ELM FARM RESEARCH CENTRE

ELM FARM RESEARCH CENTRE CONFERENCE

DOES ORGANIC FOOD HAVE AN 'EXTRA QUALITY'?
New Research, New Perspectives and New Insights

A record of the Conference held on TUESDAY, 23RD NOVEMBER 2004

This Conference was sponsored by Sheepdrove Trust in collaboration with

FQH (International Network for Food Quality and Health)
Sustain (the alliance for better food and farming)

ELM FARM RESEARCH CENTRE
The Organic Research Centre
'For organic principles and best practice'

HAMSTEAD MARSHALL
NEWBURY
BERKSHIRE, UK
RG20 0HR

TEL: +44 (0)1488 658298
FAX: +44 (0)1488 658503
E-MAIL: elmfarm@efrc.com

www.efrc.com
www.organicresearchcentre.com

PROGRESSIVE FARMING TRUST LTD
t/a Elm Farm Research Centre
.
Registered Charity No. 281276

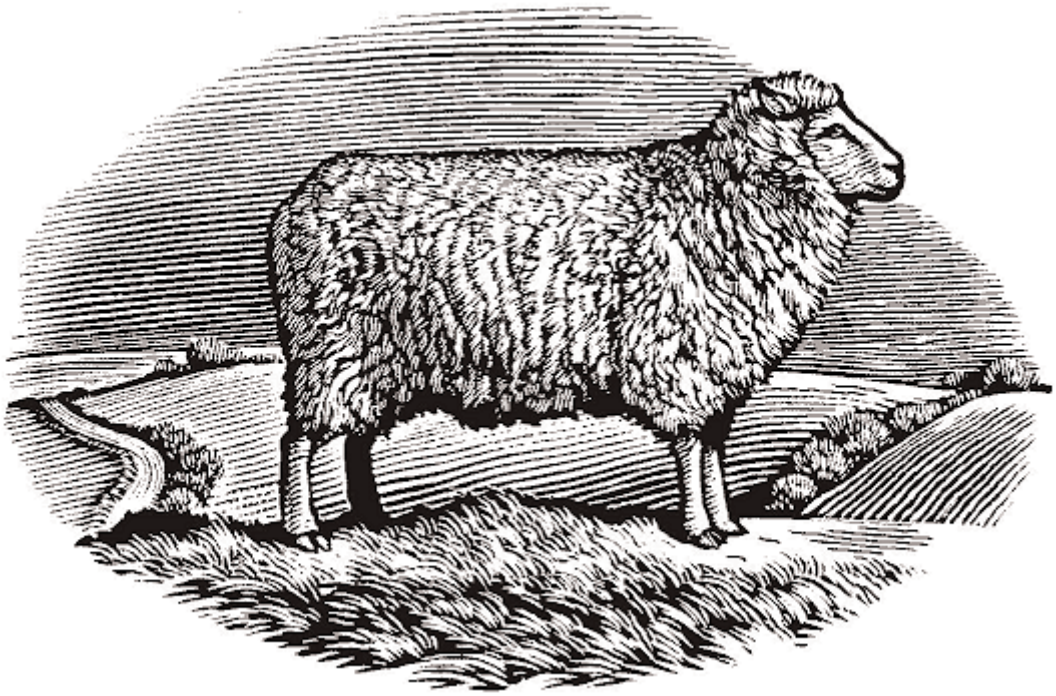
Published April 2005

For further information please contact the Director, Elm Farm Research Centre.

ACKNOWLEDGEMENTS

A special acknowledgement

We acknowledge and thank the Sheepdrove Trust for its financial support towards this Conference which allowed the use of the beautiful setting of the Kindersley Centre and its excellent facilities



ACKNOWLEDGEMENTS

Acknowledgements

We would like to thank **all** those who participated in the Conference on 23rd November 2004 - those who gave presentations, those who chaired, those who responded and those who participated in asking questions and the discussions.

We also thank the team that organised the event so effectively.

The production of these proceedings has been supported by:

promar International

"Stressing the importance of differentiating between accepted dogma: "Organic food is better for you" and what is actually "true", i.e. the scientifically proven, Dr Brandt's interesting and balanced paper highlighted the need for a consistent approach and common understanding if claims about organic food are to be accepted.

