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जैविक खेती सूचना पत्र, राष्ट्रीय जैविक खेती परियोजना के अन्तर्गत जारी एक बहुभाषीय तिमाही प्रकाशन है। जैविक खेती के उत्थान, प्रचार प्रसार व इसके नियामक तंत्र से जुड़े लेख, नयी सूचनाएं, नये उत्पाद, विशेषज्ञों के विचार, सफल प्रयास, नयी विकसित प्रक्रियाऐ, सेमिनार-कान्फ्रेन्स इत्यादि की सूचना तथा राष्ट्रीय व अर्न्तराष्ट्रीय समाचार विशेष रूप से आमंत्रित हैं। सूचना पत्र में प्रकाशित विचार व अनुभव लेखकों के अपने हैं जिसके लिए प्रकाशक उत्तरदायी नहीं है।

Organic Farming Newsletter (OFNL) is a multilingual quarterly publication under National Project of Organic Farming. Articles having direct relevance to organic farming technology and its regulatory mechanism, development of package of practices, success stories, news related to conferences, seminars etc, and national and international events are especially welcome. Opinions expressed in articles published in OFNL are those of the author(s) and should not be attributed to the publisher.

प्रिय पाठको

१० लाख हैक्टर से अधिक क्षेत्र में जैविक खेती का फैलाव तथा पूरे विश्व में सर्वाधिक जैविक कपास उत्पादन भारत में जैविक खेती की उत्तरोत्तर प्रगति का सूचक है। किसानों तथा किसानों द्वारा अर्जित ज्ञान स्त्रोत से शुरु हुइ इस विधा में विज्ञान का समावेष एक नई शुरुआत है और आशा है कि इससे पूरे आंदोलन को एक नया आयाम मिलेगा।

भारतीय कृषि अनुसंधान परिषद द्वारा संचालित जैविक खेती नेटवर्क परियोजना के अंतर्गत पिछले चार वषों में किये गये अनुसंधान का परिणाम इस अंक की विशेषता है। प्राप्त निष्कर्ष इस धारणा को बल देते हैं कि जैविक खेती टिकाउ लाभकारी व स्वस्थ होने के साथ-साथ उत्पादन क्षम भी है। जैविक फसल उत्पादन प्रकिया श्रंखला के अंतर्गत उत्तर पूर्वी राज्यों में अदरक उत्पादन प्रकिया का विवरण दिया जा रहा है। अन्य स्थाई स्तंभों के अंतर्गत राष्ट्रीय व अंर्तराष्ट्रीय समाचार, अनुसंधान परिणाम, अद्यतन जानकारियाँ अपने पूर्ववत् स्वरुप में प्रस्तुत हैं। आशा है पाठक इन सभी को उपयोगी पायेंगें।

Dear Readers

With the touching of 1 million ha mark in area under organic and emerging as world leader in organic cotton production, India is an example of fast growth in organic sector. The system which started with farmers and farmer's generated knowledge is being strengthened by scientific innovations and validations. The combination of these two knowledge systems will add value to the movement.

The present issue of Organic Farming Newsletter summarizes the four years research work on organic agriculture carried out under ICAR's "Network Project on Organic Farming". Preliminary results from the 4 years study again strengthen the notion that organic is equally productive, besides being more sustainable, profitable and environmentally safe. Series on package of practices reached North Eastern Region of the country and concentrates on an important spice crop: Ginger.

News, views, research notes and details on national and international events updates the readers on latest additions, developments and happenings around the world. I hope the readers will find this issue very useful and informative

ए.के. यादव A.K. Yadav

संपादक Editor

Network Project on Organic Farming Research Highlights

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Introduction

Organic agriculture has grown out of the conscious efforts by inspired people to create the best possible relationship between the earth and men. Since its beginning the sphere surrounding organic agriculture has been very complex and non-understandable to many conventional agriculture experts, but now it is getting wider acceptance and recognition as sustainable alternative. While there is continuum of thought from earlier days to the present, the modern organic movement is radically different from its original form. It now has environmental sustainability and optimization of productivity at its core in addition to the founders concerns for healthy soil, healthy food and healthy people. The long felt information crunch and scientific explanation of its various forms are being addressed. Research institutions are getting progressively involved in unfolding the truth behind its hidden strength and refining the practices to get best out of the system under given situations.

Organic agriculture is a holistic production management system which promotes and enhances agro-ecosystem health, including biodiversity, biological cycles, and soil biological activity. It emphasizes, the use of management practices in preference to the use of off–farm inputs, taking into account that regional conditions require locally adapted systems. This is accomplished by using, where possible, agronomic, biological, and mechanical methods, as opposed to using synthetic materials, to fulfill any specific function within the system (FAO, 1999).

Network Project on Organic Farming

To carry forward any production system and to make it competent to meet the ever growing and ever changing requirements in tune with the environment, social and economic necessities and market requirements it is very much essential that there is an understanding on its working principles and continuous research support is provided to address shortcomings and new challenges. With the mandate to infuse scientifically validated organic farming approaches and to develop location/ region specific management protocols, four years ago, a "Network Project on Organic Farming" (NPOF) was initiated by Indian Council of Agricultural Research (ICAR) under Project Directorate of Cropping Systems Research, Modipuram. Thirteen research stations from all over the country are participating in the project. Principal Investigator and participating scientists share their research highlights and experiences in annual group meetings. In its 4th annual group meeting, held at CSK, HPKV Hill Agriculture Research and Extension Centre, Bajaura, Kullu, Himachal Pradesh a summary of four years research were presented.

A brief summary of results and research highlights are presented here in the form of proceedings and recommendations.

Overview

Dr. Kamta Prasad, Principal Investigator, NPOF highlighted that the experiments in the project have been designed mainly to evaluate the relative performance of location specific, important cropping

systems under organic and conventional farming, and assess agronomic efficiency of different organic inputs especially organic manures and bioagents. Cropping systems which are under evaluation involve cereal crops (mainly Basmati rice, durum and aestivum wheat, sorghum and maize), pulses and oil seeds (Chickpea, lentil, green gram, soybean, mustard and groundnut), spices (black pepper, ginger, turmeric, chillies, onion and garlic), fruit trees (mango), vegetables (potato, okra, baby corn, cowpea, peas, tomato and cauliflower), cotton, fodder crops (sorghum, maize, pearl millet, oat, cowpea and berseem) and medicinal plants (Isabgol and mentha) in location-specific cropping systems. The highlights of four years research were:

