

## The Avocado Industry in Israel

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The 2005-2006 season was a relatively weak season in Israel, yielding 50,000 metric tons (MT) overall and 28,000 MT for export to the European markets.

The initial portion of the season (September 2005-December 2005) was fair with virtually slight drop in quantities. However, the second half of the season (January 2006-May 2006) was weak and this is where the deficits in quantities were felt. This situation of alternate bearing is problematic in all aspects of production and marketing.

The market supplier is under stress having to operate in this see-saw mode where one year he needs to exert in all aspects in order to sell large quantities and, after he has created expectations and increased demand, he is incapable of supplying the necessary quantity the following year. The packing houses are also suffering from this due to having created large working crews one year which demands time and resources to train and operate successfully, and the following "off" year cutting back on manpower in order to be efficient in production costs. The grower who is situated on the last link of the chain suffers least due to the relatively large increment in prices which help him pass through the crises in fair shape, economically speaking.

It is important to emphasize the point that the average yields in Israel are relatively higher in comparison to other avocado producing areas in the world. Still, we are incurring much higher overall production costs than many nations in Central and South America and cannot survive economically with low annual yields. Costs of irrigation infrastructures, water rates and labor expenditures are much higher in Israel than other lands producing avocados. In lieu of such factors, we are motivated to constantly improve our yields above and beyond the accepted world averages, while at the same time being cost efficient.

The season of 2005-2006, in respect to the domestic market, highlighted promising local consumption and profitability. The domestic scene again proved attractive and consistent by consuming 25,000 MT at a relatively profitable margin for all involved.

Surges in new plantings continue throughout the country with the Central Sharon Coastal Plain area “Granot Cooperative” setting the pace. In other areas the plantings are undertaken by individual settlements. The marketing studies directed towards the European as well as domestic market trends point out optimistic forecasts that give the growers confidence in their choices of planting new orchards, as well as the expansion of existing holdings. The limiting factor in expansion today is the relatively low quantities of saplings available due to the low supply of specific quality rootstock seeds. This limited supply affords the areas time to see and contemplate their investments and practices more carefully. With the assumption that the seed bank supply will be relatively constant in the next few years, the expected expansion is predicted between 3-4,000 dunams (750-1000 acres) per year.

The clonally produced method affords a higher reproduction coefficient, but the low demand and higher costs for these vegetative clonal (VC) rootstocks are preventing large scale introduction of these saplings into the fields. The current recommendation is for the new plantings to introduce promising VC rootstocks at a 10-15% of total saplings.

As of this writing, the 2006-2007 season is just about ended. The export quantities of 55,000 MT were received relatively well in the European markets while the domestic market absorbed 35,000 MT with fair returns for the growers. Orchard production was relatively high with an overall national average of 2 MT per dunam (17,600 lbs per acre). Export quality fruit was in the 70-75% range for most cultivars.

The export scenario was slightly complicated due to the presence of quality Chilean Hass fruit at the onset of the season. As the season progressed with less and less Chilean fruit, prevalent prices improved. The preference for Hass was well felt again, throughout the season. Marketing difficulties arose for green varieties, especially small sizes. All in all, another profitable year at this stage can be summarized for the growers due to high yields and a large percentage of export quality fruit.

Currently, the orchards are undergoing after-harvest maintenance operations – pruning (hedging and topping where deemed necessary), grafting new promising varieties, tending to damage incurred to irrigation systems and other basic operations. Where deemed necessary, there are also orchards undergoing asymmetrical one sided pruning, in order to maintain vegetative growth in these orchards that are producing high quantities of fruit. We are currently in the “Season of Hope” where the flowering is at its peak, the bees are out pollinating (hopefully avocado flowers) and the appearance of new fruitlets is imminent.

