ha, in this cluster.

TABLE 5: MANDARIN PRODUCTION IN THE SARANDA CLUSTER 2009.

Plantings	Area (ha)	Trees	Yield (MT)
2001-2006	122	61,000	1,500
2007-2009	96	48,700	0
Total	218	109,700	1,500

Source: Author's estimation based on data provided by Konstandin Koco, AAC Program.

2.2 TRADE

According to statistics from both the GoA and the ITC Trade Map database, Albania currently does not export mandarin (apart from one shipment of 3MT to Serbia in 2007) although informal exports to neighboring countries may occur in commercially insignificant volumes. However, Albania does import a large percentage of its domestic consumption. Table 6 indicates that 9,000MT of mandarins are imported into Albania, $\frac{3}{4}$ of which are clementines. Italy has been taking market share away from Greece and currently represents $\frac{3}{4}$ of the mandarin imports. The only other supplier of significance, after Italy and Greece, is Turkey.

⁴ This table excludes Delvina district data, which were not available.

⁵ Under the assumption that the average orchard size is 0.7ha in Saranda, and the average orchard size is 0.4ha in the other districts. These assumptions were considered reasonable by the key informants.

TABLE 6: ALBANIAN MANDARIN IMPORTS 2004-2008 (MT)

	2004	2005	2006	2007	2008
Clementines					
Italy	2,142	3,345	4,700	6,596	N/A
Greece	3,691	4,002	2,144	1,016	N/A
Other	0	0	2	9	N/A
Total	5,833	7,347	6,846	7,621	N/A
Mandarins					
Italy	297	423	695	1,021	N/A
Greece	83	1,947	2,336	1,197	N/A
Other	297	423	330	92	N/A
Total	751	3,341	3,361	2,311	N/A
All Mandarins					
Italy	2,561	3,817	5,396	7,616	6,350
Greece	3,900	5,971	4,600	2,223	2,384
Other	448	992	372	139	104
Total	6,909	10,780	10,368	9,980	8,838

Source: ITC TradeMap. Production codes used: 080520 All mandarins (which includes mandarins, wilkings, clementines, monreales, satsumas, tangelos, ortaniques, malaquinas, and similar hybrids); 08052010 Clementines; 08052050 Mandarins and Wilkings.

3. END-MARKETS FOR ALBANIAN MANDARIN

3.1 THE DOMESTIC MARKET

Table 7 provides some basic dimensions of the Albanian market for mandarins. An unknown share of the local mandarin production is garden production and is consumed without ever entering in commercial channels. In our analysis here we will only focus on commercially marketed mandarins. From this perspective, the domestic mandarin market in Albania is around 11,000MT, or \$11 million at wholesale prices with the share of Albanian production steadily increasing to 15% of total supply. Per capita consumption is 3-4 kg per year for the country as a whole, but the urban population consumption will likely be significantly higher as most of the marketed volumes will be consumed in urban areas.

TABLE 7: BASIC DIMENSIONS OF THE MANDARIN MARKET IN ALBANIA⁶

Year	Commercial Production (MT)	Import (MT)	Export (MT)	Post-Harvest Loss (MT)	Total Supply (MT)	Per capita Consumption (kg/year)
2004	760	6,909	0	N/A	7,669	2.4
2005	900	10,780	0	N/A	11,680	3.7
2006	1,070	10,368	0	N/A	11,438	3.6
2007	1,100	9,980	3	N/A	11,077	3.5
2008	1,360	8,838	0	N/A	10,198	3.2

Source: Author's estimations based on USAID 2009, ITC data, and key informant interviews.

Table 8 provides a monthly break-down of the market. This break-down reveals that November through February are the months when nearly all of the imports come into the market, with a peak in December which represents nearly 50% of the imported volume. As local mandarin production increases to more than 5,000MT per year, and abstracting from export opportunities, it will become necessary to shift to late harvesting, increased storage, and late varieties to capture market share through import substitution in January and February. These months are also characterized by higher market prices and potentially higher profitability. There are some minimal supplies in March and October, which mostly coincide with end and the start of the Italian imports, but during the April to May window, supplies drop to insignificant quantities imported from Greece.

⁶ This table excludes post-harvest losses and non-commercial production. There are no post-harvest loss data available and key informant interviews with farmers indicate that close to zero fruit losses at the farm-level. Garden and semi-commercial production are excluded because these are unlikely to have a big impact on the mandarin sub-sector and there are no historic data available on this. A population of 3.2 million is assumed.

TABLE 8: MONTHLY IMPORTS AND WHOLESALE PRICES - DOMESTIC AND IMPORTED MANDARINS 2008

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2008
Imports (MT)	1,827	1,263	44	4	3	1	0	0	8	116	1,232	3,847	8,345
CIF Import (LEK/kg) + VAT (20%)	61	60	66	62	97	104	58	68	68	69	68	70	61
Domestic (LEK/kg)	88	97	115	N/A	N/A	N/A	N/A	N/A	N/A	109	77	78	95
Imported (LEK/kg)	93	100	117	107	160	160	160	160	160	128	88	80	101
Ratio (Dom/Imp)	0.95	0.97	0.98	N/A	N/A	N/A	N/A	N/A	N/A	0.85	0.88	0.98	0.93

Source: Imports from ITC Trade Map (mirror data), CIF prices estimated by the author based on ITC data, prices from the Ministry of Agriculture, Food and Consumer Protection website - <http://www.mbumk.gov.al>.

DOMESTIC CONSUMER PREFERENCES

A small national survey of 212 consumers, representative of urban Albania was conducted, in the context of this study⁷. This survey was limited in its scope and rigor of execution, and a more extensive consumer study, including blind taste tests, is recommended. The following are key survey findings:

- 98% of the respondents buy Albanian mandarins;
- 84% state that they find Albanian mandarins of better quality than imported ones;
- 28% of respondents buy mandarins out of season;
- Consumers buy mandarins mostly from open air markets (78%), while street vendors and supermarkets are the most common place of purchase for 14% and 6% of consumers respectively;
- In 32% of the households, mandarins are eaten in similar quantities by all members in the household, but in 32% of the households is it the young adults, in 18% the children, and in 7% the older adults who consume the most mandarins.
- On average in the season, households buy 2kg of mandarins 2.7 times per week.

Consumers were also asked to indicate the main reasons for buying mandarins in general and mandarins from Albania in particular (Table 9). The main deciding factor in buying mandarin is taste, with price a distant second. Albanian mandarins are chosen because they are cheaper and perceived as fresher, while they seem to score worse than imported mandarins in terms of taste, seediness, and color. This was confirmed from our retailer survey where 94% of the retailers indicated that taste was the main reasons why consumers bought imported mandarin over local mandarin. This indicates that a quality gap needs to be bridged by local mandarin suppliers.

⁷ These 212 consumers were interviewed at open air markets, in the streets, at bus stops, or over the phone. The sample as a whole was representative in terms of urban geography as the number of respondents in a particular urban area was proportional to the size of this urban area (respondents came from 34 urban areas). The average household size in the sample was 4, the age ranged from 15 to 80, with an average of 45.

TABLE 9: PERCENTAGE OF CONSUMERS INDICATING THE CRITERION AS A REASON TO BUY THE PRODUCT

Criterion	For buying Mandarin in General	For Buying Albanian Mandarins
Taste and sweetness	93%	72%
Price	23%	36%
Freshness	<1%	22%
Seedless	12%	2%
Easy to peel	7%	9%
Color	4%	0%

In terms of prices, the survey found that once the price drops below LEK150/kg, the percentage of households buying mandarins starts to increase faster (jumps from 15% to 40%). At LEK120/kg, 50% of households are willing to buy mandarins. Below LEK90/kg, at which point over 80% of households are willing to buy mandarins, the impact of further price reductions is less. The maximum price consumers are willing to pay is LEK120/keg on average.

ALBANIAN SUPERMARKETS

Although important to partner with now with an eye to future potential (see section 3.2), domestic supermarkets do not represent a significant market for mandarins at this point. There are only a few modern supermarket chains in Albania (EuroMax with 18 branches has a share of 60-70% of the supermarket market) and currently their total annual sales of mandarin are roughly around 100MT, most of which is during the main Albanian production season (October-February). The small share of supermarkets is not surprising, given that in urban Albania fresh fruits and vegetables are being sold at lower prices and with a higher turnover (and thus fresher) on every street corner of every urban area.

In October for example, when the supply of (imported) mandarins starts to take off, supermarkets were selling mandarins at LEK325/kg, where as small shops were selling them at LEK180/kg. The product offering can however not just be compared on price. The mandarins in the supermarket had some skin blemishes and were not seedless, but they were relatively uniform in size and completely ripened (orange peel, sweet). The mandarins offered in the small shop were an inferior product: partially green, blemished peel, of all sizes, some rotten mandarins. In addition, the leaves and stems which may be perceived by the consumer as a sign of freshness add to the weight and thus increase the price per unit of edible product. Two further notes on this. First, there is a lot of variation in quality amongst the different traditional retail outlets and some of their mandarin offering exceeds the quality (and price) of that found in supermarkets (for example, at Tirana’s New Market - Pazari Iri). Second, as supplies and turnover increase and prices come down (December), the discrepancy between quality and price of mandarins offered in these two channels will likely be more comparable.

Supermarkets in Albania currently procure mandarins on a daily basis through procurement agents who in turn buy from importer/wholesalers or smaller wholesalers, just like any other retailer, except that they are looking for and getting a higher quality product. One other important difference with supermarkets is that pay not cash on delivery (COD) but make monthly payments into supplier bank accounts. This implies that a consolidator would have to have the working capital to pay farmers COD while bridging to being paid by the retailer. Given the small and daily volumes procured by supermarkets, a consolidator would also have to coordinate supermarket supplies to supplies to other

buyers in order to achieve economies of scale in transportation. As supermarkets improve their in-house storage capacity, and thus order larger volumes on a less frequent interval, this challenge may be reduced for the consolidator.

3.2 EXPORT MARKETS

In this section we will look at four export markets: the Balkan region, the CEE zone, the EU market, and the Russian market. In this section we will use reported CIF prices which should be used mostly as a relative measure to compare various markets or suppliers. Systemic errors in the data (underreporting) and variations in terms of transportation costs, product quality, seasonality, market location, and import tariffs, imply that actual purchase prices paid by importers will mostly be higher than the reported CIF prices here. The analysis here is intended to identify the main market opportunities and a more detailed analysis will provide a more nuanced and practical understanding of the selected markets.

THE BALKAN REGIONAL MARKET

Currently these markets (mostly overlapping with the Central European Free Trade Agreement - CEFTA zone of which Albania is a member and thus is not subject to import duties) are supplied from Italy, Greece, Turkey, and Spain, with unsorted, unwaxed, leaves-on mandarins packaged in palletized plastic crates of 8-10kg (pallets of around 1MT). It represents the lower quality, but also lower-priced output from pack houses in the listed countries that ship their higher quality products to more discriminating markets (Northern and Western Europe, Russia). Leaving the leaves on is a signal of freshness. The chosen presentation format thus plays into the main consumer wants: affordability and freshness. Based on key informant interviews, these consumer preferences and product/packaging characteristics are common throughout the Balkan region, including Albania. These represent the main initial market targets for the Albanian mandarin value chain actors, in its current incipient stage of development.



Photo 2: Importers Buy Mandarin by the Pallet

Table 10 provides an overview. Bosnia gets most of its supplies from Croatia at relatively low prices (\$422/MT). Croatia is a producer and exporter of mandarins in its own right, but does also import a smaller volume which mostly comes from Italy and Spain. Croatia has also been the main beneficiary of the rapid growth of mandarin imports into Serbia, with 11,000MT (over 40% of total imports). Other significant source countries for Serbian mandarin imports (+1,000MT) are Turkey, Greece, Spain, and Italy. Macedonia's mandarin imports are split between Turkey (2/3) and Greece (1/3). Montenegro's imports are small and decreasing, but prices have increased (to almost \$1,000 per MT in 2008). This price increase has coincided with a shift from Turkey to Italy and Slovenia (re-exports) as its main suppliers.