1. Several region-specific cropping systems could be identified, which performed either better than or at par with conventional cropping, in terms of yield and economics.
2. In general, appreciable improvements in yield levels under organic system were noted over the previous years.
3. Improvement of different magnitudes was recorded in respect of soil organic carbon, available-P, available-K, bulk density, and microbial count under organic systems as compared to chemical farming. However, available-N content was, in general lower under organic systems.
4. An improvement in some of the quality parameters of ginger (oleoresin and oil content), turmeric (oil, oleoresin, starch and curcumin content), black pepper (oleoresin content), chillies (ascorbic acid content), cotton (ginning percentage), and vegetables (iron, manganese, zinc and copper content in tomato, French bean, cabbage, cauliflower, pea and garlic) was recorded.
5. Based on annual system productivity and net monetary returns, the best performing treatments were combinations of; non-edible oil cake (NEOC) + cow dung manure (CDM) + enriched compost (EC) at Raipur; farm yard manure (FYM) + NEOC at Ranchi; CDM – CDM + poultry manure (PM); EC + VC + green leaf manure (GLM) + neem cake (NC) at Dharwad; FYM + VC + NEOC at Jabalpur; FYM + crop residues (CR) + GLM in rice-red pumpkin and rice-cucumber, and VC + Glyricidia leaf manure in mango at Karjat; FYM + NEOC at Coimbatore; FYM + VC at Pantnagar; FYM + VC + CR – FYM at Ludhiana; EC + VC + NEOC at Modipuram; FYM(+RP) + VC at Bajaura; and FYM + VC + NC at Calicut.
6. Differences among different organic manures with respect to their effect on different soil parameters (available NPK, bulk density, pH, EC etc.) were not found to be considerable, in general.
7. Some of the non-chemical measures, tried at different centres; were quite effective in controlling major diseases/insect-pest/weeds and resulted in improvement in yields. For example:
    - In rice-chickpea system a combination of soil application of mahua cake (100 kg/ha) + neem cake (100 kg/ha) + *Trichograma japonicum* at tillering initiation + neem spray (0.5%) + use of bird perches in rice caused a significant reduction in incidence of stem borer and green leaf hoper, and in succeeding chickpea seed treatment with *Trichoderma* @ 5 g/kg seed + *Rhizobium* + HaNPV reduced pod borer incidence considerably and led to the highest yields.
    - At Dharwad, a schedule of seedling dip with cow urine+dung slurry, botanical spray at 30 DAT, cow urine+5% NSKE spray at 45 DAT, panchagavya 3%+botanicals spray at 60 DAT, buttermilk (20%) + panchagavya 3% spray at 75 DAT, botanicals + buttermilk (20%) spray at 90 DAT, 5% NSKE +

vermiwash spray at 110 DAT in chillies was found effective against fruit borer and leaf curl index in chillies.

- At Calicut, combined use of PGPR strains of IISR-6, IISR-8, IISR-13, IISR-51, IISR-151 and PB_{21} & P_1AR_6 was found effective against rhizome rot and shoot borer in ginger and at Bajaura, spray of bhang (10% LAE) 2nd spray of Bt @ 1.0 kg/ha and 3rd spray with karvi (10% LAE) in tomato against fruit borer were found highly effective.
- For weed control, stale seed bed preparation followed by two hand weeding at 20 and 40 DAS in rice-wheat/lentil/mustard cropping systems at Pantnagar as well as at Ranchi; hand weeding twice in sunflower-cotton system at Coimbatore; and bed planting + spray of sorghum extract at 30 and 45 days after sowing in wheat at Ludhiana were found very effective.

Individual centre wise research findings are as follows:

Raipur

- The differences in grain yields of soybean were non-significant in organic (24.5 q/ha), inorganic (25.1 q/ha) and integrated (26.0 q/ha) management in 4th cycle of experiment. The difference in wheat yield was gradually lowered after completion of fourth cycle and it was only 9.22% to that of inorganic. However, the performance of integrated treatment in wheat was constantly better over organic. The yield of berseem in organic and inorganic was found to be at par in 2007-08. Maximum yield of mustard (12.60 q/ha) was observed with integrated, followed by inorganic (11.76 q/ha) and organic source (10.98 q/ha). The gap between organic and inorganic narrowed down to only 6.6% during 2007-08 in mustard. During second and third year the yield of chickpea in organic was 7.2 and 16.3% higher, respectively, than that of inorganic sources, whereas in fourth year, it was very close (1.7%) to that of inorganic and at par with each other.
- Bulk density values remained lower (1.22 Mg/m^3) in organic management compared to inorganic and integrated systems in all the years. The values of infiltration rate, measured at flowering stage of crop, were maximum in integrated and organic systems compared to inorganic system in all the years.
- Increase in the grain yield of rice over control (18.02 q ha^{-1}) was 44.8, 48.0, 48.3 and 48.6% due to application of NEOC + CDM + ED (1/3 each), NEOC + CDM(1/2 each), NEOC + EC (1/2 each) and EC + CDM (1/2 each), respectively. During rabi, application of NEOC + CDM + EC (1/3 each), recorded highest grain yield of chickpea (7.22 q/ha) and wheat (21.81 q/ha), however, all the sources of organic nutrients were at par with each other.
- After completion of 4th crop cycle in rice-chickpea system, no perceptible variation in pH, electrical conductivity and organic carbon were observed with different organic sources of nutrients.
- Among plant protection treatments, use of neem + mahua cake + Trichogramma + neem spray + bird perches gave better results over other treatments in respect of grain yield of rice. The incidence of stem borer was minimum (2.3 SM/m^2) in treatment of neem + mahua cake + (spray of karanj oil + marigold leaves extract + cow urine + pheromone trap) followed by above treatment with no significant different between themselves. The control plot had stem borer incidence of 11 SB/m^2.

Bajura

- Among different management practices, integrated management practice resulted in maximum yield of crops grown in different cropping systems, followed by inorganic and organic management practices, except cabbage grown in summer and French bean during Kharif during fourth year of experimentation.
- Tomato – cauliflower – pea cropping system gave higher yields as compared to cabbage – coriander – pea system, the former cropping system also resulted in higher net returns. Application of FYM (+RP) + VC (1/2 + 1/2) nutrient sources gave significantly higher yield of all the vegetable crops as compared to other nutrient sources and control.
- Among different plant products evaluated for the management of fruit borer in tomato 10% aqueous leaf extract each of karvi or bhang at 10 days interval initiating spraying at 35 to 40 DAT in conjunction with trapping of moths of fruit borer by light and/or pheromone traps found to be most effective.

Comibatore

- Maize-cotton-green manure was superior in terms of yield, economics and nutrient uptake than chilli-onion-green manure and brinjal-sunflower-green manure cropping system.
- The organic (100%) was superior in all the cropping system.
- In case of nutrient management in organic farming application of FYM+NEOC each at 50% of the recommended nutrients yield superior in cotton-sunflower-green manure and rice-black gram-green manure cropping system.
- The integration of cultural biological and botanical method in rice – black gram – green manure cropping system resulted in less incidence of pest and disease and more buildup of natural enemies.
- The hand weeding twice followed by mechanical + hand weeding resulted in higher yield in cotton-sunflower-green manure cropping system.

