

PREFACE

The world faces the ultimate challenge of providing enough food to maintain life. In the Foreword to *The State of Food and Agriculture 2001* Jacques Diouf, FAO Director General, made the comment: "It is a moral responsibility of all societies, communities and individuals to ensure that hunger is eradicated. It is the suffering endured by the world's hungry that keeps the commitment foremost in our minds, yet increasing recognition is also given to the fact that hunger and malnutrition act as an impediment to economic growth and welfare improvements." In this statement Jacques Diouf recognises the inescapable link between food security and economics. This is perhaps most directly applicable to food production and the development of an economically viable agricultural industry world-wide. Whilst in some parts of the world just getting enough food to eat is the problem, yet in other regions, where the marketplace is economically advanced, the questions are very different. The issues in wealthy parts of the world are more likely to be of the nature of how food production can meet consumers' expectations of safety, nutrition, quality, price, environmental concerns and social issues. At the same time, there are the challenges imposed by legislation, population dynamics, climate change, international trade, diminishing resources and of course, the ever-changing nature of pests and diseases?

For food production to be truly sustainable, it must deliver materials that satisfy the needs and aspirations of the customer, i.e. the marketplace, whilst coping with the many and diverse factors that impinge on agricultural production practices. The nature of market demands and impinging factors varies with time, and is often specific to particular geographical regions or cultures. For example, a current consumer demand for material produced by a particular agricultural production method in one part of the world may be replaced, as indicated above, by the fundamental need for sufficient food in another. Similarly, crop protection practices in one area may be necessary to control a specific problem that does not exist in another at the present time. Furthermore, legislative constraints are likely to have a major impact on available pest and disease control agents and impinge on international trade placing greater demands on mutually recognised quality assurance schemes and protocols.

This Symposium will explore how some of the market demands and factors have developed over time and how they differ between three major regions of the world. Under the chairmanship of Mike Calvert the Symposium brings together contributors with experience from across the world to review the current situation in order to allow a peep into the crystal ball of the next 25 years of sustainable food production. It is fitting that the Symposium begins with the first two papers, from Jon Woolven and Willemien Bax, that consider the driving force of change in food production, i.e. the consumer, particularly from the point of view of a developed marketplace. There then follows a personal insight, from John Chapple, into crop production systems and practices in China. It is considered by many that China will play a major part in meeting the needs of global food supply in years to come. A global supply chain, however, brings with it the need for controls and standards recognised across international boundaries. Christopher Knight reviews some of these

issues from the point of view of food safety and quality assurance. In a very challenging paper Dennis Avery questions many of the current market driven trends in production systems in the developed world and warns of their impact on global food sufficiency. Nigel Roome takes up the theme of how production systems interact with the environment before Eduard Bruckner presents a food processors view of food material supply and describes a model developed by Nestlé to ensure supply security. In the final paper Sir Brian Heap offers an insight into what he believes the next 25 years will bring in food production trends and charges us all to respond to the global challenge of sustainable food production.

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October 2002

MARKET DEMANDS AND IMPINGING FACTORS ON FOOD SUPPLY

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ABSTRACT

All stakeholders in the food chain need to react to the rapid changes taking place across the global food supply network. Pressure on resources, population expansion, together with increasing consumer demands and expectations will dictate that economic survival for food producers and suppliers will depend on the ability of such organisations to recognise, understand and adapt to the changes. The new millennium has witnessed a rapid increase in the globalisation of food supply networks, aided by new information technologies, increasing sophistication of supply logistics, together with the growing expectations in some continents for new foods in their diets. Globalisation however, heralds increasing pressures in the areas of ethics and environmental impact. The food supply chain will need to recognise these emerging issues on a similar footing to economic considerations.

In such a fast changing world, predicting the future is more difficult but more important than ever.

There are only four main drivers of change:

- Resource availability
 - Population changes
 - Accumulating knowledge (including new technology development)
 - Fashion (swings in taste and public opinion)
- but these interact in a complex way.