The overall size of this regional market is 33,000MT, once we take out Croatia's exports within the region (22,000MT). The Serbian market seems to be the most interesting one to target, given its size, higher growth rate, and relatively high prices. Other target markets that appear attractive for Albanian mandarin exporters are its direct neighbors, Macedonia (fast growth), Montenegro (high prices), and

Kosovo. Kosovo, not listed in table I given there are no statistics available yet, is an obvious target market for Albanian mandarin exports, given the dominant Albanian origin population there. One key informant indicated that he already had orders for 300MT of mandarins from importers in Kosovo.

TABLE 10: REGIONAL IMPORTS OF MANDARIN 2005-2008

		2005	2006	2007	2008	Growth Rate
Bosnia and Herzegovina	Volumes (MT)	15,282	17,840	14,106	17,754	4%
	Values (\$'000)	5,803	6,989	6,598	8,509	12%
	Unit Price (\$/MT)	380	392	468	479	
Croatia	Volumes (MT)	4,366	4,380	4,780	3,291	-6%
	Values (\$'000)	2,581	2,622	3,597	3,119	5%
	Unit Price (\$/MT)	591	599	753	948	
Serbia	Volumes (MT)	14,690	20,711	25,031	25,238	18%
	Values (\$'000)	7,400	11,583	19,192	19,104	40%
	Unit Price (\$/MT)	504	559	727	757	
Macedonia	Volumes (MT)	5,656	6,006	6,085	8,400	12%
	Values (\$'000)	2,541	2,887	3,700	5,144	26%
	Unit Price (\$/MT)	449	481	608	612	
Montenegro	Volumes (MT)	N/A	425	236	147	-22%
	Values (\$'000)	N/A	163	113	111	-11%
	Unit Price (\$/MT)	N/A	381	667	927	
Aggregate for the Countries	Volumes (MT)	39,994	49,362	50,238	54,830	9%
	Values (\$'000)	18,325	24,244	33,200	35,987	24%

Source: ITC Trade Map (direct data).

The emergence of regional supermarkets with deep pockets in the Balkans may offer interesting opportunities, for two reasons. First, they cater to a more discriminating shopper which could imply a stepping stone market in terms of product and packaging quality to the EU and Russian markets. Second, these supermarket chains will increasingly implement regional procurement mechanisms. This implies that a EuroMax (through its Serbian parent company Delta M - \$2 billion in banner sales), other currently active chains such as CONAD (Italian - \$10 billion in banner sales), or the soon to arrive in Tirana Mercator (from Slovenia - \$4.4 billion in banner sales) may find Albania the best source for its mandarins and through their Albanian distribution centers move produce to their rapidly growing network of branches in the wider Balkan region⁸.

THE CEE ZONE MARKET

Table II provides an overview of the market sizes, growth rates and unit prices for the Central and Eastern Europe (CEE) zone, beyond the Balkan region. From these data, the most promising markets appear to be Poland, the Czech Republic, Hungary, and Slovakia. The high prices in Lithuania, Latvia, and Estonia also warrant some further market exploration.

⁸ Banner sales data, for example, total sales by branches using the various brand names they own in the various countries were they operate, are from Planet Retail (www.planetretail.com).

TABLE 11: MANDARIN IMPORTS IN CEE COUNTRIES

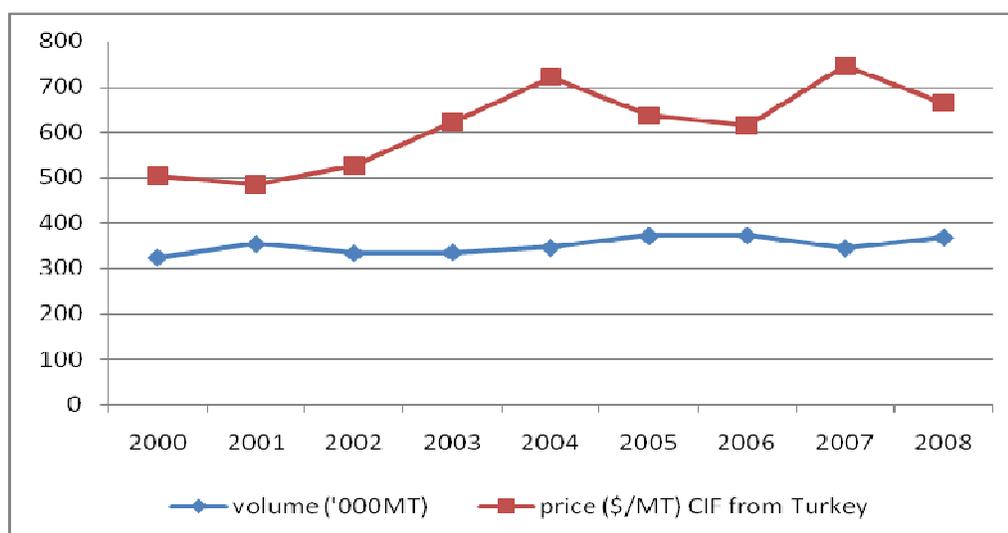
	2007 Import ('000MT)	2007 CIF Import (\$/MT)	Annual Growth Rate 2004-2008 in Value
Poland	182	806	21
Ukraine	136	214	58
Czech Republic	68	782	11
Slovakia	36	673	21
Romania	33	502	33
Hungary	29	765	30
Lithuania	22	1,036	22
Bulgaria	15	398	10
Latvia	14	912	16
Estonia	8	998	10
CEE Total	543	630	

Source: ITC Trade Map.

THE EU MARKET

The EU market for mandarins is largely supplied internally (Italy, Greece, but mostly Spain). These countries benefit from being within the EU and the subsidy support and market protective import tariffs and quotas this implies. Nevertheless, there are large imports as well. The last few years, the imported volumes have remained stable at around 360,000MT (Figure 3), valued at US\$1,000 per MT in CIF terms. The main source countries for mandarins into the EU can be classified into three size-categories (ranked descending): (1) 20-80,000MT/year – Morocco, South Africa, Turkey, Argentina, Uruguay, Peru, Israel; (2) 1-10,000MT/year – Croatia, Pakistan, Chile, the United States, Egypt, Australia, Swaziland; and (3) countries supplying less than 1,000MT per annum.

FIGURE 3: EU IMPORTS OF MANDARINS IN VOLUME AND UNIT PRICE 2000-2008



Source: ITC Trade Map.

Figure 3 also gives a price indication, using the CIF prices received by Turkish exporters as this is probably a more relevant comparison for Albania than the average EU import price, for example, in

terms of seasonality. This price has shown an upward trend since 2000 and currently hovers around \$700/MT.

Within the EU there are the demanding (but also rewarding and largest) markets of Northern and Western Europe (France, Germany, the UK, the Netherlands are in that order the largest EU mandarin importers), and markets such as Romania and Bulgaria, where consumer demands for mandarin are more in line with those in Albania.

The main EU importers of mandarins (France, Germany, the UK, and the Netherlands, in that order) are demanding in terms of the delivery format. For example, the mandarins need to go through a complete pack house line (see section 4): quality sorting, washing, waxing, size sorting (larger, higher-quality mandarins are desired), cardboard packaging,

“The Clementine market is moving to better-tasting varieties, giving greater availability of early and late season clementines.”

—Paul Chuter, International Produce, ASDA’s sole citrus supplier (FPJ 2007)

palletizing. Short order cycles and larger volumes imply good vertical coordination in the supply chain. Strict food safety and traceability standards imply increased costs for growers and packers. GlobalGAP (on production) and BRC (on pack house operations) are broadly required as supermarkets play a big, often dominant role in the market. Compliance with these standards is closely monitored by inspectors. Payments terms are typically monthly. Higher prices in these markets thus largely reflect the need to meet a high standard. A typical packaging format is brand, cardboard boxes holding around 10kg with a sorting size of 66-130. Current key suppliers during winter (Albania’s supply window) to Western EU markets such as the Netherlands are Spain (mid-September-early May), Greece (October-March), Morocco (December-late June), Israel (December-April), and Egypt (January-February). Spain and Morocco are the world’s largest exporters of mandarins.

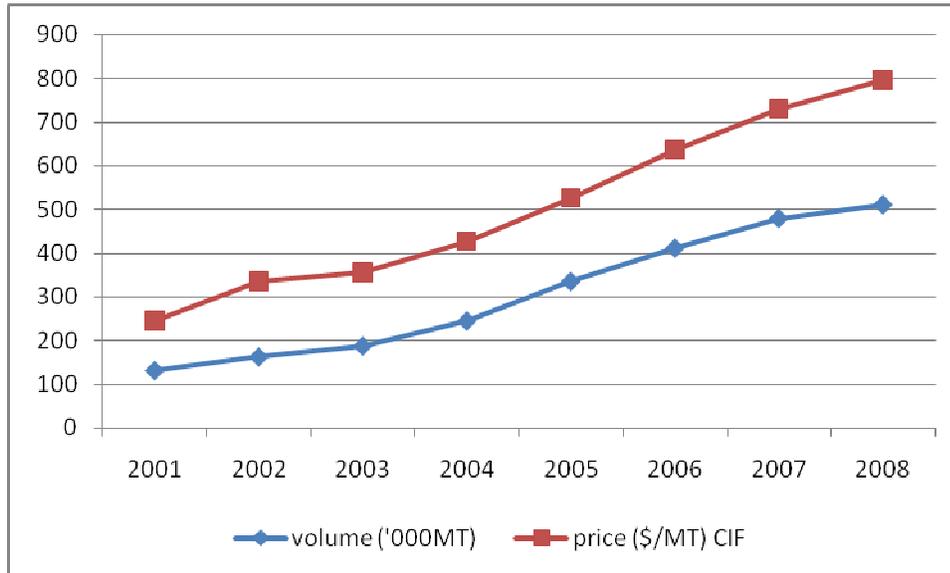
Varietal selection is a key issue for retailers in Western EU markets (FPJ 2008). Satsumas appear to be losing ground in favor of clementines. Taste (along with price) is the overriding criterion and supermarkets will not stock early varieties if the taste is not right. Oronules for example may be favored over early clementines because of a better taste. Sainsbury’s, a U.K. supermarket chain, developed their marketing strategy, “Taste the Difference TTD”, around the organoleptic qualities of the mandarins, especially taste. Within the Clementine market there is a big shift to better tasting varieties, especially Afourer (aka Nadorcott or Clemengold), which is also late-arriving. Clemenules are a dominant Clementine variety. Satsuma varieties that are gaining traction are Owari and Mihowase. The broadening of variety at the same time improves early and late season availability. Nevertheless, there still are gaps in supply to be filled, most notably the late season Clementine varieties (middle of January to March). Not all mandarins sold by high-end supermarket chains are of the waxed variety, as the sale of leaves-on mandarin, loose bulk or in punnets, have occurred successfully in the past. This lowers the threshold for potential Albanian mandarin exports somewhat, as the suggested pack house set-up would focus on this presentation format (see below).

THE RUSSIAN MARKET

The Russian market provides another and even more important opportunity. Unlike for the EU, the Russian import of mandarins has increased dramatically in volume terms and is currently growing at 40% per annum (Figure 4). CIF prices have basically doubled from \$400 to \$800 per MT between 2004 and 2008. In 2008, Russia imported over 500,000MT of mandarins, with a CIF value of \$400,000, making it the second largest importer of mandarins in the world after France. The two largest suppliers are Morocco and Turkey, which jointly supply 50% of the imports. Other import suppliers are China,

Argentina, Spain, and Pakistan. In Russia, where supermarket chains are growing rapidly and consumer are becoming more discriminating, the market is adapting to dealing with the “best of class” produce companies and has become as demanding as the EU market (for example, GlobalGAP required, etc.). These trends are expected to continue for the next five to 10 years, but at the same time supply chains are becoming tighter and opportunities for new entrants will dwindle away (FPJ 2007).

FIGURE 4: RUSSIAN IMPORTS OF MANDARINS IN VOLUME AND UNIT PRICE 2000-2008



Source: ITC Trade Map.

Whether Albanian mandarins can be competitive in the EU and Russia markets depends on several factors: (1) the ability to achieve the standards set in these markets (product and process standards); (2) the capacity to consistently deliver on demand (volume, order cycle time, palletized packaging); (3) the establishment of market linkages; (4) the delivered price relative to the prevailing price in the market. The latter will critically depend on the transportation costs and import tariffs and will vary starkly by location and seasonality. While the latter factor requires an in-depth analysis in its own right which is beyond the scope of this study, an initial set of rough calculations done by the AAC program found that Albanian mandarins would for example be very price competitive in the Frankfurt market in the winter months of October-January (USAID 2009).