Dharwad

- Higher yield in organic management were recorded in groundnut – sorghum – soybean-wheat, chilli+cotton and potato-chickpea cropping systems.
- In all the five cropping systems, net returns were significantly higher with organic system over integrated and inorganic practices. Further integrated and organic practices produced significantly higher net returns as compared to inorganic practice.
- Improvement in soil physical parameters mainly bulk density, water holding capacity, infiltration rate, soil chemical properties, available nitrogen, phosphorus, potassium, micronutrients and soil biological activity mainly population of bacteria, fungi. Actinomycetes, N fixer, P solubilizer, dehydrogenase and phosphatase activity was observed under organic management compared to inorganic and integrated.
- Integrated application of enriched (EC) compost + vermicompost and green leaf manure (GLM) produced significantly higher yield and net returns in soybean – wheat, groundnut-sorghum and chilli + cotton cropping system as compared to their individual application and control.
- Bulk density, moisture, water holding capacity, organic carbon, available nitrogen, phosphorus, potassium and microbial population were higher in integration of organic manures compared to their individual application and in control.
- In a trial on insect-pest and disease management in organic farming in chilli + cotton cropping system, bio-intensive model involving sorghum as barrier

crop, *Verticillium lecanii* at 2g/lit + Econeem 5ml/lit NSKE 5% + panchagavya 3% - 2 spray at flowering and 15 DAF, Ha NPV 250 LE/ha and GCA extract 2 percent produced significantly higher yield and net returns and was effective in management of chilli pest complex.

- In another trial on management of soil fertility in important vegetable based cropping system using combined application of FYM (1/3) + VC (1/3) + GLM (1/3) + biofertilizer produced higher yield.

Calicut

- The pH, organic carbon and major nutrients availability was found to be highest under integrated management systems followed by organic and inorganic systems, in ginger. The nutrient uptake was also highest in integrated followed by organic system.
- In turmeric the major nutrient availability was higher in integrated followed by organic management systems. The yield and nutrient uptake was highest under integrated management of turmeric variety alleppy supreme. The quality parameters like oil, oleoresin and curcumin contents were higher in organic management systems followed by integrated systems. The soil bacterial population and that of *Azospirillum* showed higher population of beneficial organisms and higher rhizome yield compared to other combinations and *Trichoderma* sp. application.

Pantnagar

- Highest grain and harvest index of paddy was recorded under 100% organic mode of cultivation. Organic mode of cultivation not only improved the quality parameters but also the acceptability of basmati rice.
- Highest values of organic carbon, available P and soil organic carbon at harvest of paddy was recorded under organic mode of cultivation. However, highest available N and K at harvest were recorded under integrated mode of cultivation.
- Highest grain yield of rice were recorded in the system of rice-chickpea with the NEOC + VC(1/2+1/2) nutrient management which was at par with EC + VC + NEOC + FYM (1/4+1/4+1/4+1/4). During succeeding rabi highest grain yield of wheat & chickpea and green pod yield of vegetable pea were recorded in the later.
- Highest yield of wheat and lentil was recorded in 2 hand hoeing however, in case of *B. napus*, highest yield was recorded in stale bed+2 hand hoeing. Two hand hoeings recorded lowest total weed density in rice at all crop growth stages and *Phalaris* minor in rice- *B. napus* system during rabi season.
- Highest yield of ginger and turmeric were recorded with poultry manure @ 20t/ha + rock phosphate@1t/ha. Mineral and trace elements were observed more in organic ginger and turmeric as compared to others.

IISS, Bhopal

- Organic management practices resulted in 11.1, 1.1, 3.0, 4.2 and 11.2% higher yield of soybean, durum wheat, mustard, chickpea and isabgol crops, respectively, compared to the inorganic management practice. Organic management practice improved available N, P and K status and favourably influenced the bulk density and aggregate stability of soil. There was about 6.2% increase in the total productivity of the system expressed in terms of soybean equivalent yield (SEY) compared to the inorganic treatment. There was a reduction in the cost of the cultivation under organic management (4.4%), higher net returns (10.8%) and higher

benefit : cost ratio (10.9%) compared to the inorganic treatment.

- Among the different sources of organic manures, application of cattle dung manure (CDM) recorded the highest soybean yield while the highest yield of durum wheat (4810 kg/ha) was obtained with the combined application of CDM + Poultry manure (PM) + vermicompost (VC) 1/3rd each. Whereas the combination CDM + PM recorded higher yield of mustard (2110 kg/ha). Combined application of either CDM + PM or CDM + PM + VC recorded higher organic carbon, available N, P and K status of soil and favourably influenced the bulk density and aggregate stability of the soil. A survey of certified organic farms in different states was initiated in order to study the input levels adopted, productivity, profitability and soil quality of organic management practices in comparison to the conventional management practices.

Ranchi

- The productivity of organic rice in initial year of conversion period was lower than inorganic rice, which improved after completion of four crop cycle and produces 10% higher yield (33.96 q/ha). Irrespective of sources of fertilization rice – potato system had maximum rice equivalent yield, which is an alternative to rice- wheat system in a diversification mode. There was improvement in physical, chemical and biological reserve under organic compare to integrated and inorganic fertilization over time.
- The productivity of rice was similar after wheat or lentil after completion of conversion period as heavy application of organic manure in wheat compared to lentil compensated the residual N gain of soil after lentil. The productivity of rice – wheat was higher than rice – lentil system preceded by green manure (dhaincha) crop. All combination of organic manuring was almost equally effective in increasing productivity system. There was considerable improvement in physical, chemical and biological reserve under both the system compared to their initial value over time.
- During first year of experimentation in rice – wheat and rice – lentil cropping system, stale seed bed followed by two hand weeding at 30 and 40 DAS had significantly higher yield than rest of the weed management practices while in rice – mustard cropping system all the weed management practices gave similar rice equivalent yield and were significantly higher than stale bed weed management. Other yield attributing characters followed similar trends.

Umiam

- Among field crops-based multiple cropping systems, maize+ soybean (2.2) – French bean produced highest MEY (158 q/ha) followed by maize + soybean (2:2) – groundnut and was found significantly superior over rice based cropping systems.
- Among different nutrient sources, FYM and integrated (FYM + vermicompost + local compost) nutrient management practices performed at par in terms of MEY and was found significantly superior compared to other sources of nutrients.
- Among vegetable crops-based cropping systems, maize + soybean (2:2) – radish – potato cropping system produced significantly higher MEY (488 q/ha) and found at par with maize + soybean (2:2) – French bean + carrot (460 q/ha) cropping systems.

Jabalpur

- Basmati rice – berseem (F) – berseem (S) (CS_3) required maximum quantity of water (208 cm/ha/yr) which was at par to CS_2 cropping system. The water productivity was maximum with CS_2 (Rice – potato – okra) because of

higher REY in a year from the system and CS_4 requires lesser water than CS_2 and CS_3.

