

Consultancy Report
Consulting Report on the West Bank Olive Sector

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LIST OF ACRONYMS AND ABBREVIATIONS

ACDI	Agricultural Cooperative Development International
ANERA	America Near East Refugee Aid
ASIR	Arab Scientific Institute for Research
DUNUM	Four Dunums = One Acre
IBPGR	International Board for Plant Genetic Resources
IOOC	International Olive Oil Committee
JCO	Jordan Cooperative Organization
JD	Jordanian Dinars
LRC	Land Research Committee
NAAB	National Association of Arab Americans
NGO	Non-Government Organization
PARC	The Palestinian Agriculture Relief Committees
POC	Palestinian Oil Council
PVO	Private Volunteer Organization
SCF	Save the Children Fund
TCAS	Technical Center for Agricultural Services
UAC	United Arab Company
UAWC	Union for Agriculture Work Committee
UNDP	United Nations Development Program

EXECUTIVE SUMMARY

The West Bank Olive Sector

The olive sector is of overwhelming importance to the West Bank (Palestine). Olives impact economic and social well being of an estimated 1,000,000 people. It is also an important part of their heritage.

The sale of olive oil provides most of the income for several thousand farm families, each of whom may support an extended family of a dozen persons. The olive sector involves approximately 100,000 people which represents 10% of the population, and provides an important part of the annual socioeconomic base. Olives return 25% of the annual gross agricultural income, and 15% of the gross domestic income of Palestine.

Olives are grown on 775,000 dunums (194,000 acres) of West Bank land. Over 90% of olives are grown north of Jerusalem. Of the olives produced, 90% are crushed for oil, and 10% are home pickled for table consumption. Both olive oil and pickled olives are an important part of the food supply of the Palestinians. Every olive farmer keeps his own supply of olive oil and pickled olives for home use.

Olives have been grown on the land for centuries. Thousands of dunums of live trees were planted during Roman occupation as a source of food and for healing purposes. Olive oil was a sign of man's wealth. The first trading market known to man was the trading of olive oil for goods and services. If one had a large store of oil, he was considered very rich. Olive trees live for centuries. The Garden of Gethsemane still contains olive trees that were growing during the time of Christ. Original cultivars are well suited to the dry land conditions of the West Bank environment.

It was interesting to learn that Palestine produced an estimated 33,000 tons of olive oil in 1992. Although far from being the largest, this production ranks them as a major producer. Farm gate value of the oil is \$59,994,000 JD's (\$89,981,000 U.S.). In spite of its importance, the olive sector has been basically neglected by the PVO and NGO working on the West Bank. This has impacted the welfare of thousands of Palestinian people. If 5,000 to 8,000 tons annual surplus olive oil was marketed at \$10 per gallon (U.S. dollars), this would add \$13,000,000 to \$20,000,000 to the Palestinian economy per year.

Evidence gained during three intensive weeks of study, meetings, workshops, and interviews, helped to identify needs that, if corrected, could greatly impact and improve the current situation on the West Bank. The needs include grower education, teaching of cooperative operation and management skills, development of a spare parts center for olive oil presses, market research, and improvement of motivated leadership. Because of the size and scope of the olive sector, although cooperative oriented, this report will deal with the olive sector from both cooperative and private perspectives.

Leadership, motivated and action oriented, is most important to the success of this project. It will require people who have the best interests of the farmers and Palestinian people at heart rather than those who seek to promote their own personal agenda.

CDP can provide the organizational leadership and direction for the olive sector. The effort will require analysis of the sub-sectors, prioritization of need within each, development of workshop materials, and a plan to communicate information to farmers and olive oil cooperatives, as well as other players. Excellent human relations skills will be required to work with the people, lead them through the process, teach the desired skills, and provide follow-up evaluation.

The olive specialist will have to sharpen his individual knowledge and skills of the olive industry with self-education. Of critical need is a resource center for West Bank olives. This library of information should receive and contain books, publications, periodicals, and research studies from international sources.

There needs to be a better understanding and knowledge of olive production cycles, alternate bearing, production practices available to minimize such occurrences, and the importance of quality assurance and supply of olive oil if the West Bank is to become a recognized supplier.

Researchers in the U.S. have proven the health-giving qualities of using olive oil in the human diet. Because of this information, olive oil has enjoyed a new birth with dramatic growth. America has become the second largest importer of olive oil in the world, bringing in over 100,000 tons per year.

Olive oil from Palestine would have a unique appeal in the U.S. market. Large numbers of Arab people live here and, secondly, because of the magic associated with the product being from the Holy Land. These two reasons alone would help to sell the olive oil in the U.S. However, if the olive oil is to be exported to any foreign market, it must meet international standards of quality. To produce, process and package a desirable olive oil will require better skills in all parts of the olive sector. It will require a large and intensive effort to re-educate the people.

Leadership through cooperative education will enhance the speed at which new skills are taught and accepted.

On a final note, the olive sector needs to develop simplified educational research projects within each sub-sector. At the moment, there is nothing. Such projects can enhance the learning curve, demonstrate the value of new practices, and help to improve and expand the olive sector for the benefit of the Palestinian people.

SCOPE OF WORK

Instructions for the review and analysis of the West Bank olive sector were written and attached as Annex A to a Consulting Agreement received from the Cooperative League of the U.S.A. The consultancy had been agreed to between ACDI (Jerry Lewis and Carol Yee) and the consultant. Work requirements of the assignment were listed in a letter received April 7, 1993 from Karen Schwart and Richard Wesling, Controller.

Reporting to CDP/Chief of Party, Thomas LaQuey; Abed Abu Arafah, CDP Director of Technical Service; Odeh Shehadeh, CDP Director of Cooperative Development; and Younis Sbieh, CDP Olive Specialist, the work assignment required a review and analysis of the West Bank with the Mission of helping to determine, design, and develop potential CDP interventions in the olive sector.

Specific responsibilities included:

1. Visit olive oil cooperative, directors and farmers, oil presses, filling plants, oil collection centers, nurseries, and olive groves, to look closely at olive sector components.
2. Meet with cooperative boards, staff, member farmers, along with any other individuals and institutions related to the olive business to gain first hand information and knowledge of the olive sector, its opportunities and constraints.
3. Review reports, documents and ideas with CDP staff, and prepare a schedule of activities for the assignment.
4. Make recommendations on cooperative objectives, methods, plans and policy considerations that CDP may use in formulating policy for olive cooperative activities.
5. Prepare a suggested training program for CDP olive specialist and other cooperative staff, both pre and post harvest.
6. Identify and recommend specific areas at the union level that training would be appropriate.
7. Assist CDP olive specialist in development methods for surveying, studying and evaluating the current position of olive cooperatives to be used as data for further needs assessment paper.
8. Review CDP planned training and publication programs related to the olive business, and recommend modifications as necessary.

9. Prepare a needs assessment paper on West Bank olive sector to be used by CDP as a base for further comprehensive olive development programs.
10. Conduct a workshop for olive sector cooperatives and institutions to discuss common problems and issues.
11. Prepare appropriate handouts.
12. Prepare a detailed technical report, the outline of which shall be approved by Tom LaQuey. ACDI Washington to be consulted before the outline is finalized for appropriate input.

METHODOLOGY

Familiarization of Current Situation

All publications, reports and surveys of the West Bank olive sector were made available and reviewed. However, it must be noted that there was very little information available about the Palestine olive sector. Internationally, it seems that this part of the world's olive production has been forgotten. What little material found had been written locally for small workshops within the West Bank.

Most valuable to the survey was information gained from meetings with oil press cooperative boards, marketing cooperatives, olive oil union, Department of Agriculture, PVO and NGO, and Volcani Institute in Bet Degan (Tel Aviv). Several trips up and down the West Bank allowed time to stop and see extensive olive plantings, which included trees dating back to the Roman era 1,000 years ago, as well as young seedlings just planted. Of course, if one wants to be impressed by the longevity of the olive tree, visit the Garden of Gethsemane where trees under which Christ prayed are still alive. Their age is over 2,000 years.

Special thanks is extended to the CDP administration, management, and staff in the Jerusalem office. My every request was their command as requests for information and materials (if available) were quickly satisfied. It was helpful to share thoughts and bounce ideas off CDP personnel as it kept the olive sector survey in focus. I appreciate the scheduling efforts of Abed Abu Arafah as he attempted to provide a comprehensive ongoing agenda of briefings, interviews, workshops, and infield tours of various facilities. His patience was admirable as the Israeli's created many problems with their check points, road blocks and Independence Day celebration, all of which created serious problems for resource people to move freely into and out of Jerusalem and along the West Bank.

A good deal of time was spent with the newly hired CDP olive specialist, Younis Sbieh. Younis is well educated and very knowledgeable about olives. He has a Masters Degree in Horticulture from the University of Jordan, Amman, where he conducted research with olive seedlings and their response to various levels of polymer treated soils with the Nabali variety. Several hours of discussion convinced this writer that if given a complete technical resource center (library) of current production practices, harvest, olive oil technology, packaging and marketing information, Younis could become a respected olive authority of the West Bank.

Additional information was received from other PVO's and NGO's that proved valuable. A visit to Volcani Center, Bet Dagan, and a meeting with Dr. Shamon Levi, was extremely interesting. He has conducted extensive olive research projects throughout the West Bank. The research information and data that is available deals with olive growing conditions on the West Bank.

FINDINGS

Following is a brief description of the individual visits, interviews and tours that occurred while analyzing the West Bank olive sector.

After arriving in Jerusalem, a briefing session was held with Project Director, Tom LaQuey, Technical Service Director, Abdel Abu Arafah, and Jerry Lewis, Vice President of Agricultural Cooperative Development International, Washington, D.C. An overview of the olive sector, including cooperative olive oil presses, marketing cooperatives, olive oil union, and other PVO's was discussed in detail.

A schedule of activities was presented for the first week.

Beit Jala Olive Oil Cooperative

The first visit to an olive oil cooperative was the Beit Jala plant in the Hebron area. We met with the management and some board members to discuss their operation. This cooperative also had a soap factory that has not operated, a bulldozer, and tractors.

Olive varieties were discussed. Beit Jala has a large percentage of a new variety called "Improved Nabali"—but it really isn't of the Nabali cultivar. although a nice, large olive, it is better utilized as a table olive rather than for oil. It has much less oil, which is difficult to extract. It slows down the process and reduces the capacity of the crushing plant.

Further, the tree is more susceptible to insect attacks because of its softer wood characteristics. The native varieties are of much harder wood, therefore, less susceptible.

The native varieties that produce a larger percentage of high quality olive oil are Nabali Baladi, Romani and Sauri, all of which have been growing for centuries. In fact, the Romani was planted by the Romans during their occupation of the territories over 1,000 years ago.

The olive press can process 2,500 pounds per hour, and handled 1,500 tons during the 1992 season. According to the cooperative staff, Beit Jala has 809 members, but serves some 2,000 farmers from surrounding villages. A major problem is their ability to handle the many very small farmers who bring in a few sacks (200-300 pounds) of olives for pressing. The board would like to sell their old line and install a new Peiralisi (Italian) with more capacity. The other option is that they install a smaller press to handle small olive deliveries.

These were major complaints about the harassment they experience from the Israeli authorities and soldiers. The cooperative has no privacy. Soldiers have taken their books, and roads are closed so that farmers are unable to get from their homes (city) to their olive groves in the country. Plans are in motion to

build a huge Israeli security road that will take out thousands of olive trees and further divide the West Bank.

Parts for their tractors and oil press are hard to get and very expensive.

When natural disasters occur, the Israeli's take care of the residents of the settlements, but not the Palestinians.

A priority of needs listed by Beit Jala in order of importance are:

1. Improve olive crushing capacity.
2. Need a local center with an inventory of spare parts that is readily available.
3. Need more people who are technically trained to quickly diagnose equipment breakdowns and the knowledge to quickly make necessary repairs.
4. Need new olive oil markets outside the West Bank to handle surplus.
5. Want less Israeli interference regarding blocked roads, curfews, security zones, and general discrimination.

Beit Jala has a 13 member board, elected by a general assembly of members. It is reputed to be the largest olive oil press on the West Bank. They claim to provide excellent service, get a good oil yield, and deliver good oil quality with some exceptions. Farmers who deliver aged olives have very poor quality.

Members of the cooperative must buy 100 shares of one JD per share (1JD = \$1.50 U.S.).

Applied Research Institute

Dr. Jad Isaac, Director of the Institute, was disturbed about the olive sector debate. In his opinion, the study should be conducted from a technical approach, not productive. He stated that there is little evidence that supports the current olive cultivars as being correct for the West Bank. Olives are a lazy farmer crop.

The Institute is focusing on cereals, legumes, stone fruits, and other dry farming crops that are labor intensive and high value for Palestinians. Only 5% of West Bank is irrigated.

If olives were to be studied, there needs to be a scientific approach to examine cultivars (genotyped), soils, rainfall, and overall land use. Olives are being haphazardly planted without regarding for any long range planning. Olives are doomed in Bethlehem because of population growth.

Sector must assess reasons for planting more olives. Is it for social reasons; economic reasons; or political?

To be successful, there needs to be an in depth study of alternate bearing, harvest season extension, etc. The study must be a holistic one. Results cannot be accomplished short-term. It will take a period of three years, and probably longer, to do research.

The IBPGR has an excellent genetic bank of olive varieties. Two countries, Cyprus and Jordan, have had their olive varieties classified.

Dr. Isaac would like to do the work, but the current government/military situation is an impossible environment in which to get anything done. A recommended research data sheet is included with this report outlining specific points.

Palestinian Agricultural Relief Committee (PARC)

This organization is dedicated to helping farmers through the extension work process. Their mission is to educate, teach, demonstrate new farming skills to farmers, and enlist help of successful and skilled farmers to teach the less advanced.

Major olive sector problems with the Improved Nabali are its low oil yield, more susceptible to insect attacks, and more difficult to crush for oil.

PARC has also identified several farmer problems with olives, including alternate bearing, lack of pruning, no fertilization, and the need to study the use of the sewage water for irrigation purposes.

Harvest timing is critical as few farmers understand the problems of picking and storing olives for several days. PARC has analyzed 1,000 oil samples and found problems with high acidity. The farmers must break the habit of picking, storing in improper conditions, and not being concerned with prompt delivery to the olive oil press.

The Hebron area has 40,000 dunums of young Improved Nabali trees, but only 7% of the West Bank's total olive acreage.

Land Research Committee (LRC)

This group, established in 1986, serves as a watchdog group to monitor and object to the land confiscation policies of the Israeli occupation. The committee objectives are as follows:

1. Investigate all historic property laws which were imposed during the beginning of historic Palestine.
2. Document all land confiscation actions in the West Bank.
3. Serve the best interests of the Palestinian farmers and land owners by:
 - a. Counseling them on their rights.

- b. Provide advice regarding agricultural projects to protect and use vacant land.
4. Monitor agricultural violations such as land confiscation, tree removal, land destruction, livestock theft, use of chemicals to kill trees, and recap all of this information in documental form.

From 1967-1979, the Israeli's took 40% of West Bank land for security reasons, based on the fact that the land was not being used productively. Most land ownership documentation dates back 400 years to Turkish times, and is weak. Israeli government takes advantage of the situation and uses their power to confiscate any land they want.

