

GUEST EDITORIAL



Reuben Ausher, born 1936. Director, Dept. of Crop Protection (DCP), Extension Service (ES), Ministry of Agriculture and Rural Development, Israel. M.Sc. in field crops and plant protection (1965), Fac. of Agriculture, The Hebrew U. of Jerusalem. 1963–1974, Regional Crop Protection Extension Specialist, ES; 1974–1980, Head of DCP, ES; 1980–1986, Deputy Director for R&D, ES, and Director Dept. of Extension, ES; 1986–, Director, DCP, ES. *Other activities:* 1975–78, Vice President, Israel Phytopathol. Soc.; 1981–84, Member and joint chairman, US–Israel Binational Agricultural R&D Fund (BARD) Technical Advisory Committee; 1983–99, Chairman, Board of Directors of government-owned Weed Control Co.; 1986–, Chairman, eight Areawide Pest Management (APM) steering committees; 1989–98, Chairman, Pesticides R&D Fund; 1991–, Coordinator, state IPM program; 1999–, Coordinator, implementation of methyl bromide substitution program; 2000–01, Coordinator, ES quality management committee. *International activities:* 1979–92, Chairman, Committee on Extension, Int. Soc. of Plant Pathol. 1986, Visiting prof. and extension entomologist, Texas A&M System, College Station, Texas. *International consulting (as from 1975):* World Bank consultant on agricultural extension (in India, Burma, Ivory Coast, Guinea, Paraguay, Ecuador, Venezuela); for FAO (China); lead consultant for Tahal (Israel's National Water Co.) Consulting Engineers Ltd. (in Thailand, Nepal, Guinea); missions for EU – Government of Israel (Italy); and for Government of Israel (Romania, Peru, Dominican Republic). *Awards:* 1982, Appreciation for Outstanding Service, Thailand; 1984, BARD Appreciation of Exceptional Service; 1990, Ministry of Agriculture, Israel, Award for Meritorious Service; 2001, Mashov Prize for Outstanding Professionals in Agriculture. *Main field of interest:* Promotion of IPM and APM; establishing and strengthening agricultural extension systems in developing countries.

Quality Management in Israel's Agriculture

Fruits and vegetables used to be judged by size, color, taste and fragrance but this is no longer the case. Marketplace requirements bearing on the individual grower, the packing-house and the agricultural marketing organizations currently emphasize reduced pesticide residues, risk management according to the HACCP (Hazard Analysis and Critical Control Point system) regulations (7,17) to attain produce free of foreign bodies, and EUREPGAP-2000 protocol (3,4,5,6,8) formulated by the Consortium of European retailer chains.

The adoption of industrial quality standards by agricultural production is underway. It means a revolutionary transition from monitoring the end product to monitoring the grower's entire production process in a transparent manner. This transition was not imposed by government regulations but rather is a voluntary accord to follow the market's and customers' demands.

Quality Management relies on a set of four main standards:

- Management and monitoring of the agricultural production process, as defined by ISO 9000 standards. ISO (International Organization for Standardization) is a non-governmental organization, a worldwide federation of national standards bodies with headquarters in Geneva, Switzerland (10). In addition, crop production and protection protocols are collated by extension, growers and quality technicians to act as cropping guidelines for the growers;
- Management and monitoring of the agricultural environment, as defined by ISO 14000 standards, signals the customer's interest in the production environs culture;
- Management and monitoring of labor safety, as defined by ISO 18000 standards, signals the customer's concern with agricultural laborers' welfare, housing and wages;
- Management of good laboratory practices, as defined by ISO 17025 standards.

ISO 9000 was first formulated as an industrial quality standard in 1987. Today, in all of the industrialized countries, the management of thousands of government and private organizations such as hospitals, county and municipal administrations, schools, police, factories, purveyors of inputs and services, subscribe to ISO standards. Farming is a business that can join this business milieu only through the adoption of quality management. Among the agricultural organizations complying with ISO standards that have been certified in Israel during the last couple of years are: regional growers' enterprises, marketing organizations such as Agrexco Ltd., packinghouses, R&D units, crop – soil – water laboratories of the Extension Service, the Veterinary Service, the Poultry Production and Marketing Board, and the Ministry of Agriculture Investment Center (15).

Several marketing firms are launching quality brand names to distinguish their produce from conventional produce. Examples are the 'Butterfly' label for vegetables grown in the Netherlands, 'Ecofresh' (2,16) fruits and vegetables nurtured by Agrexco Ltd. in Israel and M.P.S. (12) promoted by the Dutch flower auctions.

Crop Production and Protection Protocols represent the technical framework of the whole cropping process and its documentation for improved self-management and external auditing at the producer level. Protocols refer to the whole cropping sequence such as nurseries, land preparation, irrigation and fertilization, crop protection, harvesting, and postharvest handling. Participating in the preparation of protocols is a team of crop production and protection extension specialists, and active growers. Quality management specialists structure the framework. The preparation process of protocols is described by participants as being a difficult but also enriching and challenging experience that crystallizes the best available know-how in the form of personal experience and published recommendation guides, brochures and leaflets into a set of guidelines. Furthermore, the protocols incorporate the requirements of several additional sets of rules developed by groups like EUREPGAP (4), a consortium of European retailer chains that includes firms such as Albert Heijn, ASDA, Coop Norge, Marks & Spencer, Sainsbury's, Tesco and others, and HACCP. It is the role of the quality specialists to incorporate these codes in the protocol (14). Protocols do not generate new knowledge; rather, they convert the available knowledge into systematic market-oriented production procedures. The protocols

establish a new and intensive rapport between advisers and their growers. Extension develops generic protocols that can be adjusted to the specific needs of the various marketing organizations and respective growers. For example, protocols for the following commodities have been developed in Israel during the last year: aquaculture, avocado, citrus, deciduous orchards, grapes, field crops, sweet pepper, and potato (13). Protocols for other commodities are currently being developed.