Patrick Dixon, in his book *Futurewise*, provides a useful predictive framework. In his view, the future will be increasingly:

- Fast
- Universal
- Tribal
- Urban
- Radical
- Ethical

Each of these trends is of profound importance to society, business in general and the food chain in particular.

Fast

Moore's Law predicts that computer speed doubles every 18 months and this rule has applied since the 1960's. The Internet continues to grow exponentially. The 'Biotechnology Revolution' is in its infancy and should prove even more significant than the 'Information Revolution'. Nanotechnology promises yet more extra-ordinary advances to come.

However, the rapid rate of change and the accelerating pace of life results in complexity, stress and insecurity. These conditions promote frequent new business opportunities but also result in shorter product lifecycles and in some industries, complete obsolescence.

In the food chain, speed is of the essence, for cooking times, logistics and development lead times. Retailers are moving away from meal ingredients towards meal solutions, i.e. helping customers to solve their own problems.

Universal

Globalisation is a long-term process that is accelerating. World trade is growing much faster than output and the long-term trend is for substantial economic growth.

Globalisation promotes the fusion of cultures and the mix and clash of ideas. It generates both winners and losers. Market forces promote the relocation of production to the lowest cost countries, causing major shifts in agriculture and manufacturing. The retail sector is consolidating quickly and a few giant global companies are emerging.

Competitive intensity is increasing, creating downward price pressure. The squeeze is painful throughout the food chain but is even worse in some other industries.

Tribal

As a counterpoint to globalisation, perhaps as a reaction to it, tribal loyalties are growing. Today's tribes can be based around locality, ethnic origin, religion or any form of shared values. Tribalism can be a liberating force, promoting diversity, self-value and cultural enrichment. It can also destabilise and cause conflict.

In the Western world, social groups are becoming smaller and the influence of traditional families is falling. There is a growing belief in individualism and businesses are customising their products and using micro rather than mass marketing techniques.

In the food industry there is an explosion of niche products and a passionate debate over food sourcing policies.

Urban

Major population shifts are reshaping the global economy and the fastest growing continent by far is Asia. As millions of people migrate from rural to urban areas, Asia will soon be the site of several 'mega-cities' exceeding 20 million people.

World's biggest cities 2015

Tokyo	26.4m	Karachi	19.2m
Bombay	26.1m	Mexico City	19.2m
Lagos	23.2m	New York	17.4m
Dhaka	21.1m	Jakarta	17.3m
Sao Paulo	20.4m	Calcutta	17.3m

Source: United Nations

Two results will be a rapid growth in demand for protein and a growing shortage of water. Agriculture is responsible for 70% of the world's water supplies and will come under enormous pressure to improve its water efficiency.

Radical

Confidence in politicians is falling and electoral turnouts are in sharp decline around the world. The established order is under challenge, single issues pressure groups are growing in influence and conditions are ripe for new radical philosophies. In this climate of opinion, food fads and scares can flourish.

One focus of discontent is the environment, uniting otherwise disparate protestors. Businesses must tread a careful path, demonstrating corporate social responsibility and skilful public relations, to avoid becoming the target of protest.

Ethical

Ethics is replacing economics at the heart of public and political debate. The pace of change creates complex ethical dilemmas faster than we can resolve them.

Ethics is now a major differentiator for companies and new technologies must clear ethical, as well as health and safety hurdles. The food chain will remain under the public microscope.

It is the interaction of these six dimensions of change that makes the future so unpredictable. In some cases they pull in opposite directions creating tensions that will be very difficult to manage.

Interplay between forces

Fast

Accelerating pace of technology

Ethical

Increasing concern about ethics of technology

Universal

Globalisation

Tribal

Localisation

Urban

Pollution

Radical

Environmental

Agriculture faces mounting problems and the crop protection industry has never been needed more. It will play a vital role in the world's future. However, companies must expand their core competencies in several ways to meet the challenges of the future. They must be both highly adaptive to change and also agents of change, helping their customers to survive.