One other way of trying to identify in which markets Albania could become competitive, is to look at where Italy and Greece are mainly exporting. This assumes: (a) that those two countries have comparative and competitive advantages that are the closest to Albania’s amongst mandarin exporting countries; and (b) that these established exporting countries are targeting these markets based on thorough research on and experience in these markets. Table 12 provides an overview. This analysis reveals that neither Greece nor Italy export significant volumes to high-end markets in Europe, with Germany and Russia being the highest ranked in this group. Rather it is the CEE markets first and Balkan markets second to where Italy and Greece export their mandarins mostly. This could be a strong indication that high-end markets are well-covered by best-of-market suppliers (Spain, Morocco) and thus difficult to penetrate.

TABLE 12: TOP COUNTRIES IMPORTING MANDARIN FROM ITALY AND GREECE 2008

Importing Country	From Italy ('000MT)	From Greece ('000MT)	From Italy and Greece ('000 MT)
All Countries	55,950	28,580	84,530
1. Romania	5,323	6,774	12,097
2. Poland	8,085	1,278	9,363
3. Albania	6,406	1,939	8,345
4. Hungary	7,496	615	8,111
5. Slovenia	7,593	1	7,594
6. Germany	5,218	1,509	6,727
7. Bulgaria	322	5,823	6,145
8. Macedonia	38	3,234	3,272
9. Serbia	197	2,847	3,044
10. Russia	2,206	274	2,480
11. Austria	2,068	43	2,111
12. Czech Republic	955	1,015	1,970
13. Ukraine	230	1,562	1,792
14. Slovakia	815	703	1,518
15. Lithuania	885	352	1,237
16. Greece	1,162	0	1,162
17. France	1,085	1	1,086
18. Croatia	971	30	1,001
19. Latvia	1,297	19	1,316

Source: ITC Trade Map. Note: only countries importing more than 1,000MT were retained.

4. THE CITRUS VALUE CHAIN

4.1 VALUE CHAIN MAP

Figure 4 maps the mandarin value chain in Albania. It is basically a simple producer-wholesaler-retailer chain, dominated by imports and with little or no value adding to local productions. The main leverage points in the channel are the importer/wholesalers of mandarin. A possible new entrant, the mandarin consolidator operating from a pack house in Saranda District, would provide the key leverage point for the mandarin value chain. Supermarkets are in terms of mandarin sales still too small and too reliant on traditional procurement systems to represent a separate channel at this point. Non-commercial garden production of mandarins is left out of the analysis here as this production never enters markets (family and friends consume all). These producers are also not expected to upgrade to commercial production at any time. Within the commercial sales of mandarins in Albania, we can distinguish three main channels: semi-commercial domestic, commercial domestic, and import.

1. The Semi-Commercial Domestic Channel

This channel consists of a small number of growers with orchards typically less than 1ha (50-250 trees perhaps) and who use limited investments in production technology. These farmers are mostly found scattered in the Vlora, Fier, Lushnja and Berat Districts. These producers sell directly or through semi-wholesalers to retailers in nearby towns. Semi-wholesalers here refers to small traders who buy from various wholesalers or farmers and cater better to the needs of small retail units that dominate FFV retailing (wider range of products, smaller volumes, and lower prices for local FFV due to more direct channels). In terms of volumes, this channel will likely remain stable for the foreseeable future.

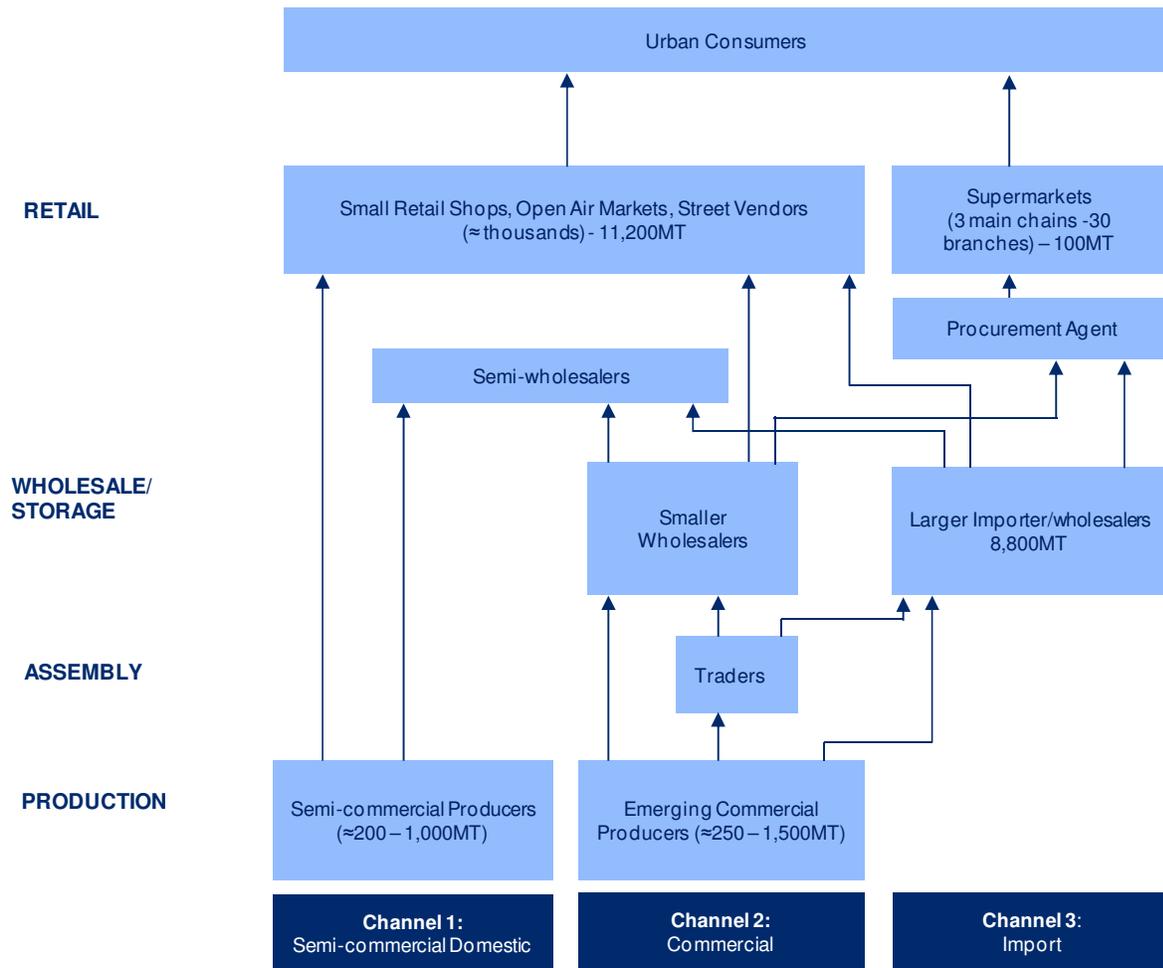
2. The Commercial Domestic Channel

This channel consists of a cluster of commercial growers (1ha or more) in Saranda District, who use modern production technologies and practices aimed at maximizing production. These farmers sell directly or through consolidating traders mostly to smaller, non-importing wholesalers who operate on the main wholesale markets in Fier and Tirana alongside larger importer/wholesalers. These wholesalers sell through semi-wholesalers to the retailers. This is a rapidly growing channel that currently displaces channel three.

3. The Import Channel

This is very short channel with the larger wholesalers who are also importers with their own trucks and space at the main wholesale markets of Fier and Tirana selling either directly but mostly through semi-wholesalers to the retailers. This channel dominates as an estimated 90% of commercial mandarin sales go through this channel, but is now under pressure from growing local supplies (channel 2).

FIGURE 5: THE MANDARIN VALUE CHAIN



Margin Analysis

Table 13 provides an overview of the marketing margins in the mandarin value chain. Even though import duties are hard to estimate (they can be as high as LEK10-20/kg, but not all imports are declared so the actual duty paid per kg is hard to estimate), they are combined with 20% VAT important to secure the competitiveness of the local mandarins. As the trees mature, Albanian production will become much more competitive. Local production of course has a transportation cost advantage. The cost of transportation from Saranda using a 22MT truck is around \$400 (roughly LEK2/kg). By comparison, the costs to transport from northern Greece is LEK3/kg, and from Turkey LEK18/kg, according to the wholesalers.

TABLE 13: MARKETING MARGINS IN THE MANDARIN VALUE CHAIN IN ALBANIA.

Stage in the Chain	Domestic (Saranda)	Import	Stage in the Chain
Cost of Production	38	N/A	
Farm-gate Price	55	61	CIF Price + VAT
Wholesale Price	95	101	Wholesale Price
Retail Price	110	120	Retail Price

Source: Author's estimation based on - cost of production from AAC's citrus expert; farm gate price from the farmer survey; CIF price from ITC, wholesale prices from the Ministry of Agriculture, Food and Consumer Protection, and the retail prices are based on retail margins (of 12-16%) as revealed under AAC's MIS and average prices indicated by surveyed retailers.

There will be downward pressure on prices due to supply growth and increasing buyer market power, so there will be a constant search for efficiency improvements in production and post-harvest handling. Farmers will also have to find ways to deal with bumper crops in competing countries that will dramatically drop prices in particular seasons.

4.2 TECHNOLOGY GENERATION

The main formal source of technology generation for citrus is supposed to be the TTC in Vlora. However, this government organization has only a limited and just recently started citrus research program. As part of this program, five mandarin varieties are being tested in research plots: caffin, esbal, Satsuma Neyagawa, clementine Spinoza, clementine Corsica II. It appears that this research is not well-linked to the needs of the industry. For example, there are no tests on an important variety such as Afourer, the big success story in high-end EU markets and that could potentially play a key role in extending the harvest season and thus in marketing opportunities. The TTC Vlora's limited citrus program is to a large degree related to the limited funding and directive to work on citrus as received from the Ministry of Agriculture.

The Greek connection influences access to technology as well as a host of other aspects of Albania's commercial mandarin value chain. Many farmers in Saranda district have a dual Albanian-Greek nationality, speak Greek, receive Greek pensions, have children that live and work in Greece including in the citrus orchards (and send remittances back home), and move easily and regularly in and out of northern Greece. In the area around Igoumenitsa, just across the border, Greek farmers freely provide advice to their Albanian counterparts on production technologies and marketing practices. This is an important informal source of technology generation, albeit it one that in practice means Albanian farmers copy Greek farmers without sufficient training to fully understand the technology.

4.3 INPUT SUPPLY

Normally, farmers can readily find inputs, seedlings, and equipment from agro-input dealers, nursery operators, and equipment dealers in Southern Albania (USAID 2009) or, as previously mentioned, just across the border near the town of Igoumenitsa, Greece. In 2009 with 80ha brought under production, supply lines were stretched especially for seedlings, and additional suppliers further south in Greece were sought.

4.4 PRODUCTION AND HARVEST⁹

There are an estimated 200 semi-commercial and 250 commercial producers of mandarin in Albania. The Saranda cluster of 250 commercial producers have some 250 ha under mandarins with trees varying in age from newly planted in 2009 to 8 year old trees planted in 2001. The older orchards (7-8 years old) are currently achieving yields of around 80kg/tree. Average yields are 26 kg per tree (reflecting that most trees are still young and many do not produce fruits yet). Commercial orchard sizes vary from 0.4ha to 5ha, with an average 1.5ha. There are on average 400 trees per ha. On average 90% of production is sold, almost all of it to wholesalers and in 84% of the cases the wholesalers buys at the farm (in 16% of the cases the farmers take it to the wholesaler). These farmers also planted some orange trees, roughly in a one-to-six ratio to mandarin trees. This implies that 200MT of oranges are expected to be marketed commercially in 2009 from the Saranda cluster, which could add throughput to a citrus pack house, should one be established. Labor needed for orchard management is locally available and seasonal labor for harvesting is typically brought in from the Northern part of the country.