The science that proves the "extra qualities" of organic food, or equally that demonstrates the detrimental effects of "conventionally-produced" foods, on our health is still developing, as shown by other speakers. But Dr Brandt concluded that organic farming, which has distinct benefits for the environment and food produced, has that "extra quality" that was the Conference's theme.

For consumers, the key benefit of organic produce may simply derive from the fact that positive choices are made in food purchasing that enhance a sense of individual value and well-being".

Alara Wholefoods

"Projects that give statistically robust nutritional differentiation between organic and non-organic food are very welcome by organic food manufacturers".

Duchy Home Farm

A SHORT REPORT ON THE EFRC *FOOD QUALITY AND HEALTH - CONCEPTS INTO PRACTICE* CONFERENCE.

Laura Davis, EFRC

The EFRC Conference last November contained a hugely significant UK first. A German research team headed by Angelika Meier-Ploeger has succeeded in gaining government approval for two innovative and holistic methods of determining food quality. This is a very important achievement as these methods - presented in their full, validated form for the first time in the UK at the conference - open up the possibility of holistically investigating the links between food quality and health. The conference also heard a comprehensive review of available mainstream methods.

EFRC advisor Laura Davis attended and was also present at our very first meeting on the subject in February 1989. Here are her observations….

About 16 years ago, motivated by its concerns about food quality, EFRC held a Food Quality Colloquium at Sutton Courtenay in Oxfordshire, which resulted in the publication Food Quality - Concepts and Methodologies. At this meeting, presentations on novel methods of determining organic food quality, including fluorescence excitation spectroscopy and bio-crystallisation methods, were considered by the invited delegates. A consensus was reached which agreed that any assessment of food quality or any claim of 'quality' should rest on scoring highly against six criteria: authenticity (which was thought to be important with the advent of genetic engineering); functional: biological; nutritional; sensual; and ethical (which included social and environmental considerations).

The 2004 Food Quality and Health - Concepts into Practice conference at the Sheepdrove Organic Farm Centre, speakers revisited the ideas and methods that originated, at least in part, at the earlier colloquium. The conference opened with a short presentation from Lawrence Woodward, 'Towards Whole Food Quality', in which he argued that organic farming is the only farming system that has as its underpinning philosophy the achievement of positive health. This philosophy is captured in the words of Lady Eve Balfour who wrote, "the health of soil, plant, animal and man is one and indivisible" (Balfour, 1946). From this perspective, a narrow sensory definition of food quality is inadequate, and a definition of total or 'holistic' food quality is needed. But although such a definition has been formulated and set out, as above, it has yet to be widely taken up, and, although valuable, it does not address the core question of whether health is a dynamic state where its components are "one and indivisible".

The conference heard about the "notable progress" that has been made in using both mainstream and alternative methods in assessing some characteristics of food and their relationship to production methods, and considered questions arising from the potential to determine whether organic food does have an "extra quality" that may be important to health. If this is the case, how can we manage production and processing systems "on the ground" to consistently deliver this extra quality and improved health?

Kirsten Brandt of the University of Newcastle considered the relationship between production methods and food quality using mainstream scientific concepts. She pointed out that almost all research on food and health has focused on avoiding harmful extremes such as deficiencies or toxic effects, which means that we know almost nothing about the consequences for health of differences in food composition when it is clear that neither deficiencies nor toxic effects are involved.

Even given the immense difficulty of establishing causal relationships with measured characteristics (such as a modest change in dietary composition), it can be concluded that existing, generally accepted knowledge on this topic is clearly inadequate, indicating a need for development of new methods for evaluation of food quality. The question is then whether this should be done by a critical revision of the interpretation of existing and new data within the framework of existing scientific concepts, or if radically different scientific concepts are needed. Distinguishing between good and bad science, and highlighting the resilience of "established scientific dogma" and the "continued struggle of reason against authoritarianism", Brandt argued for a constructive challenge to existing dogmas and paradigms whenever their predictions are "shown not to fit with actual observations"; that is located within the mainstream scientific concept; and which is built upon the same overall understanding of the laws of nature and generally accepted scientific principles.