LRC is providing farmers with seedlings through local agricultural organizations to plant open land. They coordinate and cooperate with international organizations involved in funding of agricultural projects for Palestinian farmers. Agricultural training is being provided to farmers hurt by occupation in cooperation with local and international organizations.

LRC is encouraging farmers and landowners to document and keep files of land lost to the occupational forces. When confiscation occurs, Palestinians are encouraged to file complaints with the Israeli "Objection Committee" to attempt a halt to the process of taking land for so called security reasons.

Further harassment and injury has been inflicted on Palestinian landowners and farmers when Israel takes over water and well systems, attaches meters to monitor water use, and refuses to give permits to drill new wells.

It is hoped that the future will bring peace to the region through the ongoing peace negotiations.

Tarqumia Cooperative Olive Press

Located in the Hebron area, the cooperative was established in 1975. They have a nursery to produce olive seedlings and a bulldozer that is used for land reclamation. Tarqumia has a modern olive press manufactured by Rapanelli that can crush one ton of olives per hour. A second press, Perialisi, is located at Telfewar, and can handle two tons per hour.

There are 1,600 farmers in the cooperative. Many farmers have the Improved Nabali, which is giving the cooperative problems because of low oil content, slow crushing of the variety, and the vulnerability of the fruit to attack by the Daccus fly. UNDP has provided chemical (Supricide) to help control the problem of both Daccus fly and the tree barer.

A new olive variety is being studied by Volcani Institute that may help to solve the problems brought on by the Improved Nabali. It is the Suare, a Leba-

nese olive that has a high oil content (33–35%), and can be used for pickling (table olive).

There are no lab facilities for testing oil at either plant. In recent years, samples have been sent to Italy for testing, which is too inefficient. A laboratory needs to be located in closer proximity. A marketing project sold 1,600 tons of olive oil to Italy several years ago, with quality testing being done at its destination.

Hebron University

The opportunity to meet with Dr. Sufian Sultan, Dean of the Faculty of Agriculture, was enjoyable. Both he and Abed Aljaleel, his technical assistant, explained the mission of the Hebron Ag School. They are setting up an extension system much the same as in the U.S. The purpose is to teach and train farmers in modern farming technology.

Twelve of their extension people have been sent to Italy on a six month program to study at the International Center for Agricultural Studies. Ten people studied olive production technology, and two studied animal husbandry. There are three such international centers; one in Paris, France; Aragoa, Spain; and Bari, Italy.

They want to send more individuals to Italy to study the olive oil industry, including olive crushing equipment, maintenance, proper operation, and proper sanitation. With properly trained technical people, it will allow the Palestinians to produce a more acceptable, high quality olive oil that will meet international standards.

The Palestinians need to develop export markets. The current path to Jordan and the Arab world is difficult because of the occupation. There are unreasonable delays with trucks going to Jordan. Products are heavily taxed, and with unpredictable road closures and transportation requirements, other market options need to be developed.

Technical Center for Agriculture Services (TCAS)

Located at Al Arrub outside of Hebron, TCAS is an experiment station that, at the moment, is not operational due mainly to the occupation. A short presentation was given to the agricultural engineers, farmers, and others who were present, regarding the world olive market with emphasis on the U.S. market. The group numbered about 25 people. Questions were fielded following the presentation.

TCAS was formed to help mitigate some of the problems found in the agricultural sector because of the occupation. Problems being addressed included better farming practices, more field research to demonstrate the benefits of modern farming technology, and attempt a plan to do a better job marketing products. Further, they want to improve the economic well being of the people

through increased employment opportunities with growth of the agricultural sector, and put more people into training courses with scholarships.

The center has some very well educated and experienced technicians who have international learning experiences.

United Agricultural Work Committee (UAWC)

This group has explored the olive oil sector to identify problems and explore possible solutions.

Alternate bearing has created serious problems for the farmers. Every second year a large surplus of olive oil is produced. Large years will see 33,000–35,000 tons of olive oil produced, with annual consumption totaling 8,000–10,000 tons. Assuming no crop the following year, domestic consumption will use 16,000–20,000 tons over a two-year period. The result is a net surplus of olive oil which farmers must either store or try to sell.

With each farmer storing his own olive oil, storage conditions are not adequate to maintain good quality. If export sales are explored, olive oil quality must be uniform and high quality. This is difficult with so many different storage sources.

UAWC recognized the problems with oil quality. They brought in samples of olive oil from several other countries and tested imported product against West Bank olive oil. All foreign samples tested below 1% acid. West Bank olive oil tested five to 13% acid, which is unacceptable both from a market perspective and for human health. In addition to high acid, the olive oil had a bad odor and bitter taste.

An Italian consultant was hired in 1992 and came to the West Bank to identify the problems. Several tests were conducted on olive oil samples with favorable results. With proper harvest and crush timing, 2,000 liters of olive oil will be test marketed in Switzerland, a high end market, for \$22–23 per liter. Compared to world prices, this is a very high price.

More important, UAWC identified some major problems which include alternate bearing (short crop/surplus crop), crushing delays, high acid/poor quality, poor crushing practices, and degradation in storage.

These are major issues that must be dealt with if the West Bank is to become an international olive oil producer. Assuming a good quality olive oil is consistently produced, a six-year marketing plan would be proposed to first target high price markets followed by low priced countries.

CDP Olive Sector Workshop, Jerusalem

At a workshop held in CDP's conference room, representatives of several PVO's and NGO's were present to discuss their thoughts regarding the olive

sector. Attending were representatives of UNDP, SCF, ANERA, UAWC, UAC, and CDP.

A list of priorities for the olive sector were listed as follows:

1. A marketing plan for surplus olive oil must be developed. First choice would be Jordan because of proximity to the West Bank, entrance to other Arab markets, and payment would be in Jordanian dinors. Second choice would be markets in countries with high priced food. Estimated annual surplus of 5,000–8,000 tons.
2. Must establish a quality assurance plan for West Bank olive oil. It must start at the farm with good production practices, correct harvest timing, proper crushing practices, and storage. Testing facilities must be available to guarantee good, high quality, olive oil. There have been some brokers who blend olive oil with other vegetable oils which reduces the quality, and jeopardizes credibility of producing unadulterated olive oil.
3. Training must be directed at the farm sector to provide better production technology to minimize alternate bearing and, in turn, increase production.
4. Research is non-existent on the West Bank. There needs to be a development of research projects for each part of the olive sector.
5. Olive varieties should be genotyped to properly identify cultivars of the West Bank, and classify them according to their adaptability, production capability, and suitability for olive oil and pickling use.

Omar Daoudi Meeting

An impromptu meeting with Mr. Daoudi provided more information and insight to the West Bank olive sector. He is the National Program Officer for United Nations Development Program (UNDP). His experience in the olive sector is extensive, including managing an olive oil press cooperative, administration, olive press management, marketing, and consulting. Having worked in the northern area of the West Bank, Mr. Daoudi expressed his thoughts and ideas regarding both problems and needs for the olive sector.

A major problem is "no master plan" for the Palestine olive sector. It is a disconnected series of events and actions among the many olive sector players who have no direction or idea of where they are going.

The discussion of good and bad features of the Nabali baladi versus the Nabali muhasan (improved) is an ongoing discussion. Most the Nabali muhasan is planted south of Jerusalem. The north part of the West Bank represents over 90% of all the olives grown.

Jordan was a good market for Palestinian olive oil. Now with problems of occupation and the fact that Palestine has supplied thousands of olive trees to Jordan, they are fast becoming self sufficient.

The Gaza is a good customer for olive oil, using 4,000–5,000 tons annually. In past years, Palestine shipped 6,000–7,000 tons of olive oil to Jordan. Other customers included Kuwait and some of the Gulf countries.

Pressing capacity is a problem. There are approximately 300 olive presses on the West Bank. Unfortunately, the presses are not properly located. Some areas have more capacity than needed, others are backed up with fruit for days before the olives can be pressed. This situation is bad for quality.

Farmers do well production wise, but still could use in-field workshops. They need to be instructed in harvest techniques and timing. There is a need to understand the best time to pick, most efficient harvesting techniques, importance of tree to press timing, and the best olive storage practices.

CDP could become a positive influence in the olive sector if they would begin an intensive program to build farmer relations, establish workshops, and teach in the field.

Olive Oil Union, Ramallah

Established in 1966 by four olive oil cooperatives, the union sought to provide a marketing arm for the West Bank olive industry. Of late, the Olive Oil Union has been inactive. The last official director was CDP's Abed Abuh Arafeh in 1989. Over the years, several other cooperatives have joined the union seeking guidance and market expertise for surplus olive oil.

In 1988, a new board of directors was elected in an attempt to reactivate the union. The election was held in accordance with rules set forth by the Jordan Cooperative Organization. There is a chairman, secretary, and treasurer. During 1992, eight more cooperatives joined, seeking both marketing help and to investigate the possibility of developing a spare parts center.

Several needs were articulated during the meeting:

1. The union needs an office location to serve as the base of operations.
2. Need a manager and staff of technicians.
3. Must develop a spare parts unit for the member olive presses.
4. Must assume an active role in the development of olive oil marketing. This is the second most important priority. The first priority is the need for a spare parts center.

5. Must improve cooperative movement on the West Bank.

Appreciation was expressed to CDP for helping to reactivate the union. Now that it is reorganized, CDP needs to provide leadership and technical help, both from within and outside the West Bank. The management level of nearly all cooperatives needs to be upgraded. There is currently no management training, poor records, and no budget preparation or good accounting practices.

Lab facilities are needed to test for olive oil quality. The union is seeking financial support to open an office, set up a parts center for olive presses, and a staff to oversee the operations.

Before 1987, West Bank was selling olive oil to Jordan based on quality as follows:

<u>Grade</u>	<u>Acid Level</u>	<u>Price/Kilo</u>
A	0-1%	\$1.30 JD/Kilo
B	1-2.5%	1.20 JD/Kilo
C	2.5-4%	1.15 JD/Kilo

Ein Sinia Olive Oil Cooperative

We met with some of the cooperative directors and the manager. We also observed the oil press technician doing repair and maintenance work on Perialisi olive pressing equipment. We toured the pressing plant, equipment, and the filling factory.

The Perialisi equipment was in excellent condition, installed in 1984, and well engineered for the plant facilities.

The oil filling factory, located in an adjacent building, was also in good condition. Ein Sinia cooperative makes their own olive oil containers from precut tin plate. They have forming machinery to shape and weld the cans.

Filling equipment is all hand operated, but functional. Although not operating at the time of the visit, manufacturing and filling of the containers is probably slow. However, with ten months of time between olive crushing seasons, there is adequate labor and time available to prepare packaged olive oil for the market.

The cooperative seemed to have adequate management, equipment technicians, and staff available to operate the plant for their members and non-member farmers.

Arab Scientific Institute for Research (ASIR)

As the name implies, ASIR is a scientific research institute located in El Bireh (Ramallah) that was organized in 1981. Their research work began with olives, or more precisely, with the so called Improved Nabali, which was started in the West Bank because seedlings started quickly from softwood cuttings. When transplanted to field conditions, the trees grew fast and produced early. Unfor-

unately, the Improved Nabali, basically a table (pickling) olive, and does not do well as an olive oil producer. The tree is also more susceptible to insect damage because of softer wood tissue when compared to the older varieties—Nabali, Romani, and Saura.

ASIR claims to be the only scientific institute in the occupied territories, with an analytical laboratory and field agricultural experiment station.

All services are provided to Palestinian people free of charge. Analysis of plant materials, olive oil testing, water tests, food and animal feed analysis are either free or, if large scale, are charged for on a cost basis.

Training programs have been conducted for farmers to teach them of the differences between the Nabali and the Improved Nabali. There is concern that if too many of the Improved strain are planted, it will harm the olive oil industry of the West Bank. Olive oil is the heart of the Palestinian economy.

Farmers must be taught the importance of proper growing technology, harvest timing, and the prompt delivery and pressing of olives for olive oil. This will maximize olive oil quality and provide a marketing opportunity for the sale and export of Palestinian olive oil.

ASIR has also established a large nursery near Sabah Elkhair in the Jenin area to germinate wild olive seeds, which will then be grafted to the Nabali baladi, which is the old, recognized, olive variety that produces a higher quantity of olive oil.

They also encourage farmers to have their olive oil sampled (free of charge) to determine quality for potential marketing purposes.

ASIR functions to develop and improve the education and economic levels of the Palestinian people.

Palestinian Oil Council (POC)

Initiated by ASIR, the Palestinian Oil Council is made up of over 20 organizations from the West Bank and Gaza. It includes Chambers of Commerce, university people, research and study centers, the union of olive oil presses, and marketing cooperatives.

The Council (POC) was established to support the olive oil industry by monitoring oil quality and market development (possibly the U.S.). Market expansion is their first priority because olive oil is the only source of income for thousands of Palestinian families.

On an average, there is estimated to be 5,000 tons of surplus olive oil available for export each year. It can be packed in one liter tin's or in large bulk drums. The Council will package according to the customer's needs.

West Bank Department of Agriculture, Nablus

A meeting was held with Fares El-Jabi, the extension and horticulture specialist for the West Bank.

The main discussion centered around the Improved Nabali variety of olive that is being propagated for reforestation of vacant West Bank land. It roots easily, grows fast, and comes into production in four to five years. Although not desirable for olive oil because of lower oil yield, the Improved Nabali is a good table (pickling) variety. The life of the tree is in question because of susceptibility to insects and disease because of the safer tree tissue when compared to the old line varieties planted on the West Bank.

We toured one of the largest West Bank nurseries that produces one million trees per year, of which 40% are the Improved Nabali.

Ten years of fertilizer tests have been conducted on olive trees, using ammonium sulfate as the nitrogen source. Results seem to indicate that animal fertilizer applications may not be needed. Questionable results may also be a function of the bad alternate bearing cycle that is common among West Bank olives.

It is the opinion of Fares El-Jabi that incorrect timing creates oil extraction problems with the Improved Nabali. However, it does have a lower oil yield.

The commercial table olive sector is small on the West Bank. Approximately 10% of the olives (20,000 tons) are processed for pickling. About 90% of the pickling is done at home.

Rainfall varies greatly from area to area on the West Bank, ranging from 300 mm in the low areas to 700 mm in the mountain country. The wide range of moisture contributes to the irregular olive production patterns.

Jordan Vegetable Oil Industry Co., Nablus

We visited this food oil manufacturing plant that currently processes, packages, and distributes ghee, shortening, and margarine. A work force of 300 people are employed. The plant runs 24 hours daily, and has a retirement program for the employees. A contribution of 15% is put into the employee account by the company with a matching amount from each worker.

Olive oil has been packaged at the plant in the past, but not currently. If needed, the company could process and package olive oil.

Arabic Chemical Industries Co., Nablus

The company refines pomace oil from olives that is unsuitable for human consumption. The pomace (Jift or kernel oil) is refined through a distillation and esterification process to clean up the product so that it can be used for the manufacture of white soap bars.

Volcani Center, Bet Degan, Israel

An interesting and informative meeting was had with Dr. Shamon Levi, Horticulture Department of Volcani Center. His credentials are many as he has worked with olives, olive production, mechanization, alternate bearing technology, and variety development since 1955. He has also done some work with olive oil.