TECHNOLOGY AND AGRICULTURAL PRACTICES

Mandarin producers in Saranda district use modern technologies such as grafted seedlings, micro-sprinklers, fertigation equipment, tractors, and so on. If well applied, these technologies should allow farmers to achieve yields of 100-120kg/tree on average for mature trees¹⁰. However, these commercial farmers largely copy practices from counterparts in Greece and do not always fully understand the technology or practice. For example, farmers felt that their knowledge of fertigation and plant protection is insufficient. They generally don't do soil testing (a cost) and so don't use optimized (and thus money-saving) fertilizer blends. Pruning, irrigation, and the application of organic fertilizer all greatly impact yield and have to be done according to best practices. For example, irrigation requires a careful calculation of how much water to release in the orchard based on sprinkler capacity, soil conditions, and so on. Too little water hampers the ripening of the fruit, while too much water damages the roots. Pest control can in part be based on Integrated Pest Management (IPM). For example, Greek citrus growers use feromone-based traps to address fruit fly problems. Harvesting techniques are critical for fruit quality, and retailers would like to see their supply lines to treat the mandarin like strawberries rather than citrus, and move the product swiftly from tree to shelf. If harvesting is not done carefully, especially in the case of leaves-off mandarins, 10% of the harvest may be lost for the market. Mandarin growers in Albania do not apply all of these good harvesting practices (see box 1).

Box 1: Good Mandarin Harvesting Practices

- Pick fruit at full-maturity:
- Peel color: >75% yellow-orange
- Total Soluable Solids level: >8.5%, as tested with a handheld refractometer
- Use clippers (if leaves-on) and collecting bags with soft liner and rope to release the fruit gently in field container
- Pick fruit between 9am-3pm, on a dry day, and transport immediately to dry, cool, shaded location

(Tewari 2006)

⁹ This part of the analysis is in part based on a convenience sample of 60 farmers in Saranda, Vlore, Lushnja, and Delvine.

¹⁰ This assumption is based on the yield achieved by Greek mandarin producers just across the border who use a similar technology package.



Grafted Trees and Micro-Sprinklers



Fertigation Tanks



Spraying Equipment

Seasonality

The bulk of Albanian mandarin production is harvested and directly marketed in November and December. Typically a mandarin grower in Saranda will harvest three times: 15% toward the end of October, 60% toward the end of November, and 25% right before Christmas. This will become an issue as volumes become larger and supplies need to be spread out more over time. At the farm level, this implies late harvesting of current varieties as well as the need to introduce early and late varieties. Given that the mandarin fruit is more sensitive to frost than the tree and easily damaged by cold, farmers are perhaps more reluctant to harvest in January, February, or March. For farmers, late harvesting implies a risk-reward trade-off of higher risk of product or market loss, and potentially higher prices when supplies decrease later in the season.

Variety

Introducing new varieties is a critical issue, both in terms of extending the season and delivering a mandarin that consumers like, especially in terms of taste. Four variety groups are currently important in Albania and tracked through AAC’s MIS: Clementine¹¹, Satsuma (C. unshiu), Havana, and Nova. Havana and Nova are older mandarin varieties. Nova is an early Clementine-tangelo hybrid that is mostly seeded and whose skin peels less easily, which undermines its market acceptance. Mandarin farmers in Saranda have mostly focused on a limited range of seedless Clementine varieties, although one interviewed farmer planned to plant the Nova variety. Afourer and clemenule are popular varieties in the EU market. Albania is a member of UPOV and so there are no constraints to introducing new patented varieties in Albania in that regard.

Financial Analysis at the Farm Level

A rough initial farm-level investment analysis was conducted for this study, but it is recommended to conduct this analysis in detail under the AAC program. The capital investment to start a mandarin orchard is estimated at \$49,000 per ha (Table 14), excluding the investment cost to replace the irrigation system in year 15. This cost consists of an initial establishment investment in year one of \$28,500 (Table 1) plus maintenance investments during years one to five, when there is very little or no

‘Late mandarins have been well received by the market, and one could argue they have been the most successful introduction of a new variety in recent years.’
– Bruce Cook, CitroGold, (FPJ 2007)

¹¹ Clementines are usually seed-free, but will develop seeds if cross-pollinated with a seeded citrus, and so Clementine orchards need to be isolated from seeded citrus varieties.

production (this number includes replacing 5% of trees). The cost of the land itself is left out of this analysis as this is hard to estimate and of less relevance in the absence of a real land market¹².

Years six to 12 generate an operating profit that will pay back the investment so that the farm breaks even in year 12. Years 13-30 will then generate a significant profit for the investor if anticipated full production yields can be achieved and maintained throughout the life of the orchard (for example, 30 years). Some of the investment costs can be reduced; for example, a tractor can drive a pump, rather than a stand-alone diesel engine driven pump. Capital investments are based on remittances (USAID 2009) as well as on loans, indirectly. Banks are unwilling to lend money for farming, so farmers use loans for real estate in part. Interest rates on such loans are 18-25%.

TABLE 14: INVESTMENT COST TO ESTABLISH A MANDARIN ORCHARD (US\$/HA)

Item	Calculation	Cost	Life (yrs)
Certified grafted seedlings	500 trees x \$14 per tree	\$7,000	30
Fence	400m x \$5 per meter	\$2,000	30
Land preparation (level and plough)	Fixed	\$1,000	30
Digging drainage system (gravel, plastic)	Fixed (for sloped terrain – less costly)	\$2,500	30
Digging planting holes (1m3)	500 holes x \$1.5 per hole	\$750	30
Planting trees (stick, twists, fertilizer)	500 trees x \$0.50 per tree	\$250	30
Install micro-sprinkler system and	Fixed	\$10,000	15
Pump (100HP – 150m3/hr)	Fixed (but can service up to 4ha)	\$5,000	15
Total		\$28,500	

Source: key informants.

The analysis in Table 15 presents the return to the land and ownership (profit). This is just an initial rough estimation for indicative purposes only and a more detailed and in-depth financial feasibility study is strongly recommended to assess profitability and return on investment (ROI) for mandarin production in the Saranda district. The preliminary results in table 16 indicate that mandarin production in Albania can be very profitable.



Photo 3: Looking down between two rows of mature (8 year old) mandarin trees in an orchard in Albania.

Compared to Greek producers, the cost of production in Albania is currently high. Greek growers sell farm-gate sale at Eur0.18/kg, largely the result of mature trees in full production plus significant subsidies from the EU and the Greek government. Furthermore, farmers receive Eur0.07/kg direct subsidy from the Greek government. Irrigation costs are also lower in Greece, as farmers there drive pumps with subsidized electricity, rather than through diesel pumps that Albanian growers use. Greek producers also benefit from a government-provided insurance scheme. On the other hand, there is a labor constraint in Greece, as labor costs are twice as high in Greece, relative to Albania, and Albanians who lack another nationality often do not have the visa to go to Greece.

¹² One key informant indicated that land prices are around Eur1.5-2 per m², or \$24,500 per ha.

TABLE 15: GROSS MARGIN ANALYSIS FOR A MANDARIN ORCHARD (LEK/HA)

	Five- to six-year-old orchard (40kg/tree)				12-year-old orchard (100kg/tree - full production)			
Production	Unit	Quantity	Unit Price	Total	Unit	Quantity	Unit Price	Total
Revenues								
Production (500 trees)	Kg	20,000	55	1,100,000	Kg	50,000	55	2,750,000
Costs								
Fertilizers				130,000				260,000
Pesticides				130,000				200,000
Irrigation	Ha	15	5,000	75,000	Ha	30	5,000	150,000
Machines (plowing)	Ha	2	10,000	20,000	Ha	2	10,000	20,000
Machines (roto-tilling)	Ha	2	6,000	12,000	Ha	2	6,000	12,000
Machines (cut grass)	Ha	4	6,000	24,000	Ha	4	6,000	24,000
Machines (spraying)	Ha	15	4,000	60,000	Ha	15	4,000	60,000
Machines (transport)	Hour	30	1,000	30,000	Hour	30	1,000	30,000
Labor (spray)	Day	17	1,500	25,500	Day	17	1,500	25,500
Labor (apply, clean)	Day	21	1,200	25,200	Day	21	1,200	25,500
Labor (prune)	Tree	500	100	50,000	Tree	500	150	75,000
Labor (harvest)	Day	83	1,200	100,000	Day	210	1,200	252,000
Management				68,170			1108700	110,870
Tree Replacement	Tree	25	1,500	37,500	Tree	25	1,500	37,500
Total Costs	Kg	20,000	39	787,370	Kg	50,000	25	1,257,070
	Gross Margins		Net Margins (Depreciation =LEK130,000)		Gross Margins		Net Margins (Depreciation =LEK130,000)	
LEK/ha	312,630		180,000		1,492,930		1,360,000	
LEK/kg	16		9		30		27	
\$/ha	3,360		1,900		16,053		14,700	
\$/kg	0.17		0.10		0.32		0.29	

Source: Author's calculations based on data provided by Konstandin Koco (AAC Program). Assumptions made: (1) management cost and costs for insurance and agronomists services are 10% of the total variable cost – all included under 'management' in the table; (2) an average annual tree loss of 5% - for example, 25 trees need to be replaced at a cost of LEK1,500/tree; (3) marketable yields of 40 and 100kg per tree represent averages; and (4) the depreciation costs are \$43,500 or LEK4 million written off over 30 years, including replacement of the pump and irrigation system after 15 years.

4.5 ASSEMBLY, CLEANING, WAXING, SORTING, PACKING, AND STORAGE

Assembly is done by a small number of consolidating traders and smaller wholesalers who go down to Saranda to make arrangements with several farmers to buy their mandarins. Cleaning, waxing, sorting,

packing, and (cold) storage facilities (pack houses) are not currently present in Albania's citrus value chain. This is because at the current production levels, all local production can be readily sold untreated and unsorted in the domestic market by filling incoming orders. Wholesaler/importers have limited storage space at key wholesale markets to regulate the inflow of imported mandarins (citrus in general). Storage space linked to a pack house could also be used for ripening if additional equipment is installed. Local produce is transported while packed in larger, re-usable plastic crates—the same ones used for harvesting mandarins in the field (field crates). Imported produce is packed in smaller (8-10kg), one-way plastic crates used by retailers.

'Spain has everything we could need. They have fantastic pack houses that can do anything. Their varietal development is so good it's hard to see where any better options would be. We don't jump around the other Mediterranean countries just because they happen to be cheaper.'

– Paul Olins, Poupart Citrus, Waitrose's citrus category manager

Many post-harvest handling practices influence fresh mandarin quality: growth regulator improvement of postharvest quality, cultivars, harvesting techniques, transportation to the packinghouse, degreening, separation and grading of freeze-damaged fruit, packing line machinery, postharvest citrus diseases and their control, physiological disorders, washing, waxing and color-adding, packaging and unitization, plant test regulations, pesticide tolerances, transportation to markets, and storage of citrus fruits.

'It has been quite a difficult year for Spain in terms of high evening temperatures and rain coinciding with their harvest, so we have been switching heavily into Morocco where there are some very good varieties.'

– Matthew North, Sainsbury's citrus buyer (FPJ 2007)

4.6 WHOLESALE AND RETAIL DISTRIBUTION

Albania has an extremely fragmented retail market, dominated by thousands of small independent units. FFV are retailed through street vendors, open air market stalls, small shops, and a handful of supermarkets (especially in Tirana). Open air markets are also used by farmers selling their own produce and by traders selling mostly low-priced imported FFV.

Due to the strongly fragmented nature of both the national food market and the farm sector, wholesalers play a fundamental role in the national food supply. However, just like the retail sector, the wholesale market is also very fragmented, so there are hundreds of small “semi-wholesalers” which have to source parts of their produce from smaller, regionally operating wholesalers and larger wholesaler-importers. This makes the food distribution chain inefficient, and only increases in scale can address these inefficiencies.

The larger wholesaler-importers operate on key wholesale markets, especially the modern, privately owned wholesale market in Fier and the largely mismanaged wholesale market in Tirana. Probably a dozen of these wholesaler-importers specialize in citrus. They have their own refrigerated trucks, shipped via the port of Durrës to Italy, to procure fresh produce such as mandarins. Mandarins are procured by the pallet, packaged in plastic crates of 8-10kg, with the leaves on. They are generally not sorted by size or waxed. Orders are placed over the phone—a convenient solution for the wholesaler. They directly import other citrus fruits (lemons and oranges) in full containers from suppliers as far away as Argentina in the off-season months.