Angelika Meier-Ploeger of the University of Kassel, who was one of the delegates at the earlier food quality colloquium, presented on complementary methods of food quality determination - their value and validation. Pointing out that when the term "quality" is used with respect to food, different value judgements are made by different actors or "partners in the market" such as producers, processors, retailers and eaters. Earlier scientific work in Germany, Switzerland and Britain, based on the premises that "the whole is greater than the sum of the parts"; that "life is bound to forms/structures and their maintenance; life is bound to light; life is linked to communication; life is reproduction"; leads to the necessity to verify the validity of these premises through the development and testing of new methods for the determination of food quality.

A SHORT REPORT ON THE EFRC *FOOD QUALITY AND HEALTH - CONCEPTS INTO PRACTICE* CONFERENCE.

Laura Davis, EFRC

Presenting the results of a validation process for some novel, holistic methods, Meier-Ploeger observed that such approaches in organic food quality analysis require a strict co-ordination, well defined samples, good sample storage and delivery, comparative samples, scientists "willing and able to understand the principles and language of alternatives", and scientists eager to discuss results and willing to argue about concepts and interpretation. Challenges exist to compare and correlate data from chemical analysis (e.g. of single nutrients) to those of the "holistic" methods, and questions need to be addressed as to whether these holistic methods do show more that 'the sum of different single nutrients from chemical analysis". And, perhaps most crucially, the challenge is to determine whether these "pictures, structures, forces and energies" shown by the use of holistic methods are important for animal and human health.

Jurgen Strube followed with a fascinating presentation of progress made with florescence excitation spectroscopy (FES), one of the "holistic methods" considered at the earlier food quality colloquium. The method, which has clearly been refined and validated over the intervening years, is used to distinguish culture or growing conditions of plant samples. The sample is excited by light and the total light emitted by the sample is measured after the end of the excitation. The results clearly show that it was possible, under experimental conditions, to differentiate between fertilised and non-fertilised samples of carrots and wheat, and which sample were grown under mineral fertiliser and organic conditions. Using the same methods, it is apparently possible to differentiate between qualitative differences in other products such as seeds according to their culture methods.

Johannes Kahl then presented on 'characterisation of the bio-crystallization method on using computerised image analysis'. This was also one of the methods discussed at the colloquium, and, as with the FES method, much progress has been made. The bio-crystallization screening technique is based on the crystallographic phenomenon that when adding organic substances to an aqueous solution of dehydrate CuCl2, reproducible patterns are formed during crystallization. The technique has been applied successfully to comparative studies of the effects of different farming systems on crop and product quality. Recent efforts to standardise the method have included optimising the crystallization technique, and developing computer software for image analysis of the patterns, and the method has been tested and compared in laboratories in Germany, the Netherlands and Denmark.

Steve Hicks and Rafe Bundy of Reading University's Unit of Human Nutrition gave a brief perspective from a clinical nutrition perspective. Christine Williams, the head of the unit, is the author of one of the major literature reviews which suggests that there is no evidence that organic food is any healthier than non-organic food. While impressed by the previous speakers, Hicks and Bundy observed that from a nutritional point of view, the two methods "can't actually say anything about the food having an extra nutritional quality". Acknowledging that the methods can distinguish between different farming systems, they observed "we really don't know what it means, and we don't know at all what it means in terms of nutrition for organic or non-organic food." Clinical trials and intervention studies are, of course, difficult if not impossible in human populations, even if it were possible to measure "health". Apart from the difficulties in choosing which factors to measure, science is now beginning to discover the beneficial effects that a positive and healthy mind has on the human body.

Alex Smith of Alara Wholefoods observed that the morning presentations, while they had not shown clearly "the new virtues of organic food", did indicate that it was "more stress resistant, seems to have a better property for self-organisation and disease resistance than non-organic food". He considered that these three very important properties could be applied as organising principles to society itself. Organic agriculture is therefore an important and coherent approach that has a role in reforming society in a sustainable way.

Lynda Brown, a food writer, took an individualistic rather than a population perspective on food and health, based on her own experiences of growing and eating her own 'vital' fruit and vegetables, emphasising the choices made by consumers to eat healthily or unhealthily and the plethora of confusing nutritional advice. Suggesting that "as a nation, we are obsessed with health", she observed that "very few people bother to nourish themselves with the right kind of food that will not only avoid bad health but will significantly encourage good health." Approaches that help consumers think about food in a more qualitative and holistic way "just might nudge them in the in a different and more constructive direction". However, this perspective does assume that all consumers are equal, operate on a level playing field, and that individual consumer choices will ultimately aggregate into better public health. This seems unlikely, given that people's access to healthy foods, and so-called choices about whether to consume such foods, are heavily influenced by economic, physical, cultural and social factors well beyond the individual eater's control.