Adoption of Protocols The adoption process consists of several steps.

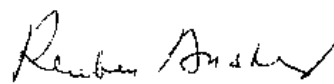
- Training growers in the basics of quality management, describing the role and structure of crop production protocols, adjusting the guidelines to the specific needs of growers, and certifying growers;
- Field visits of extension specialists with packinghouse and marketing organization representatives to survey growers' plots and the surrounding areas, looking for indications of mismanagement in pesticides storage facilities; the presence of warning signs around ditches and holes; scattered plastic sheeting and loose farm equipment, etc. The extension specialists should check record-keeping procedures of all farm and cropping activities and make recommendations for improving planning, operation and monitoring activities at farm level.
- Establishing quality management groups at the packinghouse level, and initiating their periodic meetings (14).

The Grower's Perspective The payoffs reaped by growers following adopted protocols are first and foremost a dramatic improvement in produce quality, increased growers' crop management capabilities, and enhanced collaboration with packinghouses, improvement of the latter's efficiency and better coordination among growers. The adoption process consists of: growing the crop according to the guidelines, reviewing the production process and documenting it, correcting errors *via* an extension-grower interaction and demonstrating the efficacy of the corrective actions (14,18). In addition to the guidelines, the protocol contains site-specific forms to help the grower develop transparent procedures for documenting the crop production and protection process. These forms are not meant to turn the grower into a robot or clerk who simply fills out forms. The guidelines do not dictate to the grower what to do but rather clarify and emphasize his responsibilities. Quality management is not promoted just for the customers' sake, because it also provides the grower with a management tool to avoid production mistakes, to streamline production, reduce costs and improve his end-produce. Without a flow of documented information from growers, the packinghouses and marketing body would not be able to meet deadlines efficiently, properly matching demand and supply.

The Extension-Advisory Perspective The environment created by the newly evolving quality requirements of the western marketplace supports the promotion of many sought-after technical objectives. In this context, the implementation of, *inter alia*, pest monitoring and Integrated Pest Management (IPM), has among its objectives the reduction of pesticide use and the subsequent achievement of Maximal Residue Limits (MRL) (17). Other objectives of the protocols are encompassed in a wide array of environment-friendly production practices with respect to fertilizers, energy use, and banned pesticides such as methyl bromide. These objectives are always high on extension's agenda but their large-scale implementation is enhanced mainly by the stimulus of the market's exogenous power.

The conventional promotion of IPM entails first investment of much energy in creating an environment of awareness among growers, extension staff and all participants in the entire food chain process. Second, field-level implementation of IPM requires adoption of a scientifically based concept of pest management, promotion of pest monitoring practices, and involvement of growers and their representatives in its organizational aspects, e.g. employing scouts, managing traps and monitoring devices. When the demand for environment-friendly crop production is bottom-up from the market and customers, a totally new dimension that enhances adoption of IPM is instituted. Growers are obliged to comply with the demands even when environment-friendly production, IPM-centered labels and brand names do not yield any additional return. IPM-centered labels turn rapidly into industry standard, displacing conventional produce. Although IPM labels may not bestow additional financial returns, they do provide a competitive edge in saturated or turbulent markets. Protocol-driven crop production and protection paves the way to field-level adoption of Integrated Crop Management, which is the next and more comprehensive step of IPM (9). In export-conscious countries, growers must organize into IPM groups and associations. Many of their communal activities must of necessity be IPM-focused to accelerate the adoption and expansion of IPM schemes. Protocols that pull together and document all existing know-how can focus applied research on new areas of relevance. Quality management generates new demands for extension work, engaging extension in the postharvest stage, marketing and farm management. It qualifies extension to embark on an additional domain, opening up new dimensions for professional leadership.

The Developing World's Perspective Quality management applies first to growers involved in the production of export commodities. In order to survive in the highly competitive environment of the export marketplace, growers have to be fully agreeable to the changing quality requirements. Improved production practices adopted by a group of pioneering producers spill over to the entire community of producers. Most evolutionary processes are set in motion when leading growers and extension show the utility of new practices. Quality management is not only an improved cropping practice, it is foremost a comprehensive farm management technique. Being a transparent and well-documented tool, its results and procedures are tangible and easily visible to other growers. In addition, upgraded quality standards of export products enhance the local markets and increase consumers' tastes for quality produce. In summary, proactive promotion of quality management among producers of export commodities is a must to keep them in business. Furthermore, it can provide leverage for upgrading the whole of the agricultural production and support system: growers for the local market, farmers' associations, extension, research, marketing, packinghouses, etc. Quality management catalyzes the adoption of environment-friendly crop production and protection practices.



Reuben Ausher
Dept. of Crop Protection
Extension Service, Ministry of Agriculture
Bet Dagan 50250, Israel
[e-mail: ausher@shaham.moag.gov.il]

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