Photo 4: A Truck used to transport mandarins from Italy to Albania's wholesale markets.

Although smaller wholesalers and larger wholesaler-importers trade in domestic and imported mandarins, the channels for these products are separated. Importers prefer the convenient and reliable order mechanism of imports over the cumbersome, unreliable procurement methods needed to buy locally. The absence of a consolidator with a pack house in the production area means a lack of easy, reliable order point into which the wholesaler-importer can tap. Wholesalers have to contract directly with several farmers to build volumes large enough for efficient transportation. Since these importers are main leverage points in the mandarin value chain, this missing link represents a key constraint to its development.

4.7 GENDER CONSIDERATIONS

Men conduct most of the activities in the mandarin value chain. Women play a more significant role in harvesting (seasonal labor) and retailing. If a pack house were to be established to add value to mandarin production in the Saranda district, then approximately 100 seasonal jobs would be created for sorters, an estimated 80% of which would be allocated to women.

5. Systemic Constraints and Upgrading Opportunities

5.1 RELATED TO THE BUSINESS ENABLING ENVIRONMENT

Land rights and land markets. Orchard investments have a lifespan of 30 years, and farmers want to have clear title to the land. Unfortunately, Albania's land reform policies created many small plots that are difficult to sell (see Box 2). For the Saranda cluster, this means that expansion will generally come from new investors who already own land. However, many of these land owners expect to make this investment in the near future and an expansion up to 1,000ha is feasible in the Xarre-Mursi-Konispol valley. Furthermore, this valley had better access to land in the past because many land owners relocated and left their land behind. Also, some farmers got 30-year leases to government land, but this is no longer an option for new orchards.

The potential impact of EU membership: Albania formally applied for EU membership on April 29, 2009. EU membership would have positive and negative effects. On the positive side, it would imply access to EU subsidies (€40 billion Common Agricultural Policy [CAP]) which greatly improves the price competitiveness of EU producers (Frank 2003). For example, there are subsidies for the purchase of spraying equipment or the building of packs houses (for

Box 2: The Land Market in Albania

The Fourth Agrarian Reform of 1991 re-introduced the right to own land as private property and cleared the way for a land privatization scheme that was executed over the period 1991-1998. Out of a total of 700,000ha of arable land offered to the population (for example, all arable land in Albania), 546,000ha were accepted. These 546,000ha of former state and cooperative land were split into 1.9 million plots and given to 466,000 families, resulting as many farms each 1.2ha in size. A land registration system was developed and all land was registered over the period 1994-2001, supposedly paving the way to a land market. This market has not developed yet because potential buyers are deterred by perceived insecure or insufficiently or erroneously documented property rights and by a high incidence of disputes (for example, those related to the title to the 170,000 ha of land expropriated in 1945 [World Bank 2006]). Some farms of larger size (10ha) that have emerged in coastal areas are based on land consolidation between patrilineal kin.

example, 45% of the Eur500,000 cost of building the citrus pack house in Igoumenitsa, Greece, were subsidized by the EU). On the negative side, it will imply a loss of current market protection (VAT and import duty) and strict compliance with regulatory requirements (food safety and environment). The latter would increase costs at best and in the case of noncompliance, would lead to market exclusion and bankruptcy. The net impact is unclear and an assessment of this impact could be a valuable AAC activity.



Photo 5: A freshly planted orchard, fenced in, in the Saranda cluster.

Government stimulus plan: A GoA agricultural stimulus plan promised to pay subsidies to farmers planting citrus and other trees. These subsidies could add up to \$7,500 per ha (25% of the initial investment cost). This had a very strong impact in the Saranda district, where 81 ha were planted with mandarin trees by new farmers (mostly) in 2009. However, the plan varied over time in its design and was never an assured deal for the farmer. Rather, it involved a scoring system managed at the district level, and only farmers achieving the highest scores were eligible for subsidies. The plan was also underfunded. From conversations with farmers in Saranda, it appears that most farmers will not receive these subsidies. In October 2009,

about 20% of farmers received \$1,800 in subsidies under this program, according to one well-placed key source. Although this will clearly impact the effect of future similar stimulus plans, preliminary analysis indicates that even without this subsidy, investments will provide a positive return.

Market regulation: One major problem in Albania's FFV supply chain is the poorly-organized wholesale market in Tirana, where there is no separation of wholesale and retail sales, and small market participants pay no license fees or rent (Eur1,000/month for large wholesalers). Retailers, semi-wholesalers, and even farmers sell their produce next to wholesalers at lower or similar prices than those paid by the wholesaler (to the same farmers). Farmers sell in the market themselves when prices are high, and expect wholesalers to sell their produce when there is an oversupply and prices are low. This mechanism is self-defeating and undermines the establishment of an efficient supply chain based on economies of scale. It assures that large wholesalers limit themselves to imports and off-seasonal sales, rather than deal with local produce. For the emerging mandarin cluster in Saranda, this has not yet happened and nearly all sales go through wholesalers. To avoid the pitfall that has hampered the development of other FFV markets, it is important to establish a supply chain that involves larger wholesaler-importers, as this supply chain grows with increasing local mandarin supplies.

Food safety regulations: There is little enforcement of food safety laws (for example, chemical use by farmers).

Trade regulation: Local produce receives a market protection through the VAT and import duty systems. While local produce is subjected to neither in practice, imported produce is subjected to 20% VAT and a somewhat complex import duty calculation. Importers indicate no problems with clearing imported citrus through customs, but they do note that the customs tariff system is poorly designed.

5.2 RELATED TO VERTICAL AND HORIZONTAL LINKAGES AND VALUE CHAIN GOVERNANCE

For commercial mandarin producers, we distinguish two governance mechanisms. The first is one whereby the trader (smaller wholesaler) comes to the farm before harvest starts and agrees to buy all the mandarin produced by the orchard, independent of quality. Producer and trader agree upon a price, and the trader then comes to the farm with his own pickers, picks the amount of mandarin as needed by the market, records the amount of produce removed with a local weigh bridge, and pays the farmer for the harvested volume. The trader is responsible for all post-harvest handling, including grading, sorting, and packaging. This system is used only by larger commercial mandarin growers. The second governance mechanism involved smaller brokers buying smaller volumes on an ad hoc basis and taking it to wholesale markets. There are an estimated 10 brokers in the 5-10MT range and 30 in the 1-2MT range that buy mandarin from the producers in Saranda. This is the mechanism used by all other commercial mandarin growers, excluding the few cases where they would take mandarins to the wholesale market themselves and then sell through wholesalers there.



Photo 6: A weigh bridge used to weigh trucks (and their loads) in the Saranda cluster.

There are no long-term trading relationships (coordination), only ad-hoc transactions, although there is a tendency for the same wholesalers and growers to seek each other out for repeat transactions. Buyers set the rules. They bring crates for packing. They may renege at the last minute on a verbal agreement made earlier to extract a lower price from the farmer. Volumes per deal are in the 1-10MT range. Price discovery by growers is based on phone calls to farmers in Greece and wholesalers in Albania, but access to AAC's MIS could improve this. Payments are mostly COD, but some farmers are paid by check or into their bank account. Wholesalers typically sell direct to retailers in Albania, although there were some rumors that some of the Saranda mandarin production was exported informally to Kosovo via traders based in Shkoder. Sales by farmers to a nearby consolidator in Greece are limited, as Greek growers protect their market (priority for own production).

Collaboration among growers is important to facilitate vertical linkages with large buyers through while at the same time increasing the growers bargaining position. Some key examples of such formal citrus farmer groups globally are the cooperative Sunkist (United States) and the union of cooperatives Anecoop (Spain). Amongst the Saranda cluster farmers, as for farmers in Albania in general, however, there is resistance to work in formal groups such as cooperatives, as these are associated with the failed and loathed collective farming system of the past. Farmers are very driven, willing to adapt to the latest technologies and demands in the market, but they strongly prefer to operate individually, especially in terms of marketing. Farmers share experiences amongst each other easily though, and there are some activities that could further strengthen groups, such as developing a community managed irrigation system in Xarre. The latter relates to exploiting the presence of a channel against the hills around the valley, which could be fed from a basis using a high-capacity pump and reduce the irrigation costs for farmers in this key mandarin growing community. Mandarin growers will have to realize, as their competition in other countries did, that there is a need to coordinate and that this can be achieved without sacrificing individual enterprise.

Both growers and wholesaler-importers like the idea of a consolidation center, in principle. The farmers' interest in being directly involved in pack house operations (for example, as shareholders) varies from farmer to farmer. It probably is best to keep growing and packing separated to assure effective management of the pack house operations (although a few farmers could assist with investment capital as shareholders).

It is important that the consolidator is trusted by the farmers. Two years ago, two buyers were interested in buying an entire supply, collecting it in one point. The deal fell apart for several reasons, but mostly because the buyer did not have the working capital to pay COD and because of disagreements on prices.

5.3 RELATED TO SUPPORT SERVICES

The farmers lack good agronomy support that can cater to their needs as modern mandarin producers. Agronomic support services are critical for dealing with issues such as soil testing, measuring the ripeness and sugar content of the fruit, and avoiding or containing diseases such as citrus canker that have wreaked havoc on citrus production in other producing countries. In Greece, these services are readily available and mandatory in the case of spraying chemicals (one needs a permit from an agronomist before spraying). In Albania, government agricultural support services are extremely limited and not up to date with the latest technologies. Responsiveness to critical issues (for example, a disease outbreak) is lacking.

In 2009 this weakness was exposed when a widespread infection of trees could not be readily identified, resulting in an undetermined loss of productivity. Samples of infected leaves were sent to the TTC Vlore and tested in the laboratories of the Agricultural University of Tirana in Dures, but they did not identify the problem, let alone develop a solution. Only after Spanish experts were brought in via the growers' Greek connections could the problem be identified, but by then it was too late, as the disease had petered out and trees recovered naturally.

6. Vision and Strategy for Improved Competitiveness and Growth

6.1 VISION¹³

By 2020, a vibrant cluster of 400 mandarin growers and two to three consolidators with modern pack house operations in the Xarre-Mursi-Konispol valley in Saranda District will produce 14,000MT of mandarins from 400ha over a four-month window (late October – early March) and supply it with competitive prices and quality to a broad range of markets. These markets will include 7,000MT sold in the domestic market (market share of 70%), 5,000MT sold in the Balkan region, including through the leading regional supermarket chains, and 2,000MT to a high-end market such as Russia.

6.2 STRATEGIC ISSUES SYNTHESIS

The only key competitive advantage Albanian mandarin producers have is a lower price relative to imports. The product is not earlier in the market or of superior quality (for example tastier, easier to peel), although it appears to have a freshness advantage. At the current low volumes, relative to the size

¹³ See Appendix C for a more detailed description of this envisioned growth path.

of the market, selling increased produce would not be difficult. However, when volumes increase to, for example, more than 30% of the market, good vertical coordination and investments in a pack house would maintain competitiveness.

6.3 VALUE CHAIN COMPETITIVENESS STRATEGY

The vision presented above is based on five key assumptions: (1) an annual expansion in acreage of 6%; (2) farmers achieving average yields of 110kg per tree for mature trees; (3) harvests spread out over the entire winter period; (4) consolidators invest in modern pack houses and succeed in entering various markets; and (5) farmers will sell the majority of their harvest through pack house operators.

Assumption (1) is realistic as there are 1,000ha available for citrus production and 6% growth is far below the current growth rate, even if we take into account that the growth rate up to 2009 implies a start from a small base and some of the growth was driven by subsidies not expected for the future. The other assumptions are not as straightforward and the proposed competitiveness strategy aims to underpin them through a production and a consumption axis.

FIGURE 6: COMPETITIVE MANDARIN VALUE CHAIN



PRODUCTION AXIS OF THE COMPETITIVENESS STRATEGY

This part of the strategy aims to establish a large, quality supply of mandarins throughout the season through: (i) building farmer capacity; (ii) facilitating the establishment of better agronomic support services; (iii) introducing new mandarin varieties; and (iv) introducing new/improved post-harvest handling techniques. The first two elements are needed to help assure that trees efficiently achieve yields of 110kg/tree at full maturity on average (for example, the yields achieved in Greece) throughout the orchards lifetime (30 years). The last two elements are needed to extend the harvest season, which in turn is needed for three reasons: (1) it is the only way to substitute imports during this time period; (2) it is needed to even out production over time, providing for a steady flow of mandarin through a pack house; (3) to capture the high price months (October, January, February).