With respect to olive oil, he also believes that the Improved Nabali will not be successful for olive oil. It will lend itself more to the eastern style Spanish cure that will make a medium quality olive. It is not a good dryland olive.

There needs to be more intensely organized farmer workshops to deal with fertilizer, pruning, variety selection, sanitation, and oil quality. Oil quality is of prime importance and must be emphasized.

Olive cultivars need to be classified as to genotype. Volcani Center is developing a promising new variety called Barnea. It has good oil yield and heavy production, with harvest beginning the third year. Arizona (U.S.A.) and Argentina are looking at this variety. The cultivar can also be found in some West Bank nurseries. Varietal research is important in finding out the best possible cultivars for the West Bank.

Dr. Levi encouraged our group to open up a communication and cooperation link between Volcani Center and the West Bank. He has conducted several olive research studies in the West Bank in past years. Although occupation makes travel and meetings more difficult, arrangements could be made to gather in either Jerusalem or Volcani Center.

Dr. Levi was receptive to developing a working relationship with Younis regarding West Bank olive production.

Salfit Olive Oil Cooperative

The cooperative began operations in 1980, and has Israeli registration dated 1981. Salfit's membership met last in June of 1980(?). There are 107 members, the cooperative is debt free as of 1986, and their press was installed in 1982. It cost each member \$500 JD for one share.

Plans are on the table to expand their operation to include an oil filling line and a pickling plant. The land has been purchased for the planned expansion. Salfit has also requested funding for an olive oil filling line. They want to pack olive oil in plastic containers from one to four liters in size.

The Salfit Cooperative produces 800 tons (80,000 liters) of olive oil in a good year. The off year harvest will produce 90 tons of olives. With a population of 6,000 people in Salfit Village, there is a surplus of oil during large crop years, estimated to be 4,000-5,000 tons.

The major cultivar is 99% Nabali and 1% Improved Nabali. If the cooperative starts processing table olives, the Improved Nabali will be used. A question was raised regarding who would reimburse them for a \$1,000 study that was expanded by Salfit to determine the feasibility of table olive production. Is CDP going to cover the cost?

Three major problem areas for Salfit are:

1. Marketing surplus olive oil.
2. Lack of spare parts and the extremely high prices to purchase parts when they can be found.
3. Pressing Improved Nabali is slow and creates problems with machinery.

Salfit has two olive oil press technicians who keep the equipment (Pieralisi) serviced, repaired, and operational during harvest. The cooperative appears to be well managed and profitable. Growers are charged 9% of their olive oil for crushing charges. The olive oil is stored at the plant in stainless steel containers.

Beita Laboratory, Nablus

The laboratory was constructed in 1985 to provide testing services for the farmers. Products to be tested were olive oil, soil samples, leaf analysis, and other miscellaneous tests. Although built in 1985, the laboratory did not open for business until 1990.

We met with Dr. Nashat Aqtash, a communication professor at Gaza Islamic University, the Gaze. Dr. Aqtash was very critical of the many PVO/NGO programs conducted for the benefit of the Palestinian people. In his words, the farmers need financing to properly handle their farming operations. All of the other PVO/NGO projects are too watered down by the time funding reaches the family farm level. By the time all of the administrative monies are taken out, there is little left for the farmer.

The laboratory construction is an example of the inefficiencies of the current financial support system on the West Bank—money being spent for excessive bricks and mortar which doesn't benefit the people. (07-862058/07863554 or 2)

Cooperative Marketing Union, Nablus

Established in 1987, the union is made up of eight regional agricultural marketing cooperatives. The cooperative mission is to provide marketing support to sell all products produced by the members, including grapes, citrus, olives, olive oil, etc. Participation in the Jordan Ag Show was an attempt to promote member's products to the Arab world.

A new manager has been hired and is learning the operation. Of vital importance to the union is to receive a German grant of some 1.8 million Deutsche marks to establish a revolving loan fund for farmers. Money will be loaned to farmers for production needs with payback to occur when crops are harvested and sold.

Currently, export to Jordan is problematic because of the military check points, permit process, re-loading of trucks, and long delays that occur at the Jordan bridge. There are also Israeli taxes, freight, and permit fees that have to be paid. The above problems create added burden to the marketing process. Olive oil in the local market sells for \$45 US to the farmer, and \$65-70 at consumer level for 17 kilo tins.

Future objectives include marketing products to Europe through the union; introducing a fish farming sector; developing a uniform grading system for vegetables; and requesting support for the purchase of canning equipment. There is currently a lot of fresh fruits and vegetables that spoil because the market cannot accept the produce fast enough. Processing equipment for tomatoes, frozen vegetables, and fruit would be most helpful to the farming sector.

Another need is to further expand egg, hatchery, and broiler production in the West Bank.

The union represents that they have a comprehensive accounting system and an outside certified auditor to prepare financial reports and certify annual statements.

At the moment, the union is operating without any funding. Until new money arrives, the union is basically bankrupt.

Tulkarem Marketing Cooperative

This cooperative markets agricultural products produced by their members and member organizations. Major markets are local, Jordan, and other Arab countries by passing product through Jordan.

Olive oil is marketed to Jordan with a small amount shipped to Italy in 1990. Local oil prices are \$2.85-3.00 US per kilo. Distribution is 35% local, 15% inside green line and Gaza, and 50% to Jordan. There are 110,000 donums of olives in the Tulkarem area. Approximately 20-25% of the harvested olives are pickled mostly for home use.

The cooperative requires a certificate of olive oil from the farmer guaranteeing authenticity. They have olive oil collection centers where oil is tested for acidity, color, and odor. If over 3% acid level or if the oil has an off odor, the farmer's olive oil will be rejected. All olive oil is packaged in a 17 kilo tin can.

The 1990 sale to Italy totaled 1,500 tons. However, the contract called for 6,000 tons at \$2.85/kilo. The sales price was not profitable at this level.

Lemons are another item that is marketed.

An agricultural loan program has been established for the cooperative by the Jordan/Palestine Association located in Jordan. ANERA has provided \$150,000 for financing farmers at the rate of \$2,000-3,000 per loan. The loan is paid back, plus interest at 8%. A credit manager handles the process. Each loan requires two loan guarantors who, if the farmer defaults, are required to repay the obligation on behalf of the farmer.

Regarding PVO and NGO projects, in the opinion of some board members, there is too much talk, too many studies, and too much administrative overhead, all of which dilute the amount of money the needy farmer finally receives. There needs to be less talk and more farmer level action plans and projects.

Deir Sharaf Olive Oil Cooperative

Installed in 1978, reported to be the first fully automatic olive oil press. They also have olive can manufacturing equipment and capability, as well as filling equipment. The can manufacturing facility is similar to that found at Ein Sinia.

There are 490 members of the cooperative. The cooperative will crush olives for any grower on the basis of one kilo in ten going to the cooperative for pressing charges.

Dedia Olive Oil Cooperative

Board Chairman Judge Morsi Hajeer met with us and gave a tour through the olive oil plant. The oil pressing equipment (Pieralisi) was in excellent condition. Several pieces of new equipment were being installed to increase capacity.

The first automatic press was put in place in 1976. They are currently adding a Pieralisi Super "2" which will press two tons per hour, doubling their previous capacity.

Twelve villages deliver olives to the Dedia press with 10% of olive oil taken from farmers to pay for the crushing cost. The press has 150 cooperative members and serves 2,000 farmers in the area. The season is 40-50 days.

A major problem for the cooperative is the disposal of surplus olive oil. Each farmer stores his olive oil in various kinds of containers and places. Until marketed by each farmer, his cash income is tied up in olive oil inventory.

The cooperative has an ongoing reclamation program to reforest unused land as a deterrent to Israeli confiscation. There are tractors that are rented to the farmers. Sprayers are available along with employees who will provide custom

farming. Tractor drivers have repair and maintenance skills to fix the equipment.

There is a cooperative manager and accountant on staff.

ASIR Nursery, Jenin

A visit to the ASIR nursery was enlightening as we observed the process of scarifying (scratching) wild olive seeds and the chemical (caustic soda) treatment to encourage germination and rooting. The seed coat is broken by first scarifying the olive seeds by soaking in 5% caustic soda solution for 24–36 hours, and then rubbing the seeds on gravel or a rough screen. The nursery director, an economist by education, had developed some very efficient systems for the nursery operation, which included the best use of water and space for plant propagation and growth.

ASIR is producing the Nabali baladi (original oil variety) seedlings by starting wild seeds and then top working the seedling by bud and scion grafting the old line Nabali. They are producing 15,000 trees annually.

Many nurseries are reportedly switching from the Improved Nabali to the Nabali because it is a better, more productive variety that is well acclimated to the West Bank area.

The nursery has approximately one million wild seeds that will be germinated, grafted, and sold to farmers for planting and replanting olive land.

ASIR believes very strongly that the continued propagation and planting of the Improved Nabali on the West Bank is a serious mistake. All who produce this variety in the nursery are putting farmers in jeopardy because many olive presses refuse to press the olives for oil because of the much slower, more difficult process of extracting olive oil.

It is the hope of this group that the word will be spread to farmers in the olive sector to refrain from planting the Improved variety and stay with the historic variety.

Jenin Agriculture Marketing Cooperative

We met with both management and the board of directors. Over 90% of the members (600) are from Jenin area villages. Established in 1979, the marketing cooperative sells olive oil, onions, tomatoes, potatoes, citrus, table olives, cheese, carrots, etc.

Much of the produce is shipped to Jordan. Approximately 350 tons of olive oil went to Amman. Some went to Italy in 1990 (420 tons) at \$2.40/kilo back to the farmer.

There are 150,000 dunums (3,750 acres) of olives grown in this part of the West Bank. Marketing opportunities have been good, but occupation has destroyed the smooth flow to their most important market—Jordan and surrounding Arab countries. There are 62 villages that grow olives and press olive oil. A good year will see 7,000 tons of olive oil produced, of which 3,000 tons is surplus. Considerable amounts of olive oil go to Jordan as gifts from West Bank friends and relatives.

The cooperative has automatic filling capability for olive oil of one, two, three and four kilo sizes. Farmers are well aware of olive oil quality and all of the functions required to make good olive oil.

Objectives of the cooperative are to protect farmer prices, continue to promote land reclamation, and eventually build a refrigeration plant for fresh fruits and vegetables.

Farmer training programs are an ongoing function of the cooperative. Approximately 60% of their educational efforts are directed at their olive sector. Topics include production, harvest, and spray programs.

There is a milk processing factory supported by ANERA. Specialists are available as trainers in the various sectors.

Jenin Can Factory

Managed by a medical doctor, the Jenin Can Factory produces 2,000 olive tins per day. An interesting situation where the doctor donates his time to manage the can factory to prevent it from closing. The factor was nearly closed because of poor operations until the doctor took over the reins. Two olive oil can sizes are manufactured—17 kilos and two kilos.

Time did not permit us to visit the olive oil filling factory.

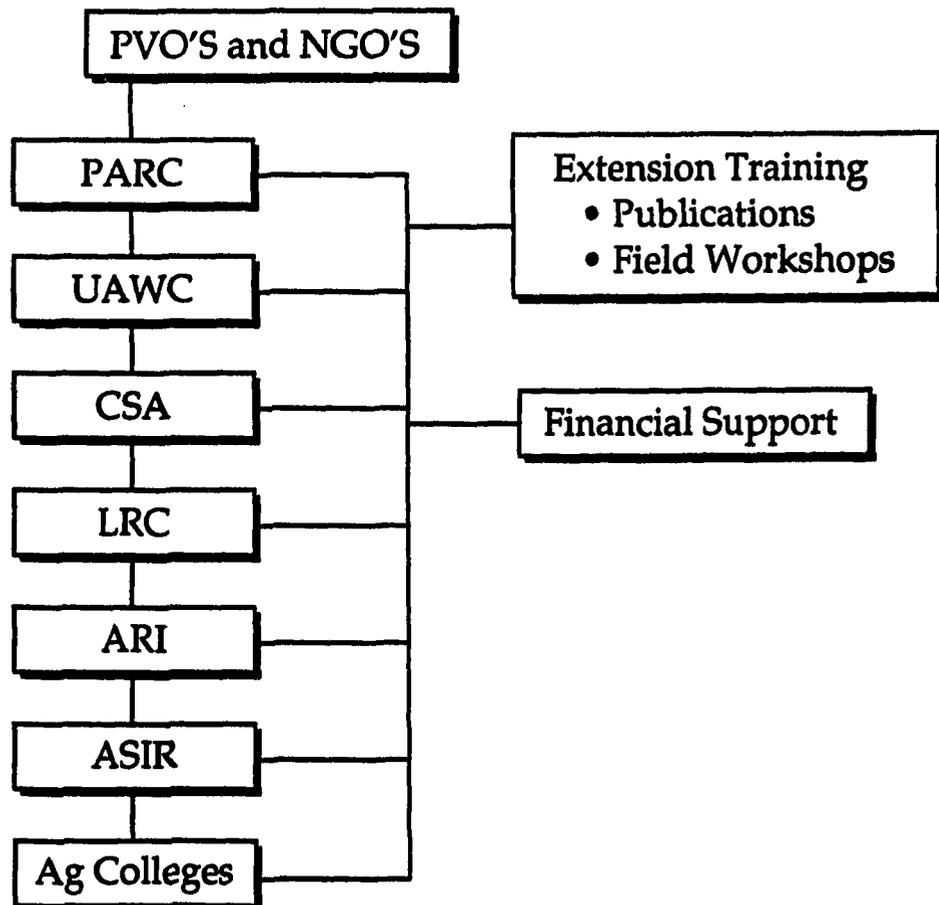
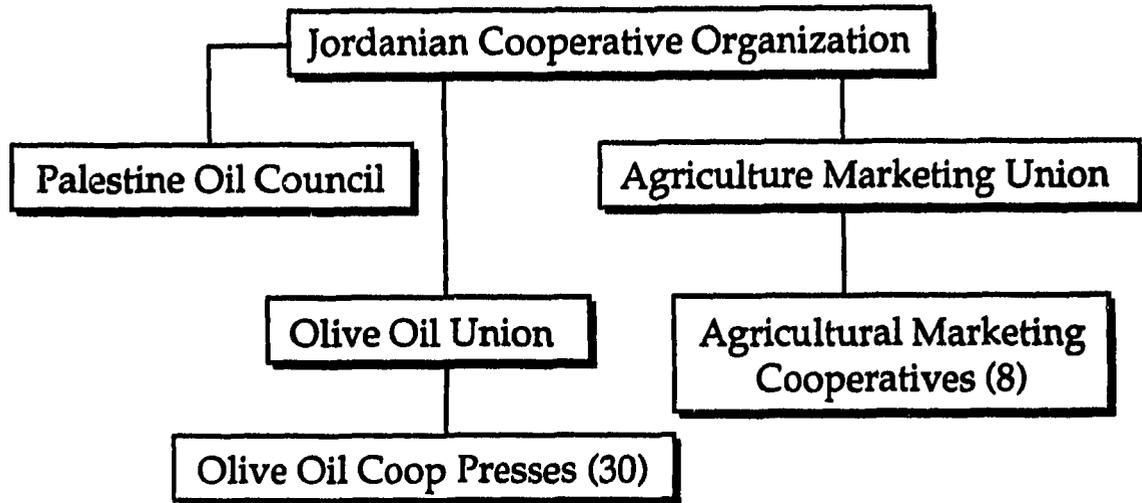
Arabeh Olive Oil Cooperative

On the return from Jenin, we stopped to meet the secretary of Arabeh at his home, after which he took us on a tour of his olive oil press. The village is small, without paved streets, and very primitive.