## **Working Goals of the Avocado Industry in Israel**

### **Productivity and Quality**

As was stated at the beginning of this paper, the goal to alleviate production fluctuations is a cardinal one for our industry and thus is one of the main issues of our research program. Methods of annual orchard pruning, as well as maintaining light infiltration within the tree canopy in order to have sufficient illumination all year around are being

investigated by mechanical as well as manual labor methods. Much effort is taken in order to rejuvenate orchards in order to reintroduce young, healthy, high quality producing (size and external appearance) fruit laden branches.

- The issues of drastic asymmetrical pruning, for example, will be studied in depth this year, with its effect on the yield in forthcoming seasons.
- High density plantings are also being studied. The efficiency of investment, as well as agro-technical methods for maintaining the density, is being closely monitored. The research plot density is 320 trees per acre with spacing of 5 meters between rows and 2.5 meters between trees. Semi-commercial plots (with various cultivars – Hass, Ettinger, Arad, Pinkerton and Reed) have been established throughout the country (Western Galilee, Coastal Plain, Jordan Valley and Upper Galilee) in order to review this method.
- Super intensive irrigation is also a matter of research. Minimal stress is desired for the trees throughout the yearly cycle. In the Upper Galilee at Mayan Baruch, a super intensive irrigation study is being undertaken with up to 40 pulses at differential rates throughout the day. Also the effect of Cytokinins in conjunction with the irrigation is being investigated.
- New and improved cultivar development is also an important issue for research. The Western Galilee R&D center at Acco is leading the field in their development. The emphasis is on those types that are similar to Hass (Lavi, Naor 8535, 3010 ). The promising varieties have been grafted in pilot plots and the varieties have also been planted as saplings with various recommended rootstocks.
- Enlargement of the Hass fruit is a never-ending research topic. This project is under the auspices of the Grower's Association and undertaken by the firm "Morning Seeds".

### **Plant Pathology**

Avocado orchards in Israel are "almost" organic in their orientation towards plant pathology. IPM (integrated pest management) methods are in use in relation to pests and diseases. Introduction of parasitism, predators, and scouting are in common practice.

The Avo Mite which invaded our orchards is an excellent example of the success of these methods. This mite can be found today in most orchards throughout Israel. The new technology that is being implemented examines the methods for distribution and encourages the maintenance and effectiveness of natural enemy populations.

There are studies questioning the need for importing natural enemies from abroad in order to combat these pests.

### **Irrigation with Recycled Water**

Many of the new orchards being developed are being irrigated with recycled water. The usage of this unique commodity has complicated the growers' irrigation infrastructure systems in many ways that need to be investigated and solutions found for the problems arising. The effects of this type of water on the soil, trees and irrigation

systems are being closely monitored. Immediate and practical solutions need to be devised in order to efficiently accommodate the usage of the recycled water in the orchards.

### **Post Harvest Technologies**

The need to extend the cold storage period of sub-tropical fruits is a very important issue for our research program. Technologies which have been studied and developed by the Post Harvest Institute at the Volcani Institute have been adopted by the exporters and further advanced by them in commercial conditions.

### **Quality Control Monitoring of All Processes in Production**

The entire system of production – from the farms to the retailers – has undertaken the mission to implement quality controls, each according to its specific needs. Management has implemented methods which provide relevant data on-line that has granted the Israeli Avocado Industry with a very trustworthy reputation in the demanding European markets. The EUREP-Gap as well as NT – Tesco's Nature's Choice certification are examples.

### **Summary**

This past season has almost been finalized, and it is possible to state that it was successful. We had a tough time during the Second Lebanese War. Kibbutz Saar paid a dear price and we all join in condolences and hope for them to regroup and continue.

Consumer consumption and demand for avocados are growing on a world wide level, a fact that gives all of us involved in the industry optimism about the future of our endeavors.

Let us hope and pray together for a peaceful atmosphere to live and work in for all our families and colleagues, development of sustainable farming practices that will improve the environments surrounding us, good health, and not to forget – profitability for all our efforts.