(i) Build Farmer Capacity

Farmers in the target area are very committed to their farms and eager to invest in state-of-the-art technologies and to follow best practices, but they are learning by copying and trial and error. A few Albanian booklets assist growers, but these are not focused on mandarins and they lack depth, scope, graphic content, and a review of the most modern techniques¹⁴. TTC Vlora has provided a few training

¹⁴ These are two booklets available from TTC Vlora: Nelaj et al. (1999) and Nelaj (2007).

programs related to mandarin production in Saranda district, but this has been limited. Specifically, more training is needed on pruning, irrigation, fertigation, pesticide applications, the application of other chemicals such as gibberellic acid that improve quality and permit late harvesting, recognizing diseases and other problems at the orchard, and harvesting, amongst others. In addition, training is needed to help farmers keep better records (which is rare), as this will provide critical insight on the profitability of mandarin production in Albania and facilitate efficient use of resources (productivity) based on best practices (GAP). This training can also be linked to facilitating access to financing for orchard expansion.

(ii) Establish a Better Agronomic Support Service

Efficient and effective agronomic support services are critical for modern mandarin orchard management. Currently, these services are provided by an extension officer of the Department of Agriculture and informal advice from the growers' Greek counterparts. No private agronomists provide such services in Saranda district. In 2009, this weakness was exposed when a disease outbreak could not be maintained, as discussed earlier. Improved agronomic services would also facilitate access to cutting-edge research on mandarin production in the Mediterranean (for example, on planting density, varieties, post-harvest techniques) that currently has no channel to the growers in Saranda. In addition, strengthening the agronomic service providers would also represent a good stepping stone to an EU context where growers have to get formal approval from agronomists before any chemicals can be applied in the field.

(iii) Introduce New Mandarin Varieties that Extend the Season and Address Consumer Preferences

Varietal selection is a core aspect of mandarin (citrus) procurement by leading retailers, mostly as it relates to taste and seasonal availability. Varietal selection is also critical for extending the season. A careful selection of three or four mandarin cultivars per orchard can yield fresh fruit for a four-month ripening period. By introducing farmers to new varieties and the advantages of planting these, in collaboration with agronomists, research institutes and mandarin seedling nurseries, they can move away from the current reliance on the same one or two clementine varieties. New introductions can come through new seedlings or grafting on existing trees.

(iv) Improve and Expand Post-Harvest Handling Techniques to Extend the Season and Improve Quality Consistency

Extending the season for existing as well as new varieties also implies a set of more advanced storage and post-harvest handling techniques that improve storage life as well as quality and ripening, such as cold storage usage (at 5°C mandarins can be stored 1 month); heat treatments (for example, hot water dip); waxing, which extend shelf life with 14 days; fungicide or fungistat treatments (for example, adding pads impregnated with diphenyl in shipping containers to contain the spread of fungi), applying growth regulators (ethylene for degreening); the use of perforated polyethylene bags (which allow storage for 21 days at room temperature); and radiation (Morton 1987).

MARKETING AXIS OF THE COMPETITIVENESS STRATEGY

This part of the strategy aims to facilitate an efficient flow of the mandarin production in Saranda to various market throughout an extended season through: (i) facilitate the establishment of a consolidator-operated pack house; (ii) facilitate long-term linkages between an informal group of farmers and the consolidator; and (iii) facilitate long-term linkages between the consolidator and a set of new buyers (including supermarkets) in domestic, Balkan, and wider European markets.

(i) Facilitate the Establishment of a Consolidator Operated Pack House

The emergence of a pack house is a condition for the competitiveness of the mandarin cluster in Saranda. In the absence of large growers, a new entrepreneur needs to take on the role of consolidators and build a modern pack house facility. This pack house is needed to cater to the needs of new buyers, mainly the large wholesaler/importers who currently handle 90% of the mandarin volumes in Albania. Only a consolidator-operated pack house that can sell large volumes of palletized crates of quality sorted, well-packaged product upon order (one to two day order cycle time) can offer a product that in the eyes of the importers can compete with the ease of importing. A potential investor with good connections to the grower has already been identified. This entrepreneur should now be assisted in terms of a business plan development, financing, starting operations, packaging, and marketing strategy. It is then expected that the emergence and success of this pack house/consolidator will spur the entry of additional entrepreneurs. There is room for two to four of these pack house operations over time for the assumed growth path.

(ii) Facilitate Long-Term Grower – Consolidator Linkages

The operational efficiency of the consolidator and the pack house are determined in part by the actual capacity usage. Assuring sufficiently large supplies (around 50% of total production), spread out over time in line with pack house capacity and market-demanded volumes will be critical. Facilitating long-term supply linkages between an informal group of growers and the consolidator can take the form of: (a) working with consolidators and individual growers to develop a common understanding of the market and best practices such as harvesting (pre-harvest intervals for spraying, timing related to ripeness, harvest and post-harvest treatment required to avoid damage); (b) brokering a long term partnership that deals with price-discovery (using the AAC MIS as a benchmark in addition to getting prices from Greece), price determination (a small premium for farmers is needed to incentivize them to cater to more demanding client), payment (COD if possible), supply mechanisms (minimum volumes, short order cycles), and planning (tracking harvestable volumes).

(iii) Facilitate Long-Term Consolidator – Market Linkages

Downstream the value chain, new market linkages need to be forged between consolidators and demanding buyers who currently buy very little or no domestic mandarins. This can be achieved only when the linkage results in transactions that are profitable for the farmer, the consolidator, and the importer. These profits can be derived from exploiting: (a) the gap between Albanian farm-gate prices and CIF import prices, which are subject to VAT and import tariffs, (b) economies of scale in domestic transportation and lower transaction costs per kg in relation to the small wholesalers due to higher volumes, (c) reduced post-harvest losses through improved handling, and (d), and the higher quality of local mandarins (since no siphoning off of high quality mandarin) linked to a differentiation strategy based on brand development, improved packaging and branding. This strategy component will entail analyzing these new buyers' product and delivery format needs in greater detail, facilitating pack house operations needed to cater to these needs (for example, sorting), and being a neutral third party facilitating initial deals between consolidators. Four types of buyers/markets should be targeted, in order of importance: (1) large importer/wholesalers in the local market; (2) local quality retailers; (3) Balkan regional traders/wholesalers; and (4) importers in high-end export markets.

7. SUGGESTED ELEMENTS FOR A MANDARIN VALUE CHAIN UPGRADING PLAN UNDER AAC

Based on the above analysis and strategy, table 16 presents a comprehensive set of activities that could be undertaken by the AAC program in collaboration with indicated partners. These activities should lead to a sustainable upgrade that improves the competitiveness of Albania’s mandarin value chain.

TABLE 16: PROPOSED AAC ACTIVITIES FOR UPGRADING THE CITRUS VALUE CHAIN

PRODUCTION AXIS		
Activities	Details:	Proposed timing:
Component 1: Build Farmer Capacity		
<ul style="list-style-type: none"> Develop mandarin growers’ manual and complementing videos 	<ul style="list-style-type: none"> Develop a detailed, comprehensive, and practical mandarin growers’ manual with color pictures as well as a set of matching instructional videos in the Albanian language (in 500 copies). Collaborate with leading citrus research institutes in the Mediterranean region is essential. TTC Vlora’s citrus expert, Dr. Jaho Nelaj, could co-author the manual with an international mandarin expert. Additionally, USAID’s AMARTA project in Indonesia has developed some videos and could provide a guidance. World Bank could co-fund such a publication as they funded the current citrus booklet available from TTC Vlora. 	<ul style="list-style-type: none"> December through March 2010
<ul style="list-style-type: none"> Farmer overseas study tour 	<ul style="list-style-type: none"> Organize a study tour for 10 lead farmers in Saranda to Spain to observe best practices. Follow-up this tour with a presentation to the farmer community. AAC staff and the TBD agronomic service provider should guide this tour. 	<ul style="list-style-type: none"> October 2010
<ul style="list-style-type: none"> Farmer training in record keeping 	<ul style="list-style-type: none"> Training to assist farmers in keeping records. Include a pre-seasonal training to discuss records to keep, and post-seasonal training to discuss records that were collected. Work with some farmers to keep records during a complete season in between the two training sessions. AAC staff with TTC Vlora to execute this activity. 	<ul style="list-style-type: none"> February 2010
<ul style="list-style-type: none"> Facilitate community pump installation 	<ul style="list-style-type: none"> Work with farmers in the Xarre community to establish community-managed irrigation system to transfer water from an existing large basin into the channel system along the valley flank that remains from the old state citrus farms. This could significantly reduce irrigation costs. A feasibility study and farmer focus group should precede this activity to establish possibilities. 	<ul style="list-style-type: none"> March 2010

PRODUCTION AXIS		
Activities	Details:	Proposed timing:
<ul style="list-style-type: none"> Farmer production training sessions with field day demonstration Farmer harvest and post-harvest handling training sessions with field day demonstrations GlobalGAP training for farmers 	<ul style="list-style-type: none"> Domestic and international experts (via STTAs) in mandarin production (pruning, irrigation, fertigation, disease management, pesticide use, and so on). Provide training sets of four training sessions, each session for around 50 mandarin growers in Saranda. These training sessions should be linked to field demonstrations on selected lead farmer farms. This should include TTC Vlora, Department of Agriculture extension officers, and TBD agronomic service providers. Domestic and international experts (via STTA) in mandarin harvesting and post-harvest handling provide training sets of four training sessions for around 50 mandarin growers in Saranda. This should include TTC Vlora, Department of Agriculture extension officers, and TBD agronomic service providers. Bring in a GlobalGAP expert for a training on GlobalGAP and help initiate the certification process as markets requiring this standard are selected for targeted sales attempts. 	<ul style="list-style-type: none"> April 2010 October 2010 March 2011
Component 2: Establish a Better Agronomic Support Service		
<ul style="list-style-type: none"> Facilitate the emergence of for-fee agronomic services Strengthen the capacity of TTC Vlora in citrus and its links to the farmers 	<ul style="list-style-type: none"> Strengthen capacities of the Department of Agriculture extension officers or use a strategic grant to facilitate the establishment of private agronomist services. One option to explore is an expansion of fee-based agronomist services by nursery operators. This could be done through a new, more elaborate mandarin research program characterized by experiments on private farms in Saranda, joint financing between the AAC program and the Department of Agriculture (DOA) in the initial phases (for example, procurement of seedlings), the establishment of an advisory group that has grower representatives, DOA extension officers, TTC Vlora and AUT researchers, and potentially some international citrus experts as members, that amongst others would provide a forum on which insights from the key global citrus industry journals are shared with growers, and facilitating linkages between TTC Vlora and leading citrus research institutes in the Mediterranean (for example, the various institutes of the International Centre for Advanced Mediterranean Agronomic Studies [CIHEAM] including one in Bari, Italy. Albania is a member of CIHEAM). 	<ul style="list-style-type: none"> December 2009 January 2009
Component 3: Introduce New Mandarin Varieties that Extend the Season and Address Consumer Preferences		
<ul style="list-style-type: none"> Conduct mandarin 	<ul style="list-style-type: none"> STTA-based assessment by an international mandarin variety expert that provides recommendations on varieties 	<ul style="list-style-type: none"> March 2010