A SHORT REPORT ON THE EFRC *FOOD QUALITY AND HEALTH - CONCEPTS INTO PRACTICE* CONFERENCE.

Laura Davis, EFRC

The conference then moved on to a question and answer session, which began with one delegate commenting on the progress that has been made in developing and validating the methods discussed in the presentations. Comparing these to the limited Food Standards Agency (FSA) approach, which is reducing the characterisation of organic and conventional only to the source of nitrogen, and which is only one small part of the "system difference", the FSA approach was attacked as being a waste of public money, without any real explanation as to why this approach was being used. Meier-Ploeger commented that although funding had been granted for further research into 'complementary methods', the timescale was too short to do proper work, "but that is how it is now for research". It was generally agreed that the need and ability to test for differences for a certification and control system for organic produce was different to the need assess the "value for health". One delegate commented that if the issue was food and health, the context is a completely different one. "It would be a pity if we start mixing up those things and start saying that one method is bad because it can't do everything, because it can't do everything because no method can do everything". Specific methods are needed for specific purposes.

In the context of a discussion on the nutritional content of organic food, and people's perceptions about this, a delegate from the McCarrison Society asked if we were being over-optimistic that the general public can think that organic is more nutritious, and better for us, when the majority of the population don't even make a connection between the general quality of nutrition and the quality of health. He also asked, "while we are agonising over which method of analysis is accurate, will the genetic modification movement negate everybody's efforts?"

There was general agreement with the observation made by Kahl that "it is very important that we succeed in going from the systemic approach in agriculture to the systemic approach in food quality analysis and a systemic approach in health." The matrix type approach was discussed and agreed to be valuable, in particular in countering the health claims of functional foods and 'nutraceuticals'. One delegate commented "there is nothing in nature ever that is presented without it being in the matrix form that is, fully bonded". In a recent case in the US Supreme Court, it was "proven to everybody's satisfaction" that the food matrix form is closest to "what might be termed food of anything that is currently on the market", and until that is fully understood we won't be able to make the progress that is desirable.

To close the conference, Lawrence Woodward drew out the importance of the progress made with the mainstream and holistic or complementary methods, commenting that this "moves the organic sector significantly forward". What we are seeing for the first time, he observed, "is actually the fact that we can differentiate between farming systems in a way that science has never been able to do before, on a consistent and repeatable basis". But despite the aspirations of organic farming there are some "very poor" farming systems and some "atrocious" processing systems, which let us down in terms of meeting our aspirations. It is time to get a handle on the link that we believe is there between the life in the soil, linking the life and vitality of plants right through animals and into humans. The need is to roll out the methods discussed and meet that challenge, which will be an immense job because of the variability in the system.

"Let's be clear," Woodward stated, "chemical industrial agriculture is not built on any concept of health; it is not based on any concept of interconnectedness with health, whether of soil, plant, animal or man. The one system of agriculture that aspires to build its world-view on those issues is organic agriculture. There may be some differences in approaches to methodologies, but what we all believe or share is the perspective that production methods - how we produce food - is critically important to not just our own health but the health of all the other organisms on this planet". This concept is so important that it should drive a wide range of policies, be framed in legislation, be the organising principle of commerce and trade and the basis of our social organisation.

Elm Farm Research Centre (EFRC) is one of the UK's leading research, development and advisory institutes for organic agriculture.

For more than 20 years EFRC has played a central role in the development of policy and standards for organic farming and food within the UK, EU and internationally.

The Centre's alliance of practice and policy – on-farm and desk research and consultancy and advice is unique.

We acknowledge and thank Sheepdrove Trust for its financial support towards this Conference and the use of the beautiful setting of The Kindersley Centre and its facilities.

Elm Farm Research Centre, Hamstead Marshall, Nr Newbury, Berkshire RG20 0HR United Kingdom

Tel: +44 (0) 1488 658298 Fax: +44 (0) 1488 658503 Email: elmfarm@efrc.com

www.efrc.com

Charity No. 281276