The plant equipment was in an old rented building, with dirt floors, and an old semi-automatic olive pressing equipment. This was a small, very primitive, operation. Olive crushing activity has ceased at least two months earlier, yet olive leaves and trash covered the floor. There was olive residue, and dirt and filth still coating the equipment. This is certainly not a plant one would show to a buyer looking for an olive supplier.

The secretary indicated that they were planning to move to a new building in the future. There may have been talk of some new equipment being added which would certainly help the cooperative.

ORGANIZATIONAL CHARTS



OBSERVATIONS AND CONCLUSIONS

The West Bank olive industry, with few exceptions, is several decades behind the world olive producers. Reasons are many, but, for the most part, occupation and politics have kept the olive sector out of sight in Palestine. The current situation has created an environment that has kept olive and olive oil production under wraps for many years. To the outside world, there is no West Bank olive industry other than that known by tourists who delight in buying finely carved olive wood at the many shops and villages.

To bring the olive sector into the 21st century will require a tremendous and well organized effort on the part of the many PVO's and NGO's who work with the Palestinian people. Olive oil alone accounts for 25% of the gross agricultural income in the West Bank. To bring the industry into the 21st century will require a major commitment of human resources, including leadership, major financial input, processing, marketing efforts, and an ongoing evaluation process to determine relative success and the need to adjust the plan. If properly orchestrated, the West Bank could become a well known olive oil producer/marketer with additional by-products derived from the olive, including soap manufacturing, cattle feed supplement, and olive wood carvings. All of these could add to the current estimated income of \$89,981,000 U.S.

Based on the three week review and analysis of the West Bank study, it was consistently reported that surplus olive oil amounts to 5,000+ tons per year on an average. If olive oil is marketed at \$10 per gallon U.S. (262 gallons per ton), this alone would add \$13,100,000 per year to the Palestinian economy. Other products, i.e., soap, animal rations, wood carvings, etc., if properly utilized, could increase the olive sector income by considerably more, although to compute a figure is not feasible at this point.

The successful development of the West Bank olive industry will require strong leadership.

With the appointment of an olive specialist by CDP, the first step has been taken. However, it is also apparent that one man will not be able to handle all of the sector responsibilities in need of attention. If the project continues to move ahead and become a reality, there will be a swift realization that the sector will need to be separated into sub-sectors with the possibility of a project leader in charge of each.

For the moment, however, to expedite development, the CDP olive specialist must receive some additional education, develop additional information resources, and become a knowledgeable spokesman for CDP's olive project.

CDP Olive Specialist

The specialist must begin to organize the olive sector into sub-sectors, including farm production and harvest, olive presses, cooperative operations and management, marketing, and research. With division of each sector, the specialist will have an easier task of prioritizing what should receive first attention. This will allow him to better focus on the specific needs and solutions for each.

It is the opinion of the consultant that first and foremost, the CDP olive specialist will need to put his own house in order regarding information sources, resource material, people to use, preparation of simple goals and objectives list, plan of execution, and evaluation process.

The following are recommendations:

1. Begin to collect resource information and materials on the olive industry to be put in a library or data bank for easy access. Utilize all sources, including Volcani Center, Bet Degan in Tel Aviv, Hebron University, International Olive Oil Council, University of California at Davis, International Horticulture Society, and other sources that may emerge.
2. With data collected, the specialist should develop specific educational topics for farmer workshops. Some material is available, but there needs to be a complete package of workshop topics with courses outlined and handouts prepared. Subject matter should include cultivation practices, pruning practice, fertilizer application, insecticide application, and harvest timing.

Each workshop topic would include necessary information on the subject matter. For example, pruning practices would include proper time of year, what limbs should be cut to allow the tree optimum opportunity to produce olives, but also with the thought in mind of trying to reduce alternate bearing (produce a crop every other year). This phenomena is characteristic of an olive tree. Farmer workshops should focus on how to minimize this condition.

For each subject, the specialist must know and understand the unique conditions and environment in which the olive trees grow and produce. With this knowledge, he can best instruct and recommend practices that would be most effective for the farmer.

3. Harvest timing is a subject that needs special attention and presentation to the farmer. There is the optimum time to harvest olive fruit for maximum olive oil yield. Also the urgency of timing from tree to olive press must be emphasized. Containers are another issue to be dealt with because the use of plastic sacks improperly handled and stored can create a tremendous amount of product degradation. In the final analysis, high quality olive oil is the product that will have the greatest market opportunity.

4. Because of the size and scale of the West Bank olive sector, the CDP specialist will need to develop good communication and working relationships with other PVO's and NGO's who are currently working within various parts of the olive sector. With coordinated effort between CDP and other support organizations (ASIR, PARC, TCAS, UNDP, etc.), the farm workshop/education process will occur more rapidly.

The interfacing with other groups should also include Volcani Center and West Bank universities, all of which have technicians and resource materials that would be beneficial.

5. CDP must develop a close working relationship with first, the cooperative olive oil presses and, second, the independent presses. The resulting data base should include all information available to provide quick answers regarding geographic area covered, number of dunums served, olive varieties, pressing capacity, type and make of equipment, repair and maintenance capability, processing technology, and storage capability. There should also be information on current and potential market opportunities and amount of surplus olive oil available for export sales.

It is important that this information be continually updated and be current, particularly for potential market opportunities.

6. Cooperative education workshops with individual cooperatives and unions must be continuous educational missions. There needs to be a review of cooperative business practices and management skills, with workshops to educate both managers, directors, and members. It is suggested that there be a sharing of management skills among the various cooperatives. Utilize a manager who is successful in a given area and have him speak at the meeting.

CDP should have in readiness, a manual on cooperative business practices, operations, director elections and responsibilities, budget and performance needs, and good membership communication procedures. With such material at the ready, the olive sector specialist will be more efficient and effective in his mission to strengthen the cooperative movement. It is suggested that cooperative workshops be a regularly scheduled activity and calendared annually or semi-annually as time permits.

7. To coordinate the many olive sector projects, CDP specialist will need to develop a twelve to eighteen month calendar with a list of activities to be accomplished. This will help to prioritize each function and aid in planning for workshops, meetings, follow-up, and evaluation.

In addition to short term (one year) plan, a long range plan should be adopted. With a written plan, the long range program will provide not only

a logical and systematic attack of sector projects, it will provide a format to gauge project success and generate reports to CDP authorities for their needs and evaluation.

8. Frosting on the cake will occur when the above projects are organized and operational. The olive specialist could then begin to visit other olive growing areas to explore and learn about how other countries grow, produce, harvest, press, store, and market olive oil.

West Bank Olive Oil Situation

From the marketing of surplus of olive oil perspective, there is an immediate need to collect inventory, quality and packaging information from, first, the cooperative oil presses and, second, from the independent sector. This analysis will provide necessary information needed to determine how much surplus oil is available, the quality of that oil, and what, if any, packaging capability is present.

The Olive Oil Union would be the group to source this information, however, it will require financial help from supporting agencies. The Union has no money, no base for operations, no management, and no support personnel or equipment. To activate a viable and effective organization, assuming the funding is available, will require the selection of a results-oriented manager who understands the industry, is aggressive, and schooled in good business practices. With a strong manager, the Olive Oil Union can become an effective umbrella agency to benefit the entire olive sector.

Specific information about the current olive oil situation needs to be collected and compiled into a report that will give the following details:

1. Name and location (village) of the cooperative oil press.
2. Location and quantity of olive oil that is readily available for export marketing.
3. Quality of the oil, including acid level (percent of oleic), color, odor, and taste, supported by a testing laboratory analysis.
4. Size and type of storage containers (one liter, five liter, 70 kilo cans, etc.).
5. Based on the above facts and information, beginning to do some market surveys, oil price studies, container size, labeling, preparation of olive oil samples, and sample shipment to identified potential customers.

West Bank Olive Oil Press Situation

Critical to the success of the olive harvest and press season are cooperative and private olive presses that have adequate capacity, dependable equipment, trouble free operations, and well organized receiving and handling of the olives. There must be assurance of the ability to produce olive oil that measures up to international standards of quality and acceptability.

The following is another opportunity for the Olive Oil Union to become a major factor in the leadership and direction of the West Bank olive oil sector:

1. With support and direction by CDP, the Olive Oil Union can be the leader to launch the olive sector as a major player in the international olive oil market.
2. The Olive Oil Union must conduct a survey of their membership to identify and determine the need for various spare parts and the quantity. Compile a list of parts, determine the source of supply and price.
3. Develop a budget required to purchase a spare parts inventory and identify a service center location where inventory will be stored until requests to purchase and ship are received from the cooperative olive presses.
4. With necessary financing to purchase an inventory of needed spare parts, contact will be made with Perialisi, Italy (manufacturer and supplier of parts), to negotiate necessary arrangements to purchase and deliver required items. At time of purchase by parts users, parts will be billed at a reasonable price that will include cost, shipping, and overhead.
5. There is a need to have available more trained technicians who thoroughly understand the complete olive oil extraction process, including trash and dirt elimination, crushing, centrifugation, and storage. They must be schooled in proper sanitation and good manufacturing practices, all of which contribute to a high quality olive oil.

There are two options to consider regarding education and training of olive press technicians. First, send a group of men to the Perialisi plant in Italy for intense training. Second, set up a series of workshops at various cooperative oil presses where a representative of Perialisi would travel to the West Bank and conduct repair and maintenance programs at cooperative press locations.

The objective would be to insure that greater numbers of qualified technicians would be available to repair and maintain the pressing equipment and systems to minimize down time. This also assumes that there will be a ready supply of spare parts available.

6. There needs to be better communication networks established between and among the olive oil press cooperatives. The management of each cooperative needs to be informed of current events, including harvest conditions, crushing capacity, breakdown problems, oil quality, and any other information that is of value.
7. The Olive Oil Union should develop a data collection system that will track spare parts usage, olive oil quality and quantity, and other data that would be of management value.

8. The structure of the Olive Oil Union should be of adequate size to properly administer to the needs of the cooperative olive sector, including organizational and management strength, spare parts needs and delivery systems, workshop training for repair technicians, and market analysis.
9. Evaluate union efforts annually in terms of cooperative success and competitiveness against the private sector. With recognized successful performance, cooperative movement will grow and the union will be the sector leader.

West Bank Cooperative Education

The CDP olive specialist has conducted a survey of the approximately thirty cooperatives on the West Bank to identify problem areas and offer solutions. The following is a list of the findings:

1. Lack of regularly scheduled general membership (assembly) meetings.
2. Regular elections to select directors and officers are not held.
3. No budget preparation process or performance tracking.
4. Knowledge of cooperative process is lacking, including ignorance of bylaws, membership agreements, methods of operation, and the cooperative philosophy.
5. Leadership/management skills seem to be lacking due to no training programs.
6. Many, if not most, of the cooperatives are in poor financial condition. This condition exists, in part, because of no apparent budgeting process, cost accounting, performance reporting, or year end financial reports.
7. Low confidence level in cooperative by members because of poor performance and lack of communication.
8. Generally speaking, many of the cooperatives have no field staff which would help to support and encourage better farming practices, harvest timing, and delivery and pressing scheduling, all of which would contribute to improved quality.

West Bank Olive Sector Research Programs

There are no formal research programs in existence on the West Bank that work with the olive sector. Considering the size and economic importance of the olive to the Palestinian people, it seems that there should be some organized, well defined, and simple research projects established for various parts of the sector. Several years ago, Dr. Shamon Levi of Volcani Institute, conducted field trials along the West Bank. The projects included olive tree nutrition, olive oil quality, soil conditions, mechanical harvesting, and olive cultivar trials.

There is a need to re-establish these kinds of projects whereby field workshops would be organized and held on progressive farms, in cooperative olive oil presses, and at universities. CDP could identify areas, organize a plan, select specialists, send out notices, and conduct the research workshops.

It appears that there are five general areas to be addressed: farm production practices, harvest timing and delivery, olive press management practices, and marketing and new products. Each sub-sector could identify problem areas that need attention, develop a research project, and apply the practices in field or operational conditions. As the results become known, document what happened and communicate the information to those who will use the information. Some research will be short-term with immediate results. Other projects (fertilizer test plots, for example, will take a longer period to evaluate positive results).

There needs to be new product research to determine other commercial uses of olive pomace after oil extraction. Currently, it is burned by farmers for heating and cooking. It could very well have more economic value by providing ingredients for soap or animal feed rations. With research work, new economic usage might develop.

OLIVE/OLIVE OIL: A WORLD REVIEW

INTRODUCTION

The olive tree (*OLEA EUROPEA L.*) produces olive fruit which is either pickled for table consumption or crushed to extract the oil. Most of the world supply of olives are grown in the Mediterranean countries. A total of 2.160 million tons of olive oil, and 893,000 tons of table olives were produced in 1992. Major olive oil producers are: Italy 630,000 tons, Spain 593,000 tons, Greece 385,000 tons, Tunisia 250,000 tons, Turkey 60,000 tons, Portugal 85,000 tons, Morocco 50,000 tons, with smaller quantities coming from other countries in the Mediterranean region, as well as Argentina and California. Olive oil is a staple food for Mediterraneans.

Olive oil of good quality is characterized by a fragrant, delicate flavor, and is in high demand by consumers who use it regularly. Olive oil is unique among vegetable oils because it can be consumed without refining. It has a moderate degree of unsaturation and is considered nutritionally preferable to the high degree of saturation or unsaturation of many other edible fats and oils. Unfortunately, not all of the olive oil marketed around the world is of good quality. Large quantities must be refined because it came from poor quality fruit. The refining process destroys much of the sensory attributes which are responsible for the extraordinary quality of olive oil.

The Olive Tree

The olive tree is a relatively small evergreen tree with narrow silvery leaves and small white flowers, known for its longevity. Olive trees in the Garden of Gethesmane (Jerusalem) are a living witness dating back to the time of Christ. However, olive production was practiced long before as men tended olive trees 8,000 years ago, harvesting the fruit and making oil for food, light, beauty, health, and power - a cornerstone in the development of civilization itself.

The cultivated type of olive tree evolved around the eastern Mediterranean and gradually spread to Southern Europe and North Africa. Spanish missionaries brought it to California about 1,850, and immigrants from the Mediterranean introduced it to South America.

The olive thrives on deep, well drained soils, clear, dry atmosphere, and moderate temperatures which should never fall below 9°C (15°F). A certain degree of chilling is necessary for the initiation of flowering. Olive production follows a two year cycle, with a good crop one year, and a short crop the next year. Such a pattern creates serious problems for the industry market efforts. Alternate bearing is influenced by insufficient irrigation, lack of fertilizer, dense plantings, lack of disease, and pest control, and poor pruning practices.