PRODUCTION AXIS		
Activities	Details:	Proposed timing:
variety assessment study <ul style="list-style-type: none"> Stakeholder's roundtable on new mandarin varieties 	<p>that are optimally suited to the growing conditions in Albania and have the best market prospects in terms of consumer preferences and anticipated production from competing sources (avoidance of oversupplied varieties). For example, what is the potential to introduce the Afourer variety that is very popular in the market right now? An option for an expert in this area is Dr. Graham Barry, manager of cultivar development at the University of Stellenbosch's Citrus Research International (South Africa).</p> <ul style="list-style-type: none"> Organize roundtables managed by the international expert conducting the assessment above and with the participation of farmers, nursery operators, TTC Vlora, AUT, a private agronomist, wholesalers, and a consolidator to discuss and select the varietal options. Assess option of strategic AAC grants to facilitate introduction of these new varieties at the farm. 	<ul style="list-style-type: none"> March 2010
Component 4: Improve/Expand Post-Harvest Handling to Extend the Season and Improve Quality Consistency		
<ul style="list-style-type: none"> Course for consolidator packer on post-harvest management 	<ul style="list-style-type: none"> This one-on-one course between an international pack house expert (STTA) and an emerging consolidator-packer should expose the latter to various techniques that help preserve post-farm gate quality, reduce losses, and extend the season. Strategic grants can reduce risk and stimulate trials in this area. 	<ul style="list-style-type: none"> August 2011
MARKETING AXIS		
Component 1: Facilitate the Establishment of a Consolidator Operated Pack House		
<ul style="list-style-type: none"> Develop a pack house business plan 	<ul style="list-style-type: none"> With the assistance of a pack house expert and a feasibility study specialist (STTAs), work with an identified emerging consolidator-pack house operator to develop a business plan with a 10-year horizon based on a thorough design and feasibility study that examines investment and working capital. The plan should be created in collaboration with a citrus packing line equipment manufacturer such as Maf Roda and should entail a step-wise expansion from a simple sorting facility to a fully fledged pack house by 2014, to coincide with an expansion of the target markets. An initial design for a complete modern packing line for leaves-on mandarin handling is presented in Appendix B – this is a design for a 5MT/hr capacity pack house, which is smaller than the facility in Igoumenitsa (at 8MT/hr – handling 3,000MT per season) but probably sufficient for the first pack house in the Saranda cluster. 	<ul style="list-style-type: none"> January 2010
<ul style="list-style-type: none"> Facilitate the 	<ul style="list-style-type: none"> AAC staff explore financing options for the proposed pack 	<ul style="list-style-type: none"> March 2010

PRODUCTION AXIS		
Activities	Details:	Proposed timing:
financing of the pack house investment	house facility, likely combining the entrepreneurs' equity with a strategic grant from the AAC program, a commercial bank loan, and co-financing from other donors (such as the World Bank), EU pre-accession funding, and so on. The cost for the equipment plus installation is estimated at €370,000 (see Appendix B);	
<ul style="list-style-type: none"> Facilitate the start-up of the pack house 	<ul style="list-style-type: none"> AAC staff work with the consolidator and the pack house equipment supplier/installer to establish the pack house and initiate operations – including working capital access and management, which may entail finding factoring solutions based on sales contracts with wholesaler-importers or establishing lines of credit with commercial banks; 	<ul style="list-style-type: none"> July 2010
<ul style="list-style-type: none"> Assist in developing optimal packaging solutions 	<ul style="list-style-type: none"> AAC staff work with an international (if needed) and local packaging specialist/supplier in determining the best packaging for various markets in terms of preservation of product quality, cost, environmental impact, branding, and market acceptance (one-way plastic crates of 8-10kg as currently used for lower quality, leave-on imported mandarins or cardboard boxes as used more for higher quality mandarins that have received the full treatment of washing, drying, and waxing); 	<ul style="list-style-type: none"> August 2010
<ul style="list-style-type: none"> Develop a marketing strategy for the consolidator 	<ul style="list-style-type: none"> The consolidator works with an agri-food marketing specialist in the development of a quality-based differentiation marketing strategy that will feed a new, higher quality local mandarin product into the domestic market. This would represent an extension of AAC's Taste of Albania branding and promotion strategy and could be linked to two quality grades: a standard grade for the bulk of the production sold through importer-wholesalers and open air markets, and a premium grade for direct sales to more high-end markets (supermarkets, Tirana's New Market, and possibly export markets such as the EU or Russia). 	<ul style="list-style-type: none"> September 2010
<ul style="list-style-type: none"> Consumer research on mandarin consumption 	<ul style="list-style-type: none"> With this assistance of an agri-food marketing specialist, the marketing strategy should be based on in-depth domestic consumer research, including blind tasting, packaging reviews, and discussions of willingness-to-pay for selected attributes (most notably a consistently good taste signaled by a brand name). For example, importers indicated that while most of the imported mandarin is second grade, some is first grade and receives a LEK10-20/kg premium. The Greek packer visited for this study indicated that while farmers are paid a fixed price per kg delivered, the packer received a €0.05 premium per size category increase. They have sizes 	<ul style="list-style-type: none"> August 2010

PRODUCTION AXIS		
Activities	Details:	Proposed timing:
<ul style="list-style-type: none"> Trade opportunity analysis 	<p>one (15 pieces per kg) to five (10 pieces per kg). Size five mandarins fetch a price that is approximately €0.20 higher than size 1.</p> <ul style="list-style-type: none"> AAC staff with an agri-food marketing and/or trade specialist, should assess the most promising export market opportunities in terms of specific consumer demands, the competitive offering, and the key market entry contacts. 	<ul style="list-style-type: none"> January 2011
Component 2: Facilitate Long-term Grower-Consolidator Linkages		
<ul style="list-style-type: none"> Organize and facilitate exploration and negotiation sessions between growers and consolidator 	<ul style="list-style-type: none"> These should be group sessions in which the benefits of working through a pack house are clearly demonstrated and subsequently discussed. Key discussions are: (a) developing a common understanding of the market and related best practices such as harvesting (pre-harvest intervals for spraying, timing related to ripeness, harvest and post-harvest treatment required to avoid damage); (b) brokering a long term partnership that deals with price-discovery (using the AAC MIS as a benchmark in addition to getting prices from Greece), price determination (a small premium for farmers is needed to incentivize them to cater to more demanding client), payment mode (COD if possible), supply mechanisms (minimum volumes, short order cycles), and planning (tracking harvestable volumes). 	<ul style="list-style-type: none"> Several sessions starting January 2010
Component 3: Facilitate Long-term Consolidator-Market Linkages		
<ul style="list-style-type: none"> Stakeholder workshop to discuss domestic marketing options Help broker direct deals between the packer and the supermarkets 	<ul style="list-style-type: none"> Large importer/wholesalers in the local market are the main initial target market, where local producers have price and quality advantage over imports, but via the consolidator they need to become a reliable, easy order point for palletized mandarin shipments. AAC staff will work with the 10 most important citrus importer-wholesalers to determine these new buyers' needs in terms of product and delivery format in greater detail, to facilitate pack house operations that cater to these needs (for example, sorting), and (with the AAC program as a neutral third party) to facilitate the initial deals between the consolidator and the importer-wholesalers leading to 700MT sold through this channel by 2012. Work with supermarkets (especially those with regional presence (EuroMax-Delta M, Mercator, Conad) and other high-quality retail markets such as New Bazar in Tirana emerging, help broker a deal between the packer and the high-end retailers resulting in 100MT sold through this channel by 2012. This would provide an initial smaller step for a smaller volume to add value by sorting. This strategy can piggy-back on AAC's current relationship with supermarkets. 	<ul style="list-style-type: none"> June 2010 (start) July 2010 (start)

PRODUCTION AXIS		
Activities	Details:	Proposed timing:
<ul style="list-style-type: none"> • Help broker deals with regional buyers 	<ul style="list-style-type: none"> • Through trade show participation and trade missions, the emerging packer and AAC staff will explore market opportunities to sell to Balkan regional traders/wholesalers, looking for specific leads, and resulting in 300MT sold annually by 2012. These nearby markets can be supplied with the same product as the importers in Albania, while exploiting transportation cost advantages and ethnic links. Serbia, Kosovo, Macedonia, and Montenegro are promising markets. 	<ul style="list-style-type: none"> • August 2010 (start)
<ul style="list-style-type: none"> • Help broker trial shipments with leading supermarkets chains in high-end markets such as the U.K. or Russia 	<ul style="list-style-type: none"> • Following up on existing AAC program leads with supermarket chains such as ASDA in the UK, the potential to broker deals with high-end markets should be explored. These markets are more rewarding but more difficult to enter. Entrance will require the presence of a fully fledged pack house with modern packing line equipment (see appendix B). Russia has good potential here. Another option is to export through nearby Greece (piggy-back in the Greek distribution system into the EU markets). This effort links to GlobalGAP certification for farmers and if the pack house delivers a product acceptable for the selected EU market, should result in one or two trial shipments of 20MT containers in 2012. To get a better understanding of these markets, visits to (not yet participation in) the Berlin Fruit Logistica produce and World Food Moscow food fairs focusing on mandarin offerings would be a complementary activity. 	<ul style="list-style-type: none"> • June 2011 (start)

APPENDIX A: LIST OF KEY INFORMANTS

Almuça, Mira – Chief, Plant Production Policies Department, Ministry of Agriculture

Bakalli, Violeta – Extension Specialist, Agricultural Extension Service Department, Ministry of Agriculture

Bami, Stavri – Mandarin farmer, Saranda District

Bushi, Zambak – Consolidator, Fier wholesale market

Cero, Sokrat – Mandarin Farmer, Saranda District

Danga, Kostandin – Consolidator, Saranda

Estrada-Valle, Juan – Chief of Party, AAC Program

Gjika, Saqi – Consolidator, Igoumenitsa (Greece)

Gongo, Namik- Fruit Importer/Wholesaler, Tirana Wholesale market

Hoxha, Osman - Crop Production Specialist, Plant Production Policies Department, Ministry of Agric.

Hyka, Hamza - Fruit Production Specialist, Plant Production Policies Department, Ministry of Agriculture

Janko, Agim – Consolidator, Lushnja wholesale market

Janopulli, Ilia – Fruit Importer/Wholesaler, Tirana wholesale market

Koco, Kostandin – Outreach Specialist, AAC Project and Farmer, Saranda District

Kote, Dhimiter – Mayor of the Mursi Communtiy and Farmer, Saranda District

Kote, Llukan – Mandarin Farmer, Saranda District

Kote, Vangjel – Mandarin Farmer, Saranda District

Kuzumi, Denalda – MIS Specialist, AAC Program

Mendez-Ruiz, Javier – Marketing Specialist, AAC Program

Muça, Ilirian - Citrus Importer, resident in Tirana and Fier

Mucobega, Mustafa – Consolidator, Fier wholesale market

Murati, Feti – Fruit Importer/Wholesaler, Tirana wholesale market

Panajoti, Dhimiter – Director, TTC -Vlora

Papa, Spiro – Mandarin Farmer, Saranda District

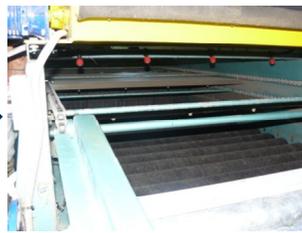
Pojaku, Ilir – Fruit Importer/Wholesaler, Tirana Wholesale market

Rapushi, Piro – Regional Linkages Specialist Lushnja, AAC Program
Rubuja, Lefter – Extension Officer, Agronomist (Dep. of Agriculture) and Farmer, Saranda District
Saraci, Mirsije – Category Manager of FFV, EuroMax Supermarkets
Sarja, Besnik – Fruit Importer/Wholesaler, Tirana Wholesale market
Sena, Sabah – Business Support Services and Associations Development Manager, AAC Program
Stergjin, Thoma – Farmer, Igoumenitsa (Greece)
Turtulli, Lefter – Production Specialist, AAC Program
Xhixha, Gezim – Chief, Agricultural Extension Service Department, Ministry of Agriculture

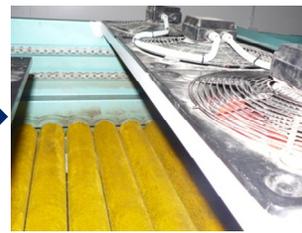
APPENDIX B: CITRUS PACK HOUSE OPERATIONS (IGOUMENITSA, GREECE)



1st Visual Inspection



Washing



Blow Drying



1st Hot Air Drying



2nd Visual Inspection



Waxing



2nd Hot Air Drying



Size Sorting (9 sizes)



Packing



Palletizing



Cold Storage (350MT)