- Rice-Berseem system proved more economic than rice – wheat system.
- Different combination of organic manure did not show remarkable variation with each other but combination of 1/3rd of each of VC, FYM and oil cakes numerically proved better.

Karjat

- Under 100% organic treatment of the rice – dolichos bean cropping system showed highest net returns/ha/annum (Rs.13352/ha) with B:C ratio of 1.19 followed by rice-groundnut cropping system (Rs.9447/ha) with B:C ratio of 1.16.
- Application of 1/3 FYM + 1/3rd rice straw + 1/3rd glyricidia leaves in *kharif* rice and 1/3rd FYM + 1/3rd Neem cake + 1/3rd vermicompost to *rabi* red pumpkin gives highest additional net returns of Rs.1,47,622/- as compared to other nutrient supply system with B:C ratio of 3.39. In rice – cucumber cropping system application of 1/3rd FYM + 1/3rd rice straw + 1/3rd glyricidia leaves to kharif rice and 1/3rd neem cake + 1/3rd vermicompost to rabi cucumber give highest additional net returns of Rs.1,47,622/- as compared to other nutrient supply system with B:C ratio of 3.39. In rice – cucumber cropping system application of 1/3rd FYM + 1/3rd rice straw + 1/3rd glyricidia leaves to *kharif* rice and 1/3rd neem cake + 1/3rd vermicompost to rabi cucumber give highest additional net returns of Rs.19.485/- as compared to other nutrient supply systems with B;C ratio of 1.24.
- In Alphonso mangoes, use of 100 kg vermicompost + 20- kg glyricidia as a basal dose/tree gave the maximum number of fruits (185) as well as fruit weight (41.63 kg) per tree and net income of Rs.60,051/-ha/annum with a B:C ratio of 1.82 but the maximum B:C ratio was recorded with application of 155 kg glyricidia/tree.

Ludhiana

- All the cropping systems gave higher rice equivalent yield (REY) under organic management followed by integrated and chemical management except Basmati rice – Wheat – Green manure system in which integrated and chemical systems gave similar REY.
- The soil health improved under organic and integrated management systems. The organic carbon was 0.37% under chemical system where as it improved to 0.54% under organic and 0.50% under integrated. There was more build up of available P and K in the organic and integrated management systems as compared to chemical system.
- The different pest management treatments were statistically at par among themselves and with the control in rice. Similarly, different weed management practices in organic wheat viz., sorghum extract spray and rice straw mulch were statistically at par with unweeded control.
- The soil health improved in all organic sources of nutrition over control. The organic carbon improved significantly over the control (0.28%) to 0.47% in CR, 0.54% in VC, 0.67% in combination and 0.72% in FYM. The pH also decreased under all the organic sources of nutrition as compared to unfertilized control.

Recommendations

Based on three days deliberations following recommendations emerged out:-

1. There is a need to create a database about organic farming with respect to area, kind of inputs being used, number of farmers doing organic farming, number of farmers having

registration and with which agency, and adoption of biodynamic/homa farming concept of organic farming through resource characterization.

2. Studies on the nutrient budgeting, nutrient release pattern of different organic sources when applied individually or in combination and soil health improvement (carbon sequestration, dehydrogenase activity, C and N status etc.) should be undertaken at all the centres.
3. Preparation of compost using EM culture or other biodynamic principles. Also there is need to include the biodynamic formulations as experimental treatments.
4. Each centre will compile the ITK information to strengthen the organic farming package. This will be published, as an edited book at PDCSR and authorship of each chapter will be given to all contributors.
5. Utmost care should be taken that the initial soil samples are properly documented and stored in a safe and secure custody so that they are not lost during change of person/scientist.
6. The university authorities will be requested to strengthen the multi-disciplinary team by deputing plant breeder and food processing scientists to work out the modalities for screening and developing varieties under organic conditions and to strengthen the value addition.
7. To bring the uniformity in working out the economic returns, it was decided that while calculating the cost of cultivation for different treatments, the price of organic inputs, especially manures should be considered as if they are being produced 'on-farm' and not the 'off-farm'. Similarly, a uniform price premium of 25% for the organic produce should be considered.

Building Sustainable Organic Sectors

Conversion to organic means a mental conversion of the whole food sector, and positive attitudes must be created with adequate information. Education, extension and research are therefore central in all organic development. A research program describing the most urgent research needs is a help in prioritizing research projects, and all relevant stakeholders should be involved in its elaboration. A new approach has to be developed where dialogue, participation, and exchange of experience inspire both farmers and researchers, and where traditional knowledge is appreciated and integrated. Extension services need to consider all aspects of the farmer's situation, from production to marketing, economy and social situation. Cooperation and linkages among farmers, advisors and scientists are important for relevance and efficiency, and the farmers and advisors can be generators of creative and feasible research projects. In the healthy development of an organic sector a wide range of relevant stakeholders are invited to cooperate and contribute. It is a winning concept to have a dialogue not only with those who from the beginning are positive towards organic, but also with conventional farmers' organizations, authorities, market actors, etc. For strategic decisions an ongoing analysis about the development mechanisms is vital. Unification on the national level creating common concepts and messages also is a great strength, while the development of local organizations and activities is an important life nerve of the organic movement. In a young organic sector a good strategy to win respect and allies is to focus on the positive contribution of organic and common points of interest instead of criticizing the current policies of institutions and organizations. When the sector grows, different perspectives of organic will develop and one challenge is to find new forms of communication. How to keep the integrity of organic agriculture while allowing growth and expansion is a main discussion issue for the organic sector.

(Excepts from: "Building Sustainable Organic Sector" a study supported by IFOAM. Full report at www.ifoam.org)

Organic Package of Practices for Ginger in North Eastern Region

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Under Technical Cooperation Project on Development of Technical Capacity Base for the Promotion of Organic Agriculture in India of the National Centre of Organic Farming (NCOF), Ministry of Agriculture, Government of India and Food and Agricultural Organization (FAO) of the United Nations.

About the crop

Ginger (*Zingiber officinale* Rosc.) is an important member of the Zingiberaceae family. It is one of the important cash crops and spices grown in India and in many other tropical and sub-tropical regions of the world. Due to its distinct flavour and pungency, it is used in culinary preparations, pharmaceutical preparations, as a flavourant in soft drinks, alcoholic and non-alcoholic beverages, and as a confectionary, pickle, etc. India is the largest producer and exporter of ginger. India exports ginger to more than 50 countries, particularly the Middle East. Ginger is grown in an area of 60,000 ha with a production of more than 2.00 lakhs tonnes. Kerala, Orissa, Andhra Pradesh, Himachal Pradesh, Meghalaya and West Bengal are important ginger growing states within the country. About 60% of the area under ginger cultivation is in Kerala, which accounts for 25% of the country's production. Northeast India is also considered an important ginger growing area. The agro-climatic conditions of northeast India, characterized by warm and humid summers with abundant rainfall, and cool winters, is favourable for ginger cultivation. Ginger is cultivated as a cash crop, mainly in jhum fields spread over the hills and plains of tribal-dominated areas of the entire region. In northeast India, Meghalaya tops the list of ginger producing states; other states like Mizoram, Nagaland, Manipur and Assam also produce substantial amount of ginger. Since there is minimum use of agro chemicals in the NER, organic ginger and value added products have immense potential for economic exploitation.