Olive Fruit

The olive fruit is a drupe (like cherries, peaches, plums), oval in shape, and consists of two main parts, the pericarp and the enclosed seed. The pericarp consists of the epicarp (skin), the mesocarp (flesh), and the endocarp (pit). The flesh represents 68-85% of the weight of the fruit. The pit makes up 15-30% of the weight, and the skin is 1.5-3.5% of the weight.

The flesh contains 96-98% of the total amount of oil, and the pit is 2-4%.

Many olive cultivars have been developed over the centuries, all with slightly different size, color, and chemical composition of fruit. Olive oil cultivars best suited for oil production have medium size olives, which contain 15-40% oil when mature.

Production

There are over 800 million olive trees in the world, covering approximately 24 million acres. Almost 98% of these trees are growing in the Mediterranean area. Annual production is roughly ten million tons. About 800-900 thousand tons are consumed as table olives, with the remaining amount going into olive oil production.

California produces 99% of the olives grown in the U.S. Arizona has a few acres for commercial table production. Most of the U.S. olives are canned for table use. The small amount of olive oil produced in California supplies less than 1% of the oil consumed in America. A majority of the over 100,000 tons of imported oil comes from Italy and Spain.

Olive oil is important in the daily diet of the Mediterranean people. Greeks have the highest consumption per capita at 20.8 kg per year. Spanish and Italian consumption averages 8-10 kg per year.

The U.S. average is .35 kg per person per year.

Fruit Development and Oil Formation

Olive size is affected by genetic and environmental factors. At maturity, single fruit weight will vary from two to 20 grams. During growth of the olive, along with increase in weight, the oil content will increase continually until maturity.

The rate of fruit maturity is affected by the age of the tree, health of the tree, soil moisture, fertilization, and abundance of sunlight.

Fruit Constituents

The flesh is the most important part of the olive fruit. At maturity, water and oil account for 85-90% of the weight. Also contained in the flesh are sugars, minerals, and a variety of phenolic compounds. A phenolic glucoside typical of olives is oleuropein, which is responsible for the bitter taste.

Olives also contain large amounts of potassium, which represents over 2/3 of the total mineral content of the flesh.

Olive Harvesting

Methodology of olive harvest is much the same as it has been for many centuries - most handpicked. Recently, some new techniques have been introduced, and are being tried to make harvest less costly.

Olives for table use are normally harvested at the mature yellowish-green stage. Olives for oil extraction are collected by hand stripping or beating the branches with poles after the skin has darkened and the oil content is at its maximum. In Greece and other large oil producing countries where farm labor is scarce and expensive, plastic nets are spread under the tree of certain cultivars and the fruit is allowed to fall naturally.

Hand picking yields the best quality for both table olives and oil. It also reduces tree injury over the poling technique.

Olive Storage

Ideally, to achieve the finest quality oil, olives should be crushed immediately after harvesting. During peak harvest, this is impractical. Therefore, olives should be stored in cool, shaded, conditions, and piled in layers not exceeding 25 centimeters. If stored in containers, the box or bin should be well ventilated. The most serious damage to quality is the fermentation of the fruit because of heating. The heat causes enzymatic action to occur that degrades the oil by increasing the acid content to levels above accepted international standards for good quality olive oil.

In some parts of the world, farmers deliver olives in plastic sacks. This is the worst possible way to deliver and store olives because the sacks create conditions with fruit inside that favor heating, microbial growth, and spoilage.

Olive Oil Extraction

Crushing the olives is the first step in extraction. The crushing machine, called the edge runner, consists of a large bowl in which two heavy wheels revolve, pressing the olives. In recent years, Italian manufacturers have introduced more modern crushing equipment.

In traditional mills, the olive paste obtained is placed on pads made of synthetic fibers, folded, placed between metal racks, and subjected to hydraulic pressures. One or two successive pressings are applied to extract the oil and water which is then separated by settling or by centrifugation. In modern mills, the traditional pressing is no longer used. Instead, oil is separated from the aqueous phase (vegetable water), and from the pomace either by centrifugation or a combination of selective filtration and centrifugation.

Centrifugation

Olives are washed, crushed, and the resulting paste is malaxed. The purpose of malaxation is to promote the coalescing of small oil drops into larger ones which helps separate oil from water. Malaxators are usually cylindrical vats with rotating blades and double walls through which warm water is circulated. Heating the paste speeds up the merging oil drops, but it can also cause a loss of volatile aroma compounds if too hot. Water is added to the malaxed paste and the mixture is centrifuged through a decanter. Olive cakes (pomace), water and oil are obtained. The oil still contains some water which is separated by a second centrifugation in a vertical separator.

Combination Process

This process is also known as the Rapanelli process. Paste obtained after washing, crushing, and malaxing the olives, is passed through a selective filtration which allows 80% of the oil to separate. The most common filtration model is the sinolea unit, therefore known as sinolea oil which still contains some water. It is separated by centrifugation. To recover oil from the remaining paste, it is moistened, malaxed again, and centrifuged in a decanter. The result is called decanter oil.

The oil extracted from sound olives by mechanical means is known as VIRGIN OLIVE OIL and is marketed without further processing. If poor quality olives (fermented, insect infested, overripe) are used, the oil has high acidity and undesirable flavor. Such oil must be refined after which it is marketed as refined olive oil. Refining includes neutralization, deodorization, and bleaching.

Olive Oil Composition

Olive oil is a mixture of glycerides, which are esters of glycerol with fatty acids. In addition, olive oil contains small quantities of free fatty acids, glycerol, phosphatides, pigments, carbohydrates, proteins, flavor compounds, sterols, and certain resins.

Storage and Packing

Olive oil, like all edible oils, undergoes deterioration during storage. The main type is oxidation rancidity. Proper storage will extend the marketing life of olive oil.

Olive oil extracted from different cultivars should be stored separately, although oil mills usually blend them. Storing in tanks is common. Tanks should be constructed of material impermeable to oil, be inert so that they do not react to the oil, protect the oil from light and be airtight, and maintain relatively constant temperature, preferably near 15°C. Enamelled tile, glass and stainless steel, are considered the best lining materials for tanks.

During storage, sediment is settling out of the oil. The sediment can ferment and flavor the oil. Racking off is a process of draining off the oil free of the sediment. When decanting the oil, precaution should be taken to minimize exposure to air which encourages oxidation. Filtration can be used in place of

decantation. It removes fine particles and brightens the oil. This is done just before bottling.

Olive oil is packaged in glass bottles, plastic (PVC), tin plated cans, lined cartons, and drums. Containers should protect the oil from light and oxygen.

Olive Oil Quality

Quality is affected by many factors. Different cultivars produce oil of different characteristics, soil and climate, production and harvest practices, and maturity, all influence quality. Olives harvested early yield oil with a fruity flavor, low acidity, and greener color than olives harvested late.

Based on flavor, the following classification of olive oil was proposed by Frezzotti, et al. (1956):

1. Unripe oil—extracted from immature olives.
2. Bitter oil—extracted from olives mixed with leaves.
3. Fruity oil—extracted from freshly picked, ripe olives (the best oil).
4. Good flavor oil—ordinary oil with some off-flavor.
5. Defective oil—oil with off flavors (moldy, wormy, rancid, metallic, medicinal, etc.).

The color of olive oil varies from light yellow to yellow-green, to green, to green-brown, depending on maturity.

Of major importance is the categorization of olive oil and olive-residue oil into grades or quality based on criteria established by the IOOC.

1. Olive oil is the oil obtained from the fruit of the olive tree solely by physical or mechanical means that does not lead to alterations in the oil, and which has not undergone any treatment other than washing, decantation, centrifugation, and filtration.
 - a. *Extra Virgin Olive Oil*: Absolutely perfect flavor, odor, and taste, with a maximum acidity of 1% or less (1g/100g).
 - b. *Fine Virgin Olive Oil*: Perfect flavor and odor, having a maximum acidity of 1.5% (1.5g/100g).
 - c. *Ordinary Virgin Olive Oil*: Good flavor and odor, with a maximum acidity of 3% (3g/100g).

2. a. *Virgin Lamponde Olive Oil*: Not fit for human consumption, off flavor, strong smelling oil, with a maximum acidity of more than 3% (3g/100g). It must be refined or used for industrial purposes.
 - b. *Refined Olive Oil*: Obtained from virgin olive oil by refining methods which do not alter the oil.
 - c. *Pure Olive Oil*: A blend of virgin olive oil fit for consumption as is and refined olive oil. Blended to the customer's satisfaction.
3. **Olive Residue Oil**: Obtained by treating olive residue with solvents and can be classified as follows:
 - a. *Crude Olive Residue Oil*: Intended for refining with the intent of using for food technical purposes.
 - b. *Refined Olive Residue Oil*: Obtained from crude olive-residue oil by refining methods. Intended for human consumption as is or blended with virgin olive oil.
 - c. *Refined Olive Residue Oil and Olive Oil*: A mixture of refined and virgin olive oils fit for human consumption.

Olive Oil and Health

Since the beginning of man's introduction to, and use of, olive oil, it was considered not only an excellent food, but also a healing agent, cosmetic oil, medicine, and a religious potent. A ten year study by the University of Texas Medical School confirmed the health giving benefits of consuming olive oil. The studies found that people who consume quantities of olive oil have a much lower incidence of coronary heart disease than people who ingest saturated (animal) fats. It was also reported that serum cholesterol level among olive oil eaters was significantly lower.

It was noted that the number of deaths caused by myocardial infarction per 100,000 is 60 in Heraclion, Greece, compared to 395 in the U.S.

A recent food seminar held at Harvard University reaffirmed the health giving benefits of using olive oil as a food. In fact, the Harvard conference has gone on record recommending the Mediterranean diet of eating more grains, olive oil, and red wine (see attached report).

**WORLD PRODUCTION AND CONSUMPTION
OF
OLIVE OIL AND TABLE OLIVES
(1,000 tons)
1992-1993**

Country	Olive Oil		Table Olives	
	Production	Consumption	Production	Consumption
Algeria	37.0	27.0	16.0	14.5
Argentina	9.0	4.0	33.0	15.0
Cyprus	1.5	2.0	5.0	5.0
EEC	1,672.0	1,300.0	402.0	350.5
Israel	1.0	4.5	16.0	13.5
Libya	10.0	19.0	2.5	7.5
Jordan	5.0	11.5	14.0	13.0
Lebanon	5.0	7.0	5.5	6.5
Morocco	50.0	44.0	80.0	30.0
Syria	42.0	62.0	72.0	70.0
Tunisia	250.0	60.0	10.0	9.0
Turkey	60.0	50.0	120.0	110.0
USA	.5	92.5	164.0	165.0
Yugoslavia	2.0	4.0	2.0	2.5
Other	<u>15.0</u>	<u>124.5</u>	<u>36.5</u>	<u>108.5</u>
	2,160.0	1,812.0	978.5	920.5

SURVEY OF WEST BANK OLIVE OIL PROCESSING FACILITIES

Mission/Objective

Olive Specialist (CDP) to identify and survey West Bank olive processing facilities. Survey to include both cooperative and private olive presses. Survey should include as much information as possible.

Ways and Means

Survey to be conducted with a prepared questionnaire. CDP olive specialist will visit processing plants, interview manager and board chairman, record answers to questions, and enter results in a final report. All material can be put into a database.

A permanent file and West Bank olive directory can be developed to include the survey materials. A reasonable schedule should be established to hold meetings, conduct interviews, and make a final report.

The attached CDP oil cooperative survey, conducted by the olive specialist, contains much of the requested information. A follow-up visit would be required to answer some additional questions that are outlined in the sample questionnaire (see Table of Contents).

Olive oil quality is critical to any organized marketing activity. Although there were reports of poor quality and high acid oil, the attached California analysis of West Bank olive oil was very positive.

The samples taken were from the Salfit Oil Cooperative, a blended sample provided by Nabil Handal (Nabile) and a fresh sample of California grown olive oil. The reports shows that Palestinian oil tested was high quality. The highest quality came from the blended sample Nabile.

The Salfit sample was graded down slightly because of a sharp taste which seemed to be a slight off flavor (bitter) that could have occurred because of too much heat being used to extract the oil. If the press water is too hot (over 35-40°C), the heat will take the bitterness out of the leaves mixed with the olives during pressing.

Heat can be easily controlled by the olive press operations.

See the attached Biological Testing and Research Laboratory report dated May 6, 1993.

WEST BANK OLIVE PROCESSING QUESTIONNAIRE

1. Location

- a. Name of village _____
- b. Name of processing plant _____
- c. Address _____
- d. Telephone _____
Fax _____
- e. Cooperative _____
- f. Year Established _____

2. Farmer Information

- a. Number of farmers served _____
- b. Total dunums of olives _____
- c. Average size of farm _____
- d. Harvest dates – Start _____ Finish _____
- e. Olive *varieties* processed
 - (i) _____ Dunums _____ Oil Yield % _____
 - (ii) _____ Dunum _____ Oil Yield % _____
 - (iii) _____ Dunums _____ Oil Yield % _____
 - Total _____
- f. Type of harvest containers used _____
- g. Farmer income/return per dunum _____
- h. Cost to crush olives: Coop Member _____
Non-Member _____

3. Cooperative or Private Leadership Information

- a. Number of cooperative members _____
- b. Number of board members _____
- c. Names of officers:
 - Chairman _____
 - Vice-Chairman _____
 - Secretary _____
 - Treasurer _____
 - Accountant _____
- d. Date of last membership meeting _____ Last election _____

4. Processing/Crushing Plant Information

- a. Manufacturer of equipment _____
- b. Capacity per hour (tons/hour) _____
- c. Age of equipment (year installed) _____
- d. Automatic _____ Semi-Automatic _____ Hand _____
- e. General condition _____
- f. Is there inventory of spare parts? Yes _____ No _____
- g. Where are parts obtained? _____

5. Operational Information

- a. Number of employees _____
- b. Manager's name _____
- c. Assistant manager _____
- d. Technician _____
- e. Other _____
- f. Gallons of olive oil produced
 - 1993 (est) _____
 - 1992 _____
 - 1991 _____
 - 1990 _____
 - 1989 _____
 - 1988 _____
- g. Are laboratory testing facilities available? _____
Location _____

6. Information for Marketing

- a. Total gallons surplus oil
 - 1993 (est) _____
 - 1992 _____
 - 1991 _____
 - 1990 _____
 - 1989 _____
 - 1988 _____

- b. Olive oil quality
 - % extra virgin _____
 - % fine virgin _____
- c. Does oil press have surplus oil?
 - % virgin _____
 - % processed _____
- d. Where is surplus oil sold? _____
- e. Average \$JD per kilo _____

- f. Type of container used to store oil _____
- g. Where is oil packaging plant? _____
- h. Containers used to package oil _____
- i. Other information/comments _____



Biological Testing & Research Laboratory

A DIVISION OF

PENT-A-VATE, INC.

Report No. M-258-U

966 WEST PALM STREET

LINDSAY, CALIFORNIA 93247

PHONE (209) 562-2839

"Uncovering the Facts"

May 6, 1993

Olive Growers Council
121 East Main Street
Visalia, CA 93291

Attn: Adin Hester

Re: Olive Oil samples submitted 5-6-93 for analysis.