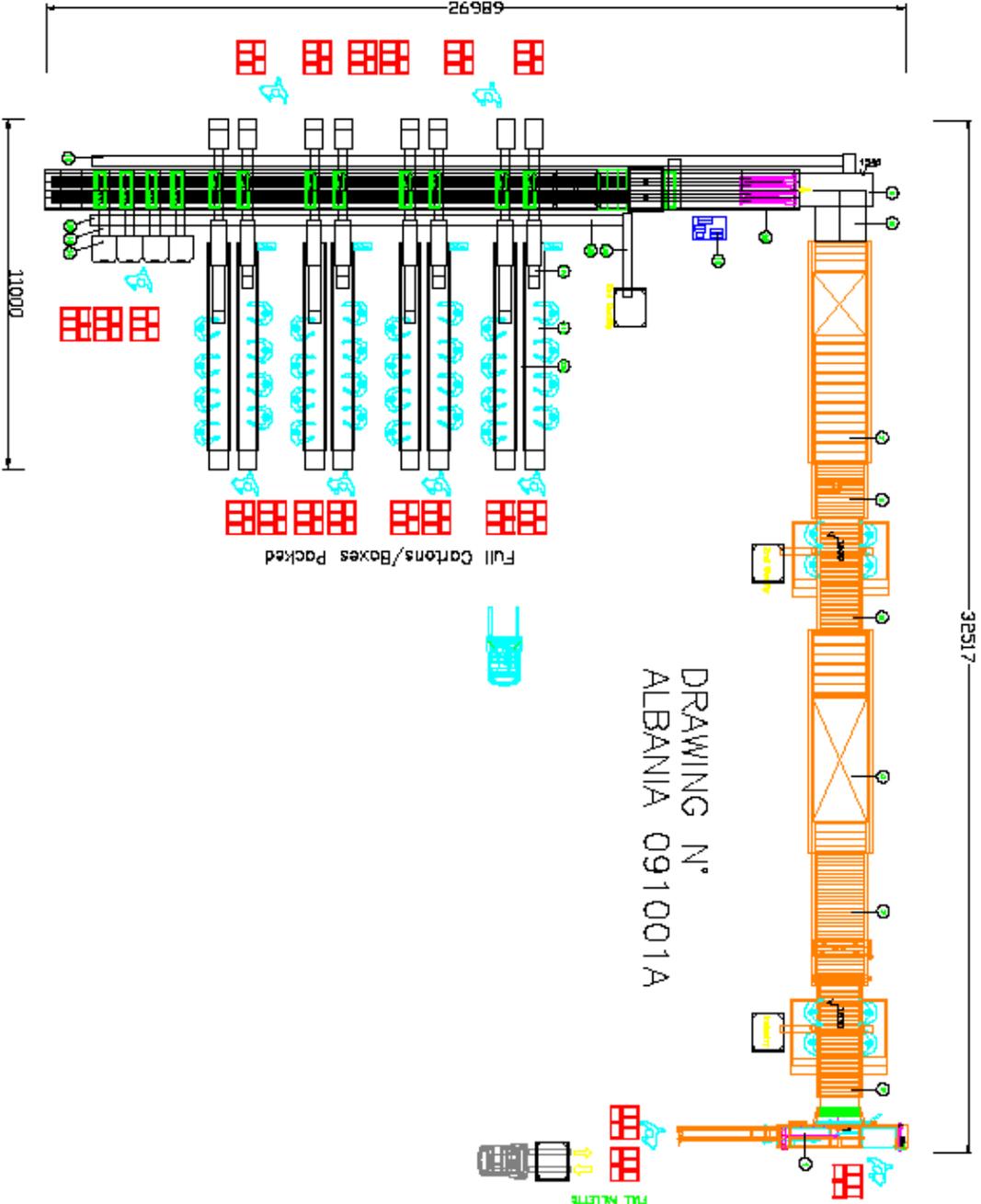
Fork-lifting

APPENDIX C: POSSIBLE GROWTH PATH FOR THE SARANDA MANDARIN CLUSTER

Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	
Ha	218	231	245	260	275	292	309	328	347	368	390	414	
Trees ('000)	109	115	122	130	138	146	155	164	174	184	195	207	yield
new	81	13	14	15	16	17	18	19	20	21	22	23	0
1 year	16	81	13	14	15	16	17	18	19	20	21	22	0
2 years	20	16	81	13	14	15	16	17	18	19	20	21	0
3 years	20	20	16	81	13	14	15	16	17	18	19	20	10
4 years	26	20	20	16	81	13	14	15	16	17	18	19	20
5 years	20	26	20	20	16	81	13	14	15	16	17	18	30
6 years	15	20	26	20	20	16	81	13	14	15	16	17	40
7 years	10	15	20	26	20	20	16	81	13	14	15	16	55
8 years	10	10	15	20	26	20	20	16	81	13	14	15	65
9 years	0	10	10	15	20	26	20	20	16	81	13	14	80
10 years	0	0	10	10	15	20	26	20	20	16	81	13	90
11 years	0	0	0	10	10	15	20	26	20	20	16	81	100
>=12 years	0	0	0	0	10	20	35	55	81	101	121	137	110
yield total (MT)	1,560	2,227	2,987	4,180	5,435	6,725	8,013	9,466	10,723	12,101	13,305	14,510	

Source: Author's estimation based on key informant data. 500 trees per ha assumed.

APPENDIX D: PROPOSED DESIGN FOR A PACK HOUSE LINE (BY MAF RODA)



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e-mail : mafroda@mafroda.it

Bertinoro , 20th of October 2009
Offer n° 2009-176 Lay-out n° ALBANIA 091001A

Sorting, Grading and Packing Line for Citrus and Mandarins with leaves

I. FEEDING OF THE CITRUS LINE - WASHING - DRYING - SORTING

1 | 0435051 CONVEYOR FOR THE FULL BOXES - L = 5.000 mm - Manual disposal of full boxes onto the chain conveyor

1a | 0015002 TWIST DUMPER - Full boxes while advance are twisted to unload the citrus

2 | 0105206 PRE-SORTING TABLE - Dim. 1250 x 3500 mm

MAF AGROBOTIC - 546, rue Gustave Jay - 82001 - Montauban Cedex - France SAS au capital social de € 6.660.000,00

Pag. I - Offer 2009/176

0105090 Anodized aluminium rollers - Dim. 55 mm every 70 mm (free space in the middle : 15 mm)

2a | 0447198 BELT CONVEYOR COLLECTING INDUSTRY - Dim. 300 x 3500 mm

0395009 Lateral catwalks in aluminium antisliding with handrails

1395145 Stairs with handrails

3 | 170133 BRUSHER-WASHER - INOX CHASSIS

Dim. 1250 x 30 brushes

170204 Disinfection Unit with dosing pump and sprayers

170220 Rinsing section

170206 Motorized rake conveyor for fruits evacuation

4 | 165007 PRE-DRYING TUNNEL

Dim. 1.250 x 7.000 mm with anodized aluminium rollers - Variable speed

Warm air generator 175.000 Kcal/hour

Underneath nylon brush and water pipe with nozzles to clean the rollers

5 | 0105208 PRE-SORTING TABLE - Dim. 1250 x 3500 mm

0105100 Lateral catwalks in aluminium antisliding with handrails

Stairs with handrails

5a | 0447198 BELT CONVEYOR COLLECTING 2nd Quality - Dim. 300 x 3500 mm

0395009 Lateral catwalks in aluminium antisliding with handrails

1395145 Stairs with handrails

6 | WAXER - INOX CHASSIS

1 | 0170130 Dim. 1.250 x 18 horse crine flat brushes - Inox chassis

1 | 0170223 Wax applicator

1 | 0190060 Rake fruit evacuator and photocell for automatic stop when there is no fruit advancement

7 | 165007 PRE-DRYING TUNNEL

Dim. 1.250 x 7.000 mm with anodized aluminium rollers - Variable speed

Warm air generator 175.000 Kcal/hour

Underneath nylon brush and water pipe with nozzles to clean the rollers

8 | 0036063 STAGGERED BELT CONVEYOR

0036064 N° 1 belt with dimensions 600 x 1000 mm

N° 1 belt with dimensions 600 x 1500 mm
9 | 0447201 FEEDING BELT CONVEYOR
0447215 Dim. 600 x 1500 mm

2. ELECTRONIC SIZER

10 | ELECTRONIC SIZER
1239071 Mod. ONEWAY - Speed : 10 cups/sec/lane
0900000 Prealigning "V" Belt conveyor 2 lanes
1239124 Universal CUPS conveyor with lateral inclination for citrus delivery to the outlets
1239117 Mod. 2 lanes with 12 drops - Length 23m
0320900 Electronic weight system on load cells
0320955 Micropilot with touch screen panel for size settings
0243026 Automatic oil lubrication system
0243026 Automatic roller washing system with pipe, sprayer and nozzles
Pag.2-Offer 2009/176
15 | 0450302 N° 1 Return belt conveyor before the Camera - Dim. 300 x 2.200 mm
15 | 0447199 Return conveyor - Dim. 300 x 24.000 mm
15 | 0447213 Return conveyor - Dim. 400 x 6.000 mm

3. PACKING SECTION

11a 8 0454005 DROP OUT BELT CONVEYOR FOR SIZED PRODUCT TO RAPID PACK (Packing tables)
Telescopic model to allow different height of cartons/boxes- Dim. 300 x 3.500 mm
11b 8 0454007 RAPID PACK
With delivery hopper for empty cartons/boxes with heights (min 6 cm - max 32 cm)
Chain conveyor for empty cartons/boxes feeding
Belt conveyor 600 x 2500 (in elevation) + 5000 mm (horizontal)
Final chute to receive the full cartons/boxes
Electrical panel
12a 4 0447198 CENTRAL BELT COLLECTING 2nd quality
12b 1 0447212 COLLECTING BELT TO RECEIVE 2nd quality and delivery to a unique point
12c 1 0447212 ELEVATOR TO THE BIN OF 2nd Quality
13 4 0447198 DROP OUT BELT CONVEYOR TO SEND FRUIT TO ACCUMULATION TABLE
0447212 Dim. 400 mm x 1000 mm
14 2 0223900 ACCUMULATION TABLE
2 046001 WITH CARTONS HOLDERS FOR MANUAL FILLING

4. GENERAL ELECTRIC PANEL AND BOX OFFICE

16 - 0600036 GENERAL ELECTRIC PANEL AND SUB-PANELS
RAL 7032 ; IP 55 ;
- - 0600003 Electrical installation according to the rules in force - Automatic operation of the line
Canals for electric cables and sub-panels
Inverters, connections and automation of the whole line with the electronic sizer

5. ASSEMBLING AND INSTRUCTIONS AT YOUR PACK-HOUSE

- - - Assembling and instructions at Your pack-house

Total Price Ex Factory : € 360.000,00

Pag.3-Offer 2009/176

ESCLUSIONS:

TVA

Water inlet and outlet

Compressed air and piping to our machines

Civil works

Electrical line to feed the machines and ground

Fuel tanks and fuel feeding or gas feeding

Gasoil Burners and smoke outlets

Transport and unloading of the machines from the trucks

Dry Room to keep the machines

Food and hotel accommodation for our technicians

Fork lift and cranes necessary to move the machines - Electricity for assembling - Fruit for tests of the machines

One of your Technicians to be trained and to help our technicians full time

Any other thing not written in this offer

WARRANTY :

The warranty is valid 12 months starting from the delivery date (CMR or DDT) with the exclusion of the consumable materials like rubber materials , knives , and electrical or electronic parts if damaged from a not suitable electrical feeding line. The warranty is intended as free shipping of the parts replacing the defective ones which have to be returned. The warranty excludes any damage caused by the customer or any damage due to atmospheric events. Pag.4-Offer 2009/176

PAYMENT CONDITIONS :

30% as down payment - Balance with irrevocable and confirmed L/C payable at the delivery of the goods

Delivery time : to be agreed

Offer Validity : 2 Months

Best regards ,

Daniele Orioli - Maf Roda

Issue to consider by the investor:

- Power supply issues to pack house (power quality as well reliability) in order to determine if the electronic sorter would be damaged by under or over voltages running from the grid or from a generator. That may assist in decisions.
- Local ability to repair and supply spare parts
- Did Roda provide a typical purchase and install contract for evaluation of workability, ancillary costs of building prep for machinery installation?
- Are lighting or lighting specifications for the culling area, inspection areas, and especially the packing table areas, included in the offer?

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