Climate and Growing season

Ginger is a tropical crop and is cultivated from sea level to altitudes of about 1500 m ASL. However, the optimum elevation for its successful cultivation is in the range of 300– 900 m ASL. Moderate rainfall at sowing time till the rhizomes sprout, followed by fairly heavy and well-distributed showers during the growing period and dry weather about one month before harvesting are optimum for its successful cultivation. Farmers of the northeastern region generally prefer to grow the ginger crop at high altitudes, where shifting cultivation or jhum has been carried out. The planting season for ginger is from March– April, with the onset of the monsoon.

Soil

A rich soil with good drainage and aeration is ideal for ginger cultivation. Ginger grows well in sandy or clayey loam, red loam and lateritic loam soils. Effective drainage is absolutely necessary for the prevention of disease. Ginger should not be grown on the same site, year after year.

Crop duration

The crop duration is generally around 9-10 months (March/April to December/ January/ February). Ginger starts flowering during the month of June–July along with the showers or rains.

Biodiversity management

Cultivation of different types of vegetable crops, besides supporting a wide range of beneficial insects and soil micro-organisms, also helps in soil and water conservation, improves soil fertility and generates better income for farmers. Rather than monocropping, intercropping or mixed cropping of ginger in the hill areas of northeast India facilitates conservation and management of crop biodiversity. The most common types of crops grown along with ginger in NER are both annuals and perennials, which include chili (*Capsicum annum*), brinjal (*Solanum melongena*), pumpkin (*Citrullus lanatus*), cucumber (*Cucumis sativus*), papaya (*Carica papaya*), maize (*Zea mays*), pineapple (*Ananas cosmosus*), banana (*Musa* spp), winter squash (*Cucurbita maxima*), pigeon pea (*Cajanus cajan*), castor (*Ricinus communis*), tapioca (*Manihot esculenta*), kidney bean (*Phaseolus aconitifolius*), cluster bean (*Cyamopsis psoraloides*), french bean (*Phaseolus vulgaris*) etc.

Maintenance of buffer zone for organic cultivation

In order to cultivate ginger organically, a buffer zone of 5– 10 m should be left all around to separate the plot from conventional farms. The produce from this buffer zone should not be treated as organic. Being an annual crop, the conversion period required will be two years. Ginger can be cultivated organically as an inter crop or mixed crop provided all the other crops are grown following organic methods. It is desirable to include a leguminous crop in rotation with ginger. Ginger-banana-legume or ginger vegetable-legume combinations are recommended as good cropping patterns.

Traditional varieties

Traditional varieties are more pungent and hence have a better market than other varieties. Since the majority of the population in the hilly areas of the northeastern region is non-vegetarian, ginger finds itself used in different culinary preparations. The farmers mostly prefer local varieties as these have less chance of being infected by pests and disease, and can be stored for a longer period (maximum for one week) as compared to high yielding varieties (maximum for 2– 3 days). However, higher pungency status of the local varieties indicates higher oleoresin (gingerol) content, which is suitable for industrial extraction. Varieties called Rio-de Janeiro and Nadia are popular among growers. Besides these, most of the states have their own local or traditional varieties. In the NER, different types of local and hybrid varieties are available, viz., Nadia, Moran, Thingpui, Thinglaidum, Karkai, Tura, Jate, Nadia, Rio-de-Janeiro, Suprabha, Poona, Varada, China , etc.

Seed Selection

Carefully preserved seed rhizomes, free from pests and disease, collected from organically cultivated farms should be used for planting. However, to begin with, seed material from high yielding local varieties may be used in the absence of organically produced material. Seed rhizomes should not be treated with any chemicals. The seed quantity required varies from region to region and with the method of cultivation adopted. However, the average is 1500– 2500 kg per ha. The weight of the seed rhizomes is approximately 25– 30 gm and 4– 5 cm length in size.

Rhizome Treatment

Generally, no treatment of rhizome is done. However, the farmers of Nagaland keep the seed rhizomes in the sun for a period of 20– 30 days before planting, while in Meghalaya, they are kept in the sun for only a day. Rhizome sets should

be treated with cow dung and urine preparation such as amrut pani/ jeevamrut/ panchagavya/ cow pat pit, etc.

Cultivation

While preparing the land, minimum tillage operations may be adopted. Beds of 15 cm height, 1 m width and of convenient length may be prepared, giving 50 cm spacing between beds. Solarisation of beds is beneficial for checking the multiplication of pests and disease-causing organisms. Solarisation is a technique by which polythene sheets are spread over moist field beds, covering all sides and being thus exposed to the sun for a period of 20– 30 days. The polythene sheets used for soil solarisation should be stored safely once the work is completed.

Sowing methods (if directly sown)

At the time of planting, apply 25 gm powdered neem cake and mix well with the soil in each pit at a spacing of 20– 25 cm within and between rows. Seed rhizomes may be put in shallow pits and mixed well with decomposed cattle manure or compost mixed with *Trichoderma* (10 gm compost inoculated with *Trichoderma*). However, in the northeastern region, ginger is planted directly in the main field. Seed rhizomes are planted randomly in shallow pits of 5 cm depth and at a plant-to-plant spacing of 15 cm (approximately) in the hill districts of Assam. In Meghalaya and Nagaland, about 45 cm distance is maintained between the rhizomes that are covered with soil (1– 1 inches) and smoothed over by hand. In mixed cropping, seeds of chili, brinjal, papaya, pumpkin, etc., are mixed and broadcast in the ginger planted field in Assam and Meghalaya; whereas in Nagaland, a nursery is prepared for chili, brinjal, tomato, papaya, etc., and these crops are transplanted in between the furrows of the ginger crop. The planting techniques vary from state to state in the NER. In some districts of Meghalaya, terraces are constructed. In Assam, khurpi is used for digging shallow pits of 5 cm depth with approximately 15 cm plant-to-plant spacing. In Meghalaya, bunds are constructed and the bund is broken into blocks in a zigzag manner in order to prevent soil erosion. In Nagaland, a naga kur (spade) is used for making furrows at a distance of 1– 2 ft in monocropping and 2– 3 ft for mixed cropping. The distance between the rhizomes is 20– 25 cm and rhizomes are planted at a depth of 7– 10 cm.