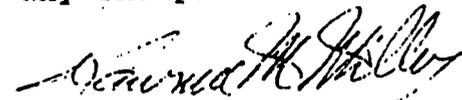
ANALYSIS

	<u>California</u>	<u>Salfit</u>	<u>Nabile</u>
Free Fatty Acid (% as Oleic Acid)	1.85	0.75	0.39
Color	Dark Greenish Yellow	Cloudy Golden Yellow	Clear Golden Yellow
Bouquet	Strong Olive Odor	Clean Fragrant	Clean Fragrant
Taste	Strong Olive Taste	Clean & Mild With A Trace Of Sharpness	Clean, Mild

Remarks: The classification of Olive Oil with regard to free fatty acids is as follows:

	<u>% Free Fatty Acid</u>
Extra Virgin	Not More Than 1.0
Fine Virgin	Not More Than 1.5
Semi-Virgin	Not More Than 3.3
Virgin (Lamp Oil)	Greater Than 3.3

An excellent olive oil would be light golden yellow, with a clean, fragrant aroma and a clean, mild taste free of any sharpness.


Lawrence M. Willey
Chemist

RECOMMENDATIONS

PHASE ONE: IMMEDIATE ACTION PLAN

1. CDP, through expertise of olive specialist, begin the collection of material and establishment of a resource center. Call, write, or subscribe to periodicals and magazines that are olive specific. An example would be OLIVAE, published by International Olive Oil Council five times each year.

Seek out resource materials, publications, and research papers, covering all phases of olive and olive oil production. Get on mailing list of universities who work with olives. Purchase books and pamphlets on olive oil subjects.

Organize and catalog all olive materials in CDP library.

Connect with Volcani Center, Hebron University, University of Amman to learn of seminars, field demonstrations and lectures in which to become involved.

2. Develop a master plan to identify olive sub-sectors and list specific areas to be addressed for workshops, training sessions, and meetings. This effort should be directed at the local level-farm, olive press, cooperative, and marketing organizations.
3. Following identification of the sub-sectors, write simple workshop/ seminar lesson plans that will be used as a teaching guide, and prepare handouts for participants. Sub-sector workshop outlines should include the following:

A. Farm/Production Sub-sector

1. Cultivation practices
2. Pruning technology
3. Fertilizer application
4. Pesticide treatment and application
5. Olive maturity/harvest timing and harvest practices

B. Olive Oil Cooperative Sub-sector

1. Cooperative leadership: Develop a management training program to teach good administration and operation practices. Include financial accountability and year-end statements.
2. Harvest: Scheduling, containers, and storage.

3. Olive press operations: Sanitation, repairs and maintenance, and good manufacturing practices.
4. Quality assurance: Olive oil testing, laboratory availability, and international olive oil standards.
5. Olive oil storage: Containers, quality maintenance, and sanitation.
6. Oil market opportunities: Identify quantities, quality, filling capability, container sizes, market survey and identification, and business arrangements.

C. Olive Oil Union

1. CDP to provide assistance for organizational planning, *i.e.*, set meeting arrangements, agenda, discussion, and obtain commitment from board of directors.
2. Provide cooperative management training workshops for manager, directors, and members.
3. Assist in developing an operational plan for union, including administration, accounting, operations, membership meetings, and schedule of activities.
4. Help to develop a spare parts supply center for olive oil presses, including recommendations for financing, part sources, contract arrangements, delivery schedules, inventory control, inventory pricing, order shipments, billing, and collection.
5. Identify all olive oil filling plants, location, capacity, and olive oil containers. Also review olive oil labels for design, color, style, and proper content listing. Emphasize Holy Land.
6. Recommend to cooperatives with surplus oil to report quantity. Require quality testing by laboratory and, if good, prepare samples with supporting documentation for market presentation.
7. Prepare a marketing budget, identify production cost, container cost, freight cost to various destinations, and determine approximate selling price for olive oil.

D. Production Sub-sector

1. CDP to initiate plans for in-field workshops. Set dates and places. Communicate information regarding workshops to area farmers and oil cooperatives.

2. Conduct workshop with intent of teaching new skills and practices. Provide handout materials to support recommendations and reinforce information communicated.
3. Establish workshops to cover each of the following practices: proper cultivation, pruning, fertilization, insect control, and harvest timing.
4. Identify selected progressive farmers. Ask permission to conduct small experiments to demonstrate, overtime, the value of improved production practices.
5. Prior to harvest, hold a workshop in cooperation with the oil presses to explain and demonstrate the importance of proper harvest timing, harvest techniques, sanitation, container usage, and timely transportation to the olive press. Relate the importance of the above skills to the production of high quality olive oil and the international market.

E. Olive Press Sub-sector

1. Coordinate dates and place for manager/employee workshops. Review good cooperative business practices, good manufacturing skills, timely repair and maintenance schedules, oil quality, and assurance testing by laboratory and storage.
2. Teach the importance of good storage, proper containers, well maintained and sanitary equipment, and proper oil extraction technology to maintain high quality.
3. Review international olive oil quality standards and emphasize the importance to attract export sales.
4. Present information on proper containers to meet market requirements along with labeling. Discuss importance of filling orders, making prompt shipments, and guaranteed customer satisfaction.
5. Technician availability and training program must be addressed.

F. Olive Sector Support System

1. Become well acquainted with other PVO, NGO, and university support groups. Attempt to utilize their skills and sector mission to enhance and expedite the educational process of the West Bank olive sector. Communicate with them to coordinate activities of mutually beneficial projects, keep them informed of CDP sector objectives.

2. **Maintain communication network between oil cooperatives, unions, and marketing boards, as well as PVO's and NGO's with newsletters, meetings, and other opportunities.**

G. Olive Press Technician Training

A major problem during the height of olive crushing is the lack of qualified and trained technicians who can analyze breakdowns, determine what to do, make the necessary repairs, and put the olive press back on line. In an attempt to help solve at least part of the trained help deficiency, it has been recommended that a group of six to eight qualified men be selected and sent to Peralisi headquarters in Italy for a crash course in the repair and maintenance of this type of equipment.

Younis Sbieh presented a list of potential candidates. Their qualifications were reviewed to determine which were the most qualified. In conference with Younis, the following named olive oil presses will be selected to send one of their recommendations to the Italian workshop:

Azzoun
Deir Sharef
Ein Sinia
Salfit
Yassid

Two to three more will be selected from other cooperatives at the appropriate time. Over 13 olive oil cooperatives sent in recommendations.

H. Cooperating Agency/University Communication

CDP, through the olive specialist, should begin a dialogue with the various NGO's, PVO's, and university personnel to become aware of activities where cooperative assistance may enhance CDP's goals and objectives for olive sector improvement and growth. Effort should be to learn about their mission statement and how they hope to accomplish objectives. Attend and participate in seminars, workshops and meetings to become better acquainted with players and build a communication system.

Connect with the local university system, learn of their planned activities, attend their programs that deal with olive production, sign up for continuing education programs that will expand olive knowledge and skills. Utilize current data and information from these outside sources to build a CDP information center for olives, olive production and olive oil.

PHASE TWO: FUTURE ACTION PLAN

1. Sector Research and Development

With no identifiable research projects being conducted in the West Bank, it seems appropriate that consideration be given to selection of a series of basic research projects to be conducted in each area of the olive sector. The purpose would be to demonstrate effectiveness of changing practices and how change will help farmers, olive oil cooperatives, oil union, and marketing.

The demonstrations should be conducted with progressive farmers and olive oil cooperatives. As neighbors observe research activities and beneficial results, they will begin to accept some of the new practices.

Even more futuristic is the consideration of a highly scientific study of the olive cultivars (varieties).

Suggested by Dr. Jad Isaac, of the Applied Research Institute, the study would properly identify and classify the West Bank olive varieties.

This information would help to better understand and classify various cultivars as to the environment in which they will best grow, the scientific description of the trees based on leaves, trunks, flower types, dates of blossoming, etc., and characteristics of the fruit (weight, size, oil yield, table versus oil, stone (pit) information, maturity, and yield).

All of this information could then be compared with the major germ plasm banks located in Spain and Italy.

See Clonal Selection of Local Olive Varieties.

2. Sector Evaluation of Activities and Projects

The use of a master plan listing goals, objectives, and deadlines for sector activities will provide an excellent work schedule. Periodically, the master plan needs to be reviewed to determine both successful and unsuccessful activities. The evaluation process will allow for enhancement of successful projects and redesign of those that prove to be unsuccessful. If evaluation becomes an ongoing part of the overall olive sector improvement projects, there will be many successes that will open up new opportunities.

3. Olive Oil Union Development

There needs to be continued CDP observance and advisory participation in the operations of the Olive Oil Union. This group will be responsible for major improvements that will have a great impact on the West Bank olive sector.

If properly organized and executed, the development of a spare parts center and inventory will be a dramatic step forward for the olive sector.

The development of an overall marketing system will help to reduce surplus oil problems and inject additional cash income to the sector. The long range impact will greatly improve the well being of the Palestinian people but, more specifically, help the agricultural sector become more progressive and self sufficient.

CDP will need to stay close to the Olive Oil Union activities and provide leadership and support.

4. Olive Oil Cooperatives

Continue to monitor operations during olive crushing season. Make note of problems and issues that need to be addressed during off-season meetings. Be alert for ways and means to improve efficiencies, enhance oil quality and financial strength.

Consider possible working relationships with other presses during peak harvest time with the thought in mind of sharing facilities to help reduce the pressure of harvest depending on whether or not the olive press may have additional capacity.

If a market program develops for export of olive oil, the filling plants will need a study to determine total available filling capacity and container size capability. All of this information should be incorporated into the olive oil press survey/information form. Although much of the exported oil is sold in glass bottles, it seems prudent for the moment to utilize existing facilities and can-filling equipment. The use of tin containers will help to alleviate shipping damage and/or breakage. As the export market improves, and if demand requires it, a study can be conducted to research the merits of installing glass filling lines for olive oil in the West Bank.

There will also be an eventual need for simple lab testing equipment with trained technicians who can sample and analyze olive oil for quality assurance. Some planning needs to occur that will identify what labs are available, if technicians are available to conduct oil analysis, equipment requirements for setting up a basic testing facility, and where to train technicians.

West Bank Organizations and Resource People Interviewed

Organization	Name	Position
Abdel Hadi Nursery	Saleh Hamdan	Manager
Ag Marketing Union	Bassam Walif Bassam Shumaleh	Director Admin Director
Agriculture Department University of Hebron P. O. Box 40 Hebron, West Bank	Dr. Sufyan Sultan Dr. Abdel Jaleel	Dean Assistant Dean
American Near East Refugee Aid	Adnan Oberdat Ibrahim Matar	
Applied Research Institute P. O. Box 45 Beit Sahour, West Bank	Dr. Jad Isaac	Director
Arabeh Olive Oil Coop	Hussineh Jameel	Secretary
ASIR	Dr. Karen Assaf	Office Manager
ASIR Nursery	Mustafa Alzarineh	Ag Engineer
Azzoun Olive Oil Coop	Ameen Alsalam	Chairman
Beir Jala Coop P. O. Box 211 Beit Jala, Bethlehem	Dimian Allam Hana Allam Rock Alfred Ilias Jahshan	Chairman Technician Treasurer Manager
Bidya Olive Oil Coop	Hamzeh Salameh	Secretary
Deir Debwan Oil Press (Private Press)		
Deir Sharaf Oil Coop	Mohamad Deeb	Manager
Dept. of Agriculture	Fares El-Jabi	Horticulture
Ein Sinia Oil Coop	Ibrahim Hawarth Imad Elhusineh	Treasurer Secretary

Jenin Marketing Coop	Khaled Alwad	Chairman
Jenin Tin Factory	Dr. Khaled Tukan	Manager
Land Research Committee P. O. Box 506 Hebron	Jamal Talab Muhamad Hassasneh Shukri Radaydeh	Chairman Member Member
Olive Oil Council	Khames Al-Hamad Ibrahim Hawarth	Treasurer Vice-President
Olive Oil Lab	Dr. Nashat Aqtash	Professor, Gaza Islamic Univ.
Olive Oil Union	Khamis Al-Hamad Hamazeh Salameh Ibrahim Hawarth	Treasurer Secretary Chairman
Palestine Ag Relief Committee Shufat P. O. Box 25128 Jerusalem	Ayed Abdul Aziz Hussam Isseed	Ag Engineer Ag Engineer
Salfit Oil Coop	Khames Al-Hammad Abed El-Latif	Manager Board Member
Save the Children Fund	Kayed Janazreh	Director
Technical Center for Ag Services	Majdi Al-Muhtasseb Muhamad Al-Shalaldeh Shawki	Chairman Ag Engineer Ag Engineer
Tulkarem Market Coop	Mohamad Awad	Manager
United Ag Work Committee	Nabil Handal	
United Arab Comp.	Hasib Nashashiri	
United Nations	Omar Daoudi	Project Director

OLIVE SECTOR WORKSHOP

Ramallah, West Bank

April 28, 1993

Participants

Names	Organizations
1. Dahand Hawarth	Chairman of Olive Oil Union
2. Faris Aljabi	Agriculture Department
3. Mazer Algushih	Agriculture Department
4. Nasseg Ahmed Ismael	Tulkarem Agriculture Marketing Group
5. Hussin Sabeg	Agriculture Department
6. Kamal Alnatesheh	ANERA
7. Imad Alhussiench	Ein Sinia Olive Press Cooperative
8. Nehiah Hamodeh	PARC
9. Fiad Abed Alsalam	Azoun Olive Press Cooperative
10. Saed Dageg	PARC
11. Jihad Albergothch	PARC
12. Kaied Janazerh	Agriculture Work Union Committee
13. Almed Yousef Jabesi	Agriculture Department
14. Omar Aldaowedeh	UNDP
15. Sameih Albargothch	Olive Development Center
16. Basam La Fee	Yasonf Olive Press Cooperative
17. Yassen Saleim Saleih	Assaleh Handicraft Cooperative
18. Khames Alhamed	Salfit Olive Press Cooperative
19. Bahjet Odeih	Bidya Olive Press Cooperative
20. Ismael Gabeha	Burtaah Olive Press Cooperative
21. Mhamond Ibrahim	Deif Estya Olive Press Cooperative
22. Hameza Salameh	Bidya Olive Press Cooperative
23. Khaleel Tafweeg	PARC
24. Yagoub Altaheg	Ramallah Agriculture Marketing Group
25. Malkee Mhamond Suliman	Beit Our Cooperative
26. Deeb Emshafee	Yasid Olive Press Cooperative
27. Tom LaQuey	CDP Project Director
28. Abed Abu Arafeh	CDP Technical Director
29. Nadia Handal	CDP Interpreter
30. Adin Hester	CDP Consultant

WEST BANK SURVEY OF COOPERATIVE
MEMBERS OF OLIVE OIL UNION

March 18, 1993

To: Abed Abu Arafah
From: Younis Sheih

Subject: Preliminary report on survey results of member co-ops
in the Olive Oil Co-op Union.

Survey Purposes:

1. Identifying the co-ops, their present and future activities.
2. Identifying training needs for these co-ops that might help develop their business.
3. Identifying the members' needs for useful publications that help improve and increase the production of olive trees.
4. Identifying the problems and difficulties hindering the co-op's work, so as to work with the Union for solving these problems.

