ONE ON ONE

Feeding the world

Nature is changing right before our eyes and the Volcani Center – under the direction of Yoram Kapulnik – is developing new ways to grow the food we need

• BARRY DAVIS

With the country in an environmental frame of mind after this week's Tu Bishvat celebration, it seems timely to get a handle on what the country's leading agricultural research facility is up to.

After a session with Prof. Yoram Kapulnik, director of the Volcani Center, or, to give it its full titular due, the Agricultural Research Organization (ARO) Volcani Center, it appears the institute has its hands full.

ARO is located in a sprawling and suitably verdant campus at Beit Dagan, just east of Tel Aviv. All told, the center incorporates half a dozen institutes, covering such important areas as plant sciences, animal science, plant protection, environmental sciences, and post-harvest and food sciences. That is a pretty generous spread of exploratory endeavor and, as Kapulnik points out, the center needs to keep its wits about it.

"In the last few years we have reached the inescapable conclusion that there have been changes in nature that we have to take into consideration. There has been global warming which, say five years ago, we tried to explain away with regard to certain phenomena, and not address the possibility of global warming. We said that, maybe, [the weather conditions of] a particular season were something out of the ordinary. But after so much noise was made, the situation is clear."

Of course, we are not the only ones with pressing issues connected to the potentially catastrophic effects of humankind's contemporary lifestyle.

"California is now dealing with their fourth drought season," says Kapulnik, proudly noting that the center is at the forefront of coming to grips with planet Earth's worrying ecological issues. "As we speak, there is a group of six experts from the Volcani Center who were asked by the United States administration to try to come up with a solution for what is happening in California."

While Kapulnik is justly proud of the kudos conferred on his colleagues and the center by the Americans, he says the onus is very much on survival and on adapting to Mother Nature's reactions in the way we go about our human business. "We need to realize that nature is changing right before us, and one of the jobs of our R&D is to try and see, despite these changes, how we can continue to conduct agricultural activities, and not only to enjoy nature itself but also to provide mankind with service, and to grow the food we need."

The Volcani Center has been around for some time, and has seen plenty of changes. It began life at Ben Shemen, in 1921, when the Jewish Agency established the Agricultural Experiment Station and appointed celebrated Russian-born agronomist and writer Yitzhak Elazari-Volcani as its first director. Coincidentally, Volcani was born on Tu Bishvat. The station was the brainchild of Chaim Weizmann and Zionist movement leader Arthur Ruppin, who recognized the need to advance agriculture in British Mandate Palestine.

The station relocated to Rehovot in 1932, and in 1951, shortly before Volcani's death, the institute came under the auspices of the Agriculture Ministry and was renamed the Agricultural Research Station (ARS). In the 1950s, the station moved to its present campus at Beit Dagan, and in 1971 the ARS became part of the ARO under the auspices of the Agriculture and Rural Development Ministry.

One of the results of the changing weather conditions is that we can no longer just go with the flow and hope that the heavens will provide the necessary precipitation, as and when we need it.

"Look at our winter," says Kapulnik, gazing through the windows of his spacious office at the cloudless sky. "There are fewer rainy spells, but the amount of rain we get in the brief periods is much greater and the rainfall is much more intensive. And then we get back to warm sunny weather. That is one of the results of global warming."

The problem is, of course, not just a local Israeli matter.

"Last year they had serious flooding in New York, and there has been flooding in Britain," continues Kapulnik. "We need to study all these phenomena and to understand them."

Worrying meteorological developments notwithstanding, the Volcani Center director says we don't quite have to gear up for a doomsday scenario. We are not talking about drastic changes here. We are talking about changes of five or six degrees over a timeline of 100 years.

Even so, the natural order is clearly being disturbed.

"We are already seeing warmer nights," warns Kapulnik. "Plant life needs cold nights, so it can rest a bit. If you take, for example, the tomato, it manages perfectly well with normal heat during the day, as long as it has some respite at night."

As addressing the evolving ravages of global warming is generally the domain of the elected powers that be, principally the participants of the recent United Nations Climate Change Conference in Paris, Kapulnik and his cohorts have to do their best to dig into

THE INSTITUTE of Plant Sciences at the Volcani Center. (Yigal Elad)

PROF. YORAM KAPULNIK: Today we know that the issue of food shortages will be a localized problem. (Yigal Elad)

their technological and scientific know-how to help farmers to deal with shifting street-level rules.

"We have to take the climate changes into consideration, to produce new species [of plants]," the director notes, adding that pollution is also having a telling impact on entire ecosystems, not just crops and fruit. "It is not only the plants that are being affected by all of this. There are insects and pests and fungi. You suddenly get new kinds of pests, and you have to overcome them, too."

What about Mother Nature's amazing balancing act? Doesn't that come into the agricultural equation somewhere? Can't nature eventually muster the wherewithal to redress the encroaching human footprint?

"Nature takes its time to get going," explains Kapulnik, noting that there are certain bottom-line realities that can't be ignored.

"If you have a harvest in a month's time, for example, you can't wait for nature to do its work. So humankind has to intervene in these processes; otherwise we won't have food to eat."

Kapulnik moved into the Volcani Center hot seat four-and-a-half years ago. It has been, he says, a critical period for the environment and for awareness of the state of the planet.

"Another matter that has emerged in the last few years is the topic of hunger around the world. Today we know that the issue of food shortages will be a localized problem. There will be places that stop cultivating certain crops, due to global warming."

But the struggle to ensure that everyone has something to eat is not just an inevitable result of humankind blithely getting along with its everyday stuff without giving too much thought to what, for example, unnecessary car use or growing pretty lawns in climates that do not naturally support them do to the ecology.

"It is also because the population of the world continues to grow," Kapulnik points out. "But we continue to develop technologies and search for solutions. For example, today it is not clear that we will get all the protein we need from cows. We can get proteins from other sources, possibly from insects. I think we can find solutions for all sorts of things." ■

For more information about the Volcani Center: www.agri.gov.il