Managing soil fertility

Mulching the ginger beds with green leaves is an essential operation to enhance germination of seed rhizomes and prevent the soil from washing off due to heavy rains. It also helps to add organic mater to the soil and conserve moisture during the later part of the cropping season. The first mulching with green leaves @ 10– 12 t/ha is at the time of planting. It is repeated @ 5 t/ha 40 and 90 days after planting. Use of *Lantana camara* and *Vitex negundo* as mulch may reduce the infection of shoot borer. Cow dung slurry or liquid manure may be poured on the bed after each mulching to enhance microbial activity and nutrient availability. For the management of soil fertility, the farmers mostly incorporate leguminous crops like pigeon pea, black gram, cowpea, cluster bean and french bean as green manure crops. Besides improving soil fertility, these are income-generating crops and have a good market demand. Some farmers use wood ash in the field as this increases the potash content of the soil. In Meghalaya, compost or cattle manure is used to enrich soil fertility. As ginger is a nutrient-exhausting crop intercropping of ginger with leguminous crops, crop rotation and use of cattle manure are practised to replace the nutrients exhausted by the previous crop. Application of well-decomposed cow dung or compost @ 5– 6 t/ha may be applied as a basal dose while planting the rhizomes in the pits. An additional application of neem cake @ 2 t/ ha is desirable. Generally in the northern region ginger

cultivation done mostly on freshly prepared land, where adequate nutrients are already available. Addition of cattle manure before plantation is not very popular, though it is advisable in order to enhance the yield.

Water requirements

Moderate rainfall is required at the time of sowing till the rhizomes sprout; fairly heavy and well-distributed showers during the growing period; and dry weather for about a month before harvesting. A proper drainage channel in between the bunds to drain off stagnant water is advisable to ensure optimum drainage for better plant stand. Mulching of ginger beds helps in soil and water conservation. The first mulching is done at the time of planting with 12.5 tonnes of green leaves/ha and the second is done after 40 days with five tonnes of green leaves/ha. Mulching conserves soil moisture by checking evaporation loss. Bunds are constructed to prevent soil erosion and to retain the topsoil and proper drainage channels are provided to drain off stagnant water. Seasonal legumes are also grown along with ginger to suppress weed growth, minimize soil erosion and enhance soil fertility.

Problem insects and diseases

Shoot borer, leaf roller and rhizome scales are the major pests that infest ginger. Soft rot, bacterial wilt and leaf spot are the major diseases. Regular field surveillance and adaptation of phyto-sanitary measures are necessary for pest management. Major pests and diseases found in ginger crop are:

Shoot borer (Conogethes punctiferalis /Dicrhosis punctiferalis) - The damage is caused by the caterpillar – which bores into the main stem of the young plants causing their death. Management methods should be adopted at a stage when there is 1 egg mass per square meter. The shoots infested by the borer are cut open and the caterpillars are handpicked and destroyed. Some farmers grow neem trees along with ginger crops to repel the pest.

Other insect pests - These include the rhizome fly (*Mimegralla coeruliforns*), white grub (*Holotrichia setticolis*), skipper (*Udaspis folus*) and scale (*Aspidiotus garlic*). Tilling of the soil during land preparation and solarisation are good practices that can reduce the chances of insect pests, particularly in controlling white grubs which get exposed at the time of tilling and are foraged by the birds. Light traps are helpful to control the adult population of insects. Mechanical collection of infected leaves and white grub adults is also practised. However, there is no intensity of insect pest attacks in the hill regions of NER. Suggested biological controls include application of Trichodema sp. At the time of planting, application of Lantana camara as mulch reduces infestation by shoot borer. Conservation of hedgerows around the ginger plantation also helps to maintain a population of ladybirds, spiders, etc., which are good natural bioagents for control of many of the insect pests.

Diseases

Soft rot or rhizome rot - Soft rot is caused by *Pythium aphanidermatum* and *Pythium myriotylum.* The fungus Pythium can survive in two ways: (a) in diseased rhizomes kept for seed, and (b) through resting structures like chlamydospores and oospores that reach the soil from infected rhizomes. Soft rot fungi are soil dwellers and can live with soil saprophytic allies in the absence of their host. A high temperature above 30°C and high soil moisture are the important predisposing factors favouring the disease. Hence, water logging in the field due to poor drainage increases the intensity of the disease. This disease mostly occurs during the months of June and July.

Symptoms and damage pattern - In the beginning, the leaves of the infected plants turn pale green. The top leaves become

yellow. Gradually, yellowing of the leaf blade and leaf sheaths progresses downwards along the margin. Hence the leaf margins turn yellow while the centre remains green for a few days. After the leaves are completely yellowed, withered and dry, the dead area extends towards the leaf sheath. The dead leaves droop and hang down on the stem till the whole shoot dries. The junction of the plant and rhizomes on the soil surface turns pale translucent brown. Later, this junction becomes watery and soft. Such infected plants do not fall to the ground, but the shoot can be easily pulled out. Soft rot extends to the rhizomes from the collar region. Gradually the rhizomes decompose and form a decaying mass enclosed by the tough rind. Soft and rotten roots are found on the decayed rhizomes. The decayed rhizomes exhibit a very unpleasant odour.

Management
- Planting of disease-free seed rhizomes.
- Providing adequate drainage.
- Burning of diseased plants.
- Removing the affected clumps along with the soil.

Ginger growers in the hill districts of Assam believe that ginger is less prone to infection in bamboo growing areas and also give higher yields when grown in such areas.

Bacterial wilt

Bacterial wilt is caused by *Ralstonia solanacearum/Pseudomonas solanacearum*. The bacteria spread through soil, water, infected or contaminated rhizomes. The bacteria enter the plant through wounds made in the roots during transplanting, through cultivating equipment, nematodes and insects. They can also enter through the natural cracks from where secondary roots develop. The bacteria reach the xylem vessels and through them spread throughout the plant. Along the vessels they escape into the intercellular spaces of the parenchyma cells in the cortex and pith, damage the cell walls, and create cavities filled with slimy masses of bacteria.

Symptoms - Infected young plants die rapidly. In older plants there is leaf drooping and then discolouration. The plants exhibit one-sided wilting and stunting before they wilt permanently and die. Sometimes, development of adventitious roots increases. Vascular tissues of the stems and roots turn brown. The pathogen is soil-borne and it invades the root system and colonises most of the vascular elements, dramatically limiting the water uptake thereby resulting in rapid wilting and death of the plant.

Management
- Crop rotation with maize, cotton, soybean.
- Planting of disease-free seed rhizome.

Other diseases - Other diseases include leaf spot (*Phullosticta zingiberi*), sheath blight/ leaf blight (*Rhizoctonia solani*), dry rot (*Fusarium oxysporium*), etc. Good drainage arrangements effectively reduces the occurrence of these diseases. Affected plants are generally removed mechanically by farmers and burned. However, in the NE Region, these diseases were reported to be uncommon.