Survey Procedures:

A questionnaire with all the necessary information was prepared. 19 out of 20 member co-ops were visited (and one not listed with the Union and another). Each questionnaire was filled by the responsible staff person in the co-op. All information is currently being entered into the computer. The following table, however, gives some preliminary information of these co-ops.

membership meetings.

in the general assembly's request to liquidate the co-op as the case in the co-ops of Yassid and ~~kufer~~ THUL TH.

The ignorance of some board members as of cooperative laws and regulations.

5. Lack of technical expertise which prevented the co-op from benefiting of several investments.
6. Some of the projects at these co-ops are useless and were started without any prior studies such as the packaging factory at Deir Sharaf and the soap factory at Beit Jala.
7. Most of these co-ops suffers from great deficits in their budgets.
8. Most workers employed at the press factories have little experience which results in spending a lot of money on maintenance as a result of their mistakes.
9. A lot of olive co-ops do not differentiate between member and non member co-ops which encourages farmers to withdraw of not join the co-op.
10. The lack of trained staff at these co-ops to give proper guidance to olive farmers as to the treatment of this tree and on better harvest and pressing methods which effected the quality and quantity of the olive oil.

RECOMMENDATIONS:

*① Meet with board of directors.
② Coops need support - refuse services until elections held.*

1. Encourage co-ops to hold general assembly meetings so as to elect new board of directors or
2. Organize specialized accounting courses for these co-ops and continuous follow up (by CDP) on the co-op's accounting progress. *budgets, performance tracking*
3. Hold courses on co-op law and regulations for board members.
4. Provide the necessary expertise in olive presses by training individuals working with these co-ops. *must have trained person*
5. Encourage these co-ops to make use of all their resources and provide them whatever their projects lack.
6. Coordinate with other development organizations working in related areas to insure funds will be invested in the right place.
7. Make sure that adequate publications are being provided especially on the maintenance of olive oil presses and on olive oil in general.

u

From the previous table, we see that the total number of the members of these co-ops is 3922 ie the average of 196 member per co-op. The largest membership was in Targumia (1400) and the smallest in 'Awarta (21). There are three co-ops with more than 400 members.

Geographically, the co-ops are spread out as follows:

<u>AREA</u>	<u>NUMBER OF CO-OPS</u>	<u>NUMBER OF MEMBERS</u>	<u>AVERAGE NUMBER OF MEMBERS</u>
North	16	1145	71,6 (72)
Middle	3	1377	409
South	1	1400	1400
Total	20	3922	

In spite of the fact that olive oil production is centered in the north, yet the average number of members decreases as we go north.

As for olive oil presses, they are geographically spread as follows:

<u>AREA</u>	<u>NUMBER OF CO-OPS</u>	<u>AUTOMATIC 2 LINE PRODUCTION</u>	<u>AUTOMATIC 1 LINE PRODUCTION</u>	<u>SEMI AUTO.</u>
North	16	4	3	8
Middle	3	2	1	-
South	1	1	1	-
Total	20	7	5	8

From the previous table, we notice the non-existence of semi automatic olive presses in the south and middle areas. This might be due to the small number of members in the north as the other kinds of presses is sufficient to fulfil their needs.

Main Problems:

1. The absence of periodical elections in the co-ops which hinders the emergence of fresh and active board of directors that will work on developing the co-op.
2. Several co-ops do not have approved budgets as the board of directors distributes profit to members immediately after the season ends. This generated a lot of financial problems to the co-ops and hinders their progress.
3. The existence of differences between board members in some cooperatives due to the absence of elections which results

*no budgets
no reserves
no accounting*

8. Hold specialized courses about olive trees (in which a representative from each co-op will be present) so that these can provide proper guidance for farmer members in these co-ops.
9. Prepare for holding the workshop on olive presses spare parts that was discussed with the Union of Olive Oil Co-ops.
10. Form a committee from representatives of the Union and other development agencies concerned in the olive sectors to discuss marketing of oil surplus.

CDP Survey of Olive Press Cooperatives

اتحاد الجمعيات التعاونية لعصر الزيتون
استمارة معلومات

Meeting location: مكان المقابلة:

		Legal Coop Status	اولا: الوضع القانوني
	District منطقة عمل الجمعية		اسم الجمعية Cooperative Name
	WEST BANK REGIST NO. الضفة الغربية		AM grey 'AMMAN REGIST رقم التسجيل عمان Number
	REGISTRATION DATE الضفة الغربية		AM Date AMMAN REG. DATE تاريخ التسجيل عمان

			MEMBERSHIP ثانيا: العضوية
	عدد اعضاء لجنة الادارة NO. of Board Members		عدد اعضاء الهيئة العامة Membership NUMBER OF MEMBERS
	تاريخ اخر اجتماع للهيئة العامة Date of General Assembly's last meeting		عدد اعضاء لجنة المراقبة Supervisory Com. Members
	عدد اجتماعات الهيئة العامة منذ التأسيس Number of total G.A. Meeting Since Beginning		عدد اعضاء لجنة الادارة الحالية: Names of Present board

	عضو		الرئيس chairperson
	عضو		السكرتير Secretary
	عضو		امين الصندوق Treasurer
	عضو		عضو Member
	عضو		عضو Member
	عضو		عضو Member

Co-op representatives in the Union - Olive Oil Union
ثالثا: ممثلوا الجمعية في الاتحاد

	أسماء مندوبي الجمعية للهيئة العامة للاتحاد Names of Representatives	
.٤		.١
.٥		.٢
.٦		.٣

Olive Oil
Coop representatives in the Union Board
ب اسماء ممثلي الجمعية في لجنة ادارة الاتحاد

Membership Date in the Union

تاريخ الانتساب للاتحاد :
قيمة الاسهم المكتتبه بالاتحاد : Unpaid share in the Union

	١
	٢

*

	اخر ميزان مراجعة
	الاسهم المدفوعة Total paid shares in coop.
	الاسهم المكتتبه بها Unpaid Shares?
	الموجودات الثابتة Fixed assets value
	تاريخ الدفع Payment date

رابعاً : الوضع المالي	
	تاريخ اخر ميزانية مصدقة date of last approved budget
	قيمة السهم الواحد Share VALUE
	قيمة رسم الانتساب Membership Fee
	رصيد الصندوق الحالي Existing treasury Funds
	مجموع الاسهم المدفوعة للاتحاد Total shares paid to Union

القروض والهبات : Loans and Grants

Purpose الغرض	Type النوع/ه	Source المصدر	Year السنة	Value القيمة	
					١
					٢
					٣
					٤
					٥
					٦

* REQUIRES FROM COOP 100 JD's TO BELONG TO UNION.
SOME PAID AND SOME HAVE NOT.

Present projects

خامسا : المشاريع القائمة

Other equipment Auto - 2 lines Automatic - One line

معمل/مصنع	معصرة (٢)	معصرة (١)	النوع
			Kind/type
			سنة التركيب
			Installation year
			سنة التشغيل
			Date Beginning - Operation Year
			الطاقة الانتاجية الفعلية اليومية
			Daily actual production capability
			الطاقة الانتاجية الحالية
			Present production capability
			الطاقة الاجمالية (معدل عام)
			Total Production (average)
			مجموع ايام التشغيل للموسم الاخير
			Last Season
			مجموع المستفيدين من خدمات المشروع (معدل عام)
			Operation Days - Number of Operational Days
			الطاقة الاجمالية للموسم الاخير
			Last season Total
			تاريخ توقف المشروع عن العمل
			Date of ending
			مجموع المستفيدين من خدمات المشروع (معدل عام)
			Project Operations
			Total farmers served (average)
			مجموع المستفيدين من خدمات المشروع (معدل عام)
			Total beneficiaries from project services
			مجموع المستفيدين من خدمات المشروع للموسم الاخير
			" " " " " " for last season
			في حالة عدم التشغيل ما هي الاسباب؟
			reason for net operating (if any)
			عدد سنوات التوقف :
			Years of net operating

Employees

سادسا : المستخدمين

Perminant Personnel	دائم	Personnel	موسمي	Position
الاجور المدفوعة	العدد	الاجور المدفوعة Paid wages	العدد #	
		Not Paid Volunteer	1	ادارة Administration
				تشغيل وصيانة (فنيون) Operation & Maintenance (technician)
				عمال تشغيل Labor
				نظافة وحراسة Janitor/security
				اخرى (حدد) Others

سابعاً : الوضع الاقتصادي (حسب ارقام الميزانية للموسم الاخير)

Press Fees in kind/ cash رسوم العصر : عيناً/نقداً Profit/ revenues		Book value of machinery & equipments القيمة الدفترية للالات والمعدات
مجموع العوائد من المعصرة Total Revenue		Total salaries & wages مجموع الرواتب والاجور
مجموع العوائد الاخرى Other income		Total maintenance & spare part costs مجموع تكاليف الصيانة وقطع الغيار
تعويضات مزارعين عن العصر Farmers compensation for Pressing If Mistakes are discovered		Total water/electricity costs مجموع تكاليف المياه والكهرباء
ربح او الخسارة المتحقق Actual profit loss		Total of the operational expenses مجموع تكاليف تشغيلية اخرى
		Total cost of filling/packing material مجموع تكاليف العبوات
		ما هي المشاريع المستقبلية؟

ثامناً: المشاكل والاقتراحات
Problems and Suggestions

أ نوع المشاكل :

Type of Problems

ب الاقتراحات :

Suggestions

Reasons for not joining olive oil Union
if any.

١- في حالة عدم الانضمام للاتحاد ما هي الاسباب المانعة لذلك؟

Services desired from the Union

٢- في حالة الانتساب للاتحاد ما هي الخدمات المطلوبة من الاتحاد؟

What projects - activities the coop needs immediately or in
the future.

٣- ما هي المشاريع، والانشطة التي تعتقد الجمعية انها بحاجة لتنفيذها؟

What services - Tech assist/extension are needed by Olive Farmers & Coop need.

٤- ما هي الخدمات الارشاد او وسائل المساعدة الفنية التي يحتاجها منتجو الزيتون والجمعية؟

Interviewed by : أجرى المقابلة :

تاريخ اجراء المقابلة

Rate of the Interview

اجاب على الاسئلة:

Who answered the questions

CLONAL SELECTION OF LOCAL OLIVE VARIETY

Date of Recording:

I. LOCATION

- 1) Code number of tree:
- 2) Village-District:
- 3) Site of the village:
- 4) Name of the farmer:

II ENVIRONMENT

1) Description of the plot where the plant was located:

- a) Altitudeb) Slopec) Plant distance....
- d) Type of orchard (Specialized, with trees of different species, isolated tree),

2) Soil

- a) type of soil (heavy, medium, light, sandy, gravelly or other):
- b) drainage: (water logged, well drained, susceptible to drought):
- c) fertility: (poor, medium, rich):
- d) acidity (acid, neutral, alkaline, saline):

3) Climate

- a) Mean monthly maximum temperature:
- b) Mean monthly minimum temperature:
- c) Mean monthly rainfall,
- d) Winds (direction and velocity):
- e) Frost (time of the year):
- f) Relative humidity (low, medium, high)

4) Cultural practices

- a) Soil cultivation:
- b) Irrigation:
- c) Plant Protection treatments:
- d) Present state of the tree under observation:

Notes:

IV. FRUIT CHARACTERISTICS

1. Fruit

- a) Weight (grms per 100 fruits):
- b) Uniformity of size (not uniform, uniform):
- c) Shape (round, obovate, elliptic, other):
- d) Colour of the skin of fully ripened fruit (wine red, dark red, violet, blue-black, black).
- e) Lenticels in fruit skin (few, many, none):
- f) Tip (absent, small, medium, large):
- g) Base (basin-shaped, rounded, spindle-shaped):
- h) Suture (absent, little marked, marked):
- l) Colour of flesh at full ripeness (white, reddish, wine-red, violet, blue violet):

2. Stone

- a) Weight (grms per 100 stones):
- b) Shape (rounded, obovate, elliptic):
- c) Tip (pointed, blunt):
- d) Base (acute, truncated, rounded):
- e) Suture (inconspicuous, fairly conspicuous, conspicuous).

3. Ripening

- a) Harvesting season for green table olives:
- for black table olives:
- for oil production:
- b) Degree of adherence of stone to flesh (adherent, semi-free, free):
- c) Speed of natural fruit drop (as from initiation of of fruit ripening):

4. Crop Yield

- a) Yield (total weight in grms):
- b) Oil content (%) during the period of fruit ripening:
- c) Crop use: for oil production:
- : for table use (green or black):

Notes:

HARVARD CONFERENCE ON THE MEDITERRANEAN DIET:

Better Health Through Grains, Olive Oil, and Wine; Minimize Meats, Processed Foods; Get Most Protein from Plant Sources

By William D. Sherman, M.D.

Why should the 1960 diets of Crete and Southern Italy be healthier than counterparts or contemporary diets of Northern Europe, North America, and most other parts of the world? That's a question not fully answered, at least not just yet. Nonetheless, if longevity is the criterion—and most of us will readily accept it as a good one—there is no disputing the mortality tables.

It was to theorize about diets in various Mediterranean locales and to draw lessons from them that the Harvard School of Public Health last month convened an international conference, cosponsored by Boston-based Oldways Preservation & Exchange Trust, a nonprofit organization whose primary purpose is studying and promulgating diets that historically have been linked to good health and longevity. Conference co-chair Walter Willett, chair of nutrition at Harvard, noting that these diets correlate with low rates of heart disease, cancer, and other chronic diseases, argues that common elements of the diets "suggest a cultural model for healthy eating for adults that deserves greater consideration by the scientific and public-health communities." The evidence being what it is, that proposition is persuasive indeed.

The principal elements of the 1960 diets of Crete and Southern Italy and, with minor variations, just about all other Mediterranean locales, are what some researchers characterize as simply "wheat, wine, and olives" but others, more comprehensive in their approach, spell out thus:

- High consumption of fresh fruits and vegetables, legumes, and grains;
- Low to very low consumption of red meat and very low use of animal fat for cooking;
- Low to moderate consumption of other foods from animal sources, including fish, poultry, milk, cheese, and yoghurt;
- Olive oil as the principal fat;
- Moderate consumption of wine, primarily with food;
- Abundant use of minimally processed foods.

Some elements in this regimen have long been recognized worldwide as beneficial, and many of them appear in the well-known dietary pyramid promulgated by the U.S. Department of Agricul-

ture (USDA)—especially a relatively high ratio of plant to animal products and of low-cholesterol fish and poultry to high-cholesterol red meat. However, American nutritionists often have emphasized fat as the chief problem in animal products—ergo, the emphasis on low-fat milk and cheeses and on lean meats. In the Mediterranean diet, the problem apparently is not the fat itself but the source of the fat. If the source is olive oil, fat may not be so problematical. Indeed, while the World Health Association, the American Heart Association, and numerous other health-interested organizations recommend that dietary fat be limited to 30% of calories, the people of Greece, Italy, Spain, and many other Mediterranean nations regularly consume 40% or more, principally in the form of olive oil, without apparent deleterious effect.

Dr. Willett at the Harvard conference unveiled his own dietary pyramid, which has many elements in common with the USDA pyramid but also contains significant differences. (The pyramids are reproduced on pages 5 and 6 of this newsletter.) The USDA pyramid promiscuously groups fats, oils, and sweets, while the Willett/Harvard/Mediterranean pyramid has only one category for fats: olives and olive oil. The USDA pyramid calls for two to three servings daily of the grab-bag "meat, poultry, fish, dry beans, eggs, and nuts group," some products in which are high in fats and/or cholesterol, whereas the Willett/Harvard/Mediterranean pyramid calls for "lean red meat" to be consumed only "a few times per month or somewhat more often in very small amounts" and suggests that poultry, eggs, and fish be consumed "a few times per week." Both pyramids have breads and grains at their base and fruits and vegetables immediately above the base.

The USDA pyramid, developed as a cooperative effort with the Food Marketing Institute, a trade organization, has drawn criticism because of

ERRATUM

The January issue of *Healthy Eating*, in 2 nutritional analyses, erroneously stated cholesterol in grams rather than milligrams. The correct numbers are: page 6, column 2, 638mg; page 7, column 2, 654mg.

its link with a group of producers' advocates. One story has it that the original draft of the pyramid called for a lesser role for meat but was overruled by funders in the beef industry. In any event, olive oil and the Mediterranean diet are indivisible.

A second element in the Mediterranean diet that has been ignored by USDA and by many American nutritionists, some of whom condemn it, is wine. While the diet of most North Americans and Northern Europeans contains relatively little if any wine, and while American governmental agencies even to this day inveigh against the consumption of alcohol in any form, wine is a staple of the Mediterranean diet, consumed every day. (Some hospitals and insurance companies in the U.S. automatically categorize patients as alcoholic if they report that they consume alcohol every day.)

The possible cardioprotective and other health-beneficial effects of alcohol in general and wine in particular have come under considerable public discussion of late, largely as a result of the broadcast on the CBS television program *60 Minutes* of a segment titled, "The French Paradox." Dimitrios Trichopoulos addresses this in his interview, beginning on page 7, and Norvelle Harris in her article, beginning on page 12, "The French Paradox: Is the Key Ingredient Wine, Lifestyle, Both, or Neither?" Meanwhile, there are a number of other paradoxes that present themselves to students of the Mediterranean diet, leaving one to question which fall within the "because of" category, which within the "in spite of," and which in the simply "coincidental."

Consider the tobacco paradox. The carcinogenicity of smoking is virtually unchallengeable, as *Healthy Eating* editor Harris and many other scientists have demonstrated over the years. Smoking also is implicated in coronary disease. Yet, incidence and individual volume of smoking are much higher in most Mediterranean countries—especially Spain, Greece, Italy, Portugal, and France—than in the U.S. In the face of irrefutable evidence that smoking is hazardous, we can conclude only that most Mediterraneans enjoy greater longevity than Americans in spite of their smoking rather than because of it or coincidental to it; by extension, Mediterraneans might well enjoy even greater longevity if they smoked less or—better yet—not at all.

Next is the exercise paradox. While people in Greece and Southern Italy arguably got more exercise in 1960 than did the typical American, if only because The Greeks and Southern Italians' poverty and minimal industrialization made it necessary for them to walk more and perform more manual la-

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degrees from the
University of
Michigan.



bor, the probability is that today's average American gets considerably more exercise than today's average southern Italian or Greek, who has taken up the sedentary ways of so many pre-Nike/Reebok Americans. The cardiovascular benefits of exercise are virtually beyond challenge, so the assumption is that greater longevity in sedentary populations is in spite of rather than because of or coincidental to lack of exercise.

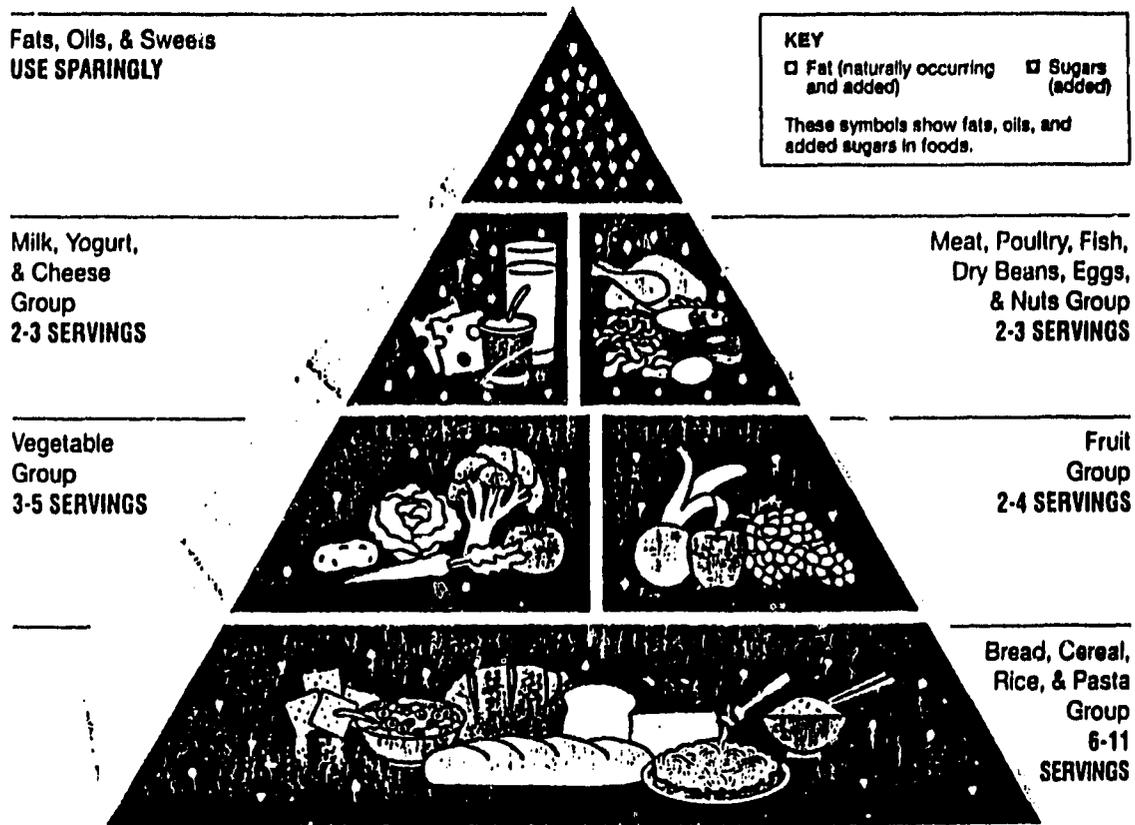
Perhaps most interesting of all is the fat paradox. When proselytizers of the French Paradox suggested that wine might help overcome high fat in the Lyonnais diet, Marion Nestle, one of three co-chairs of the Harvard conference, argued that the data did not support this because those Lyonnais now enjoying noteworthy longevity were raised before fat rose to its present high levels in the French diet in general and the Lyonnais diet in particular. Nestle's protest suggested to many people that she is anti-wine. However, she insists that she is merely anti-animal-fat, and at the Harvard conference she went on record that there is "over-whelming evidence" that wine "reduces coronary disease and increases life expectancy." The verdict of conferees seems to be unanimous, at least tentatively, that olive oil is preferable to all other fats. This opinion opens the door to possible revision at some point of the long-standing dictum that fat should be no more than 30% of calories.

Not insignificantly, apropos fat, the conference's three co-chairs eat little if any meat. Willett says he eats none, Nestle and Trichopoulos very little. Says Trichopoulos: "I don't think anyone in public health can like meat anymore. We know so much about it."

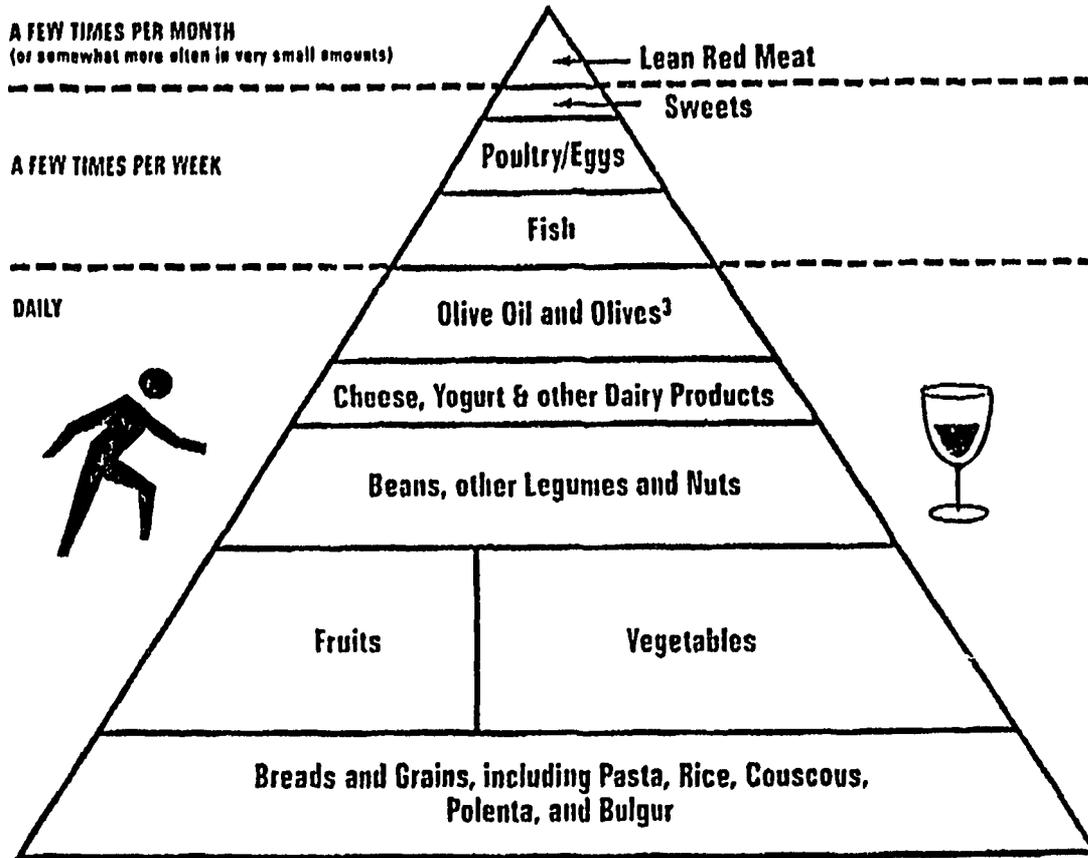
In sum, this provocative and enlightening conference, offered lessons that can change—and perhaps extend—many lives. Next year's conference, also at Harvard, is on Asian diets.

A Tale of Two Pyramids...

The U.S. Department of Agriculture Pyramid



The Willett/Harvard/Mediterranean Pyramid



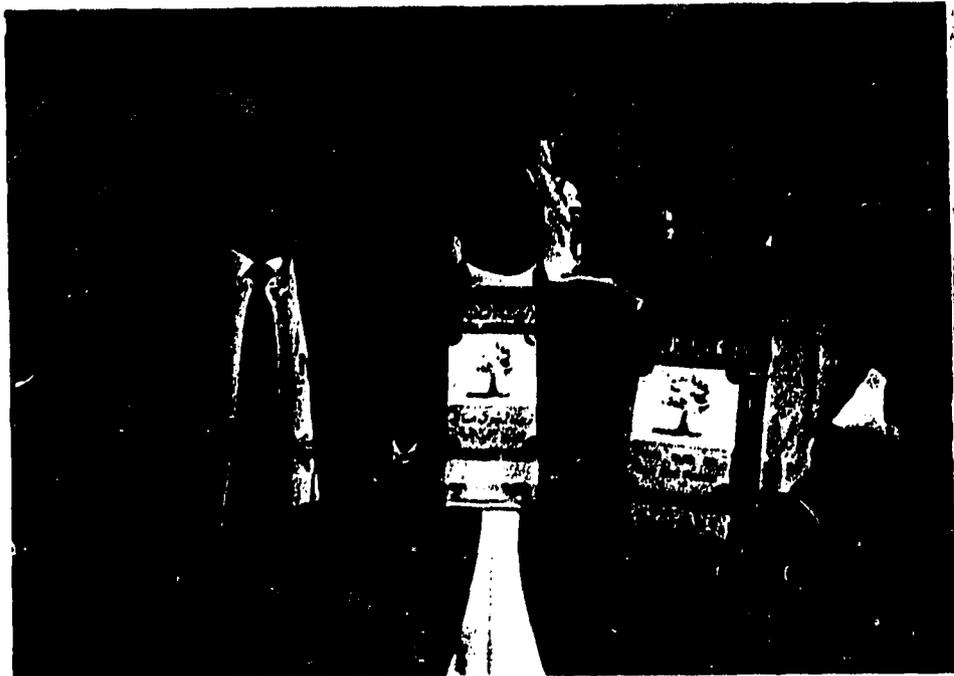
A typical view of the rolling, rocky land of the West Bank. Olive trees adapt well to this type of farming. Land is being prepared and will be planted to olive trees. Bulldozers owned by several of the oil press cooperatives are used to remove rocks, level the land, and prepare the soil for reforestation with olives.



Abed Abu Arafah, CDP, explains to a meeting of farmers, agricultural engineers, and university people, the study being conducted on the West Bank Olive Sector. The meeting was held at the agricultural experiment station near Hebron.



Deir Sharaf, Olive Press Cooperative, with Chairman, Mohamad Deeb, in center of picture. On right is Khamis Al Hamad, Manager of the Salfit Oil Press Cooperative. Deir Sharaf has olive oil filling equipment that has not been used. It was reported that plans are in the works to operate the equipment in 1993.



Members of the Board of Directors of the Olive Oil Union meeting with CDP in Ramallah.



Members of PARC following a meeting to learn of their organizational interests and purpose. Met in a PARC member's home because of difficulty getting to office in Jerusalem. The home was in Beit Jala.



A private operation, Abdel Hadi Nursery near Nablus where the "Improved" Nabali, or Nabali Muhasanis, is being propagated at the rate of one million per year, according to the manager. As reported herein, this is not a desirable variety for olive oil. However, it does serve well as a pickling olive for table use.



CDP Consultant Adin Hester viewing a private greenhouse operation where thousands of Nabali Muhasan cuttings are being rooted in hothouse beds prior to being transplanted to one gallon containers.



A skilled oil press technician performing repair and maintenance work on an automatic Pieralisi olive press located at the Ein Sinia olive cooperative.



CDP olive specialist Younis Sbeih and consultant Adin Hester examine a Romani olive tree estimated to be over 1,000 years old. Olive trees throughout the West Bank are centuries old.



CDP Olive Sector Workshop held in Ramallah. Shown in the picture are some of the participants, including CDP Project Director Tom LaQuey; Abed Abu Arafeh, CDP Technical Services Director; CDP Olive Consultant Adin Hester; and CDP Interpreter Nadia Handal.



Delegation of West Bank Olive Sector people who attended the CDP-sponsored workshop at Ramallah. Attendees are listed elsewhere in this report.



A semi-automatic olive press, privately owned, and located near the Ein Sinia cooperative press. The equipment is older. It was reported that this equipment was to be replaced with a new fully automatic Italian made Peralisi.