Animal and rodent pests

In some areas, rodents damage the ginger crop by making holes in the ginger fields. Sometimes, monkeys, buffaloes, wild boar and other grazing animals also destroy the ginger cultivation by grazing or trampling over it.

Management
- Traps are used to catch and kill rodents.
- In the hill districts of Assam, ginger growers prefer to cultivate ginger in sloping and steep areas, as the crop will be protected from grazing animals and rodent pests.

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India Organic News

Organic Cotton Advisory Board – Ministry of Textiles, Government of India has recently constituted an "Organic Cotton Advisory Board (OCAB)". The terms of reference for OCAB are: (a) To assess the feasibility for data collection, (b) Framing of regulation for certification of organic cotton in India, (c) To evolve the guidelines for the basis of certification, delineation/ identification of production areas and varieties suitable for organic farming and (d) Recommend subsidy for production practices to be followed for cultivation of organic cotton under Mini Mission II of the Technology Mission on Cotton (TMC)/ Integrated Cotton Development Programme (ICDP). The Board will consist of 35 members representing Ministry of Textiles, Ministry of Agriculture, ICAR, State Governments, APEDA, NCOF, Organic Certification agencies, Prominent NGOs, State Agricultural Universities and representatives from Textile Industries and Ginning and Processing sector. Joint Textile Commissioner (Cotton), Mumbai shall be the Member Secretary. The members will serve the Board upto 13.10.2010. Besides its activities mentioned under terms of reference, the OCAB will also look after Coordination and Monitoring of organic cotton development in the country.

6 Month Proficiency Program in Organic Farming - Bioinformatics Institute of India C-56 A/28, Sector – 62 Noida - 201301, UP (INDIA) has recently launched a 6 month Proficiency Programme in Organic Farming. The course provides an excellent education for those wishing to farm organically or to manage an organic unit. There are also opportunities within the organizations which support the organic food industry, in organic food marketing and in research into organic production systems. The main objective of the course is to give students an understanding of the principles and practice of ecological agriculture. The course also aims to develop student's capacity for learning and communication, as well as competencies to critically contribute in the development of more sustainable farming systems. The other objectives of the course are:

1. To become well-acquainted with all aspects of planning, growing and marketing of grown fruits and vegetable.
2. To understand the recommendations made for using certified organic practices to manage pest and fertility issues on an organic farm.
3. The course would provide knowledge base to employ collaborative learning techniques based on consensus building methods.

Micronutrient Management Through Organic Farming - Requirement of various miscronutrients applied to arable crops through synthetic chemicals varied from 1kg (Mo) to 50 kg(Fe) per ha. Only few parts of these nutrients are taken up by the crops and the rest are lost. If added through organically, these micronutrients are slowly available to the crops as per requirement and larger part is adsorbed in soil for the next crops. A rice or vegetable farmer applying compost @ 10t/ha will provide 3.6kg Fe, 0.85 Zn, 2.0kg Mn, 0.14kg Cu, 1.0kg B and 0.02kg Mo/ha, which is equivalent to 19kg Ferrous Sulphate, 4.25 kg Zinc Sulphate, 6.7 kg Manganese Sulphate, 4.2 kg Copper Sulphate, 0.9kg Borax and 0.0385 kg Ammonium Molybdate. Experimentally it was found that efficiency of chemically applied micronutrient fertilizers in soil is only 2-10% whereas availability of micronutrients applied through organic sources is more than 10% and supply is continuous. In this respect application of

organic manures to any crop at larger amounts provide both major and micronutrients. Major nutrients require supplementation from inorganic sources, whereas the micronutrients through organics do not need supplementation of inorganic micronutrient fertilizers. Crop removal of micronutrients can be met through supplementing organics, which are ecofriendly as well as congenial in crop production. Experiments conducted on Zn application to rice crop through green manure and FYM at 5t/ha showed significantly higher yield in a Zn deficient loamy soil than no Zn application and almost equal yield to application of 12.5kg ZnSO4/ha and slightly lower yield than application of same at 25 kg/ha (Source – Sahu and Samant, 2006, Orissa Review, OUAT, Bhubaneshwar)

Natural Garden Pesticides - Use of harmful and toxic pesticide may destroy essential nutrients and beneficial insects from your gardens. It can also accidentally poison pets or children, pollute groundwater, lakes and streams. So get rid of pest and restore your picturesque gardens with these natural pesticides. Natural pesticides can be made at home without using any dangerous chemical. So start shielding around your precious plants with these top garden tips: (a) **Eggshells and salt** - add crushed eggshells to the soil to get rid of snails and slugs. These eggshells will act like broken glass pieces for them. However if the problem persists then use a pinch of salt on that area, (b) **All Alliums** - alliums are pungent bulbous plants like garlic, onion and leek. Prepare a mixture of several cloves of garlic per gallon of water. These are effective in killing soft body insects and paralyzing flying insects with the very first direct spray. It is best when crushed or liquefied in a vegetable oil tea instead of water. Mix well, chopped garlic cloves with the skin, couple of hot peppers, few drops of liquid bleach and water. Spray it on the plants and undersides of the leaves to get rid of all kinds of pests, (c) **Canola and vegetable oils** - suffocate and kill soft body insects. However, be careful when using this product as it may burn the leaves of sensitive plants. Do not use more than one cup of oil per gallon of water, (d) **Dishwashing soaps** - mix few drops of dishwashing liquid and water and wipe it down the affected areas to regain its rich looks. Use1-2 cups of natural soaps or mild dishwashing soaps like Ivory on plants in water and spray it on plants. They help in paralyzing many insects in direct contact. Make sure not to use much on flowering fruit or vegetable plants as it can hinder the fruit production, (e) **Tomatoes** - leafs of tomatoes contain alkaloids that are very effective against aphids. So get some from the nearby field or market and chop them in fine pieces. Compact the pieces into one-cup measure and add one cup of water to it. After 24 hours drain through a cloth and add on more cup of water and spray it. It effectively kills aphids and attracts more beneficial insects to your garden, (f) **Water wand** - an easy and effective way to get rid of pestering invaders is the water wand as the high-pressure wand cleans mites, aphids from the plants. So invest one immediately, (g) **Neem** - Neem products has been used for centuries. Neem oil extracts of azadirachtin from Neem trees are very low toxicity insecticides. They not only destroy soft body insects but also destroy their ability to reproduce. This makes the pests starve by removing their appetites. It also controls several diseases. (h) **Leftover Coffee Grounds** - place the grounds directly around the plants as the acidity of the coffee keeps invaders at bay. They also work well to enhance sickly plants. (i) **Redesigns the garden landscape** - plant certain plants close together to fight disease and control pests and improve soil. This companion planting creates biodiversity concepts and increases beneficial insect to control the harm made by destructive insects. (Source – www. living.oneindia.in)

Global Organic

25% Reduction in Global Food Production by 2050: Organic Agriculture Part of the Solution, UN Says - Amid concerns about weird weather, sea level rise and changing precipitation patterns, perhaps just as serious a concern (if not more so in some ways) is changes in global food production. With the world population continuing to grow at unsustainable rates, access to food and water is likely to be a serious problem in some places and one made worse by climate change. The UN Environment Programme has issued a new report detailing how much worse it could get: In its report, The Environmental Food Crises: Environment's role in averting future food crises, the UNEP found that: The 100 year long trend of falling food prices is likely over, with food price rises of 30-50% likely within decades. Those living in extreme poverty may end up spending 90% of their income on food. Up to 25% of world food production could be lost to "environmental breakdowns" by 2050 unless action is taken. Cereal yields worldwide have stagnated, while one-third of these are used as feed for livestock. This figure is expected to rise to 50% by 2050, with environmental degradation and poverty rates increasing. Instead of feeding cereals to livestock, the report recommends "recycling food wastes and deploying new technologies, aimed at producing biofuels, to produce sugars from discards such as straw and even nutshells could be a key environmentally-friendly alternative to increased use of cereals for livestock." The amount of fish currently discarded at sea (30 million tonnes annually) could sustain a 50% increase in fish farming and aquaculture: An amount needed to maintain per capita fish consumption without increasing stress on marine ecosystems.

Organic Agriculture Increases Yields 128% in East Africa - Medium to long term measures include managing and better harvesting extreme rainfall on Continents such as Africa, alongside support to farmers for adopting more diversified and ecologically-friendly farming systems - ones that enhance the 'nature-based' inputs from pollinators such as bees as well as water supplies and genetic diversity. A recent report by UNEP and the UN Conference on Trade and Development surveyed 114 small-scale farms in 24 African countries, publishing our findings in late 2008. Yields had more than doubled where organic, or near-organic practices had been used, with the in yield jumping to 128 per cent in east Africa. The study found that organic practices outperformed traditional methods and chemical-intensive conventional farming and also found strong environmental benefits such as improved soil fertility, better retention of water and resistance to drought. The research also highlighted the role that adapting organic practices could have in improving local education and community cooperation. Additional and equally important steps recommended in the report include: (a) Establishing a food safety net for those people most at risk of hunger. This would be backed by a "global, micro-financing fund to boost small-scale farmer productivity in developing countries." (b) Removal of agricultural subsidies and the promotion of second generation biofuels to reduce pressures to convert croplands to biofuel production, as well as prevent deforestation.

Organic and Conventional Production Systems in the Wisconsin Integrated Cropping Systems Trial: II. Economic and Risk Analysis 1993–2006 - This article, the second in a series looking at the Wisconsin Integrated Cropping

Systems Trial (WICST), reports on the profitability of six conventional and organic systems, with a focus on net returns and associated risk exposure. Several pricing scenarios were compared to evaluate the impact of government programs and organic price premiums. When net return estimates are made using only neighboring elevator prices (no government programs or organic price premiums), we found that the no-till corn-soybean system [Zea mays L. and Glycine max (L.) Merr.] was the most profitable grain system, and management intensive rotational grazing (MIRG) the most profitable forage system. When government programs and organic price premiums are included, returns increased by 85 to 110% for the organic grain system (corn-soybean-wheat + red clover (Triticum aestivum L. + Trifolium pratense L.) and 35 to 40% for the organic forage system [companion seededalfalfa with oat + field pea (Medicago sativa L., Avena sativa L., and Pisum sativum L.), hay, and then corn]. This places both organic systems with higher returns than any of the Midwestern standards of no-till corn-soybean, continuous corn, or intensive alfalfa production. Also, the results indicate how risk exposure varied across systems. Interestingly, taking risk into consideration did not drastically affect the ranking among those systems. Our analysis shows that, under the market scenarios that prevailed between 1993 and 2006, intensive rotational grazing and organic grain and forage systems were the most profitable systems on highly productive land in southern Wisconsin (Source – Chavas et al 2009, Agron J 101:288-295).

Australian Organic Agriculture - Industry Analysis - "Australian Organic Agriculture - Industry Analysis" report provides extensive research and objective analysis on the organic agriculture industry in Australia. This report helps clients to analyze the organic farming trends, the current scenario of organic food industry and the future of organic food industry in the country of kangaroos. The forecast given in this report is not based on a complex economic model, but is intended as a rough guide to the direction in which the market is likely to move. This forecast is based on a correlation between past market growth and growth of base drivers. Key Findings are: (a) Australia has the largest area under organic cultivation around the world, (b) On continent level, the share or organic land in proportion to all agricultural land is highest in Australia, (c) Australia organic exports are expected to occupy 5% of worldwide organic exports by 2010, (d) Japan and Europe accounted for more than 55% of Australian organic exports in 2006 and (e) Majority of certified organic products are purchased from supermarkets. The research report also addresses the key issues and facts that are critical to success, these are: (i) Evaluation of current market trends, (ii) Government support & regulation, (iii) Consumer trends & industry profile for Australian Organic Industry, (iv) SWOT analysis of the Australian Organic Agriculture Industry, (v) Legislative framework and regulations in the Organic Industry and (vi) Supply chain issues related to Processors, Wholesalers and Distributors.

Arthropod Pest Management in Organic Crops - Burgeoning consumer interest in organically produced foods has made organic farming one of the fastest growing segments of agriculture. This growth has not been supported adequately by rigorous research to address challenges such as arthropod pest management. The research that has been conducted, however, is complemented by research in aspects of conventional agriculture that may have applicability in organic systems, as well as by research in underpinning fields such as applied ecology. This article synthesizes the available literature in relation to a conceptual model of arthropod pest management strategies suitable for organic systems. The present

work uses the four phases of the model to review the strategies in an agro-ecological context and provides a synthesis of the factors that influence the success of each phase. Rather than constituting a fringe science, pest management research for organic systems draws on cutting edge science in fields such as landscape and chemical ecology and has a bright future. (Source Zehnder et al 2006 Annual Review of Entomology Vol. 52: 57-80)

Assessment and maintenance of soil fertility in temperate organic agriculture - The maintenance of soil fertility is a key tenet of organic farming and can be broadly defined as the ability of the soil to support the productivity of the system. The central concept of soil fertility in these systems is the use of legume-based multi-annual rotations together with the judicious use of on-farm manures. Rotations provide the opportunity for nutrient elements to be replenished, usually within a grass-clover ley phase with inputs of carbon and nitrogen (by the biological processes of photosynthesis and nitrogen fixation). We review evidence that shows that this 'building phase' of the rotations is also associated with increased biological activity and changes to the soil's physical characteristics. The sequence of crops within a rotation is designed to utilize changing levels of fertility and optimize the utilization of nutrient resources over the period of the rotation. Crops with high nutrient demand would therefore normally be placed at a point following the incorporation of a nutrient-rich ley phase. In some circumstances cover crops or undersown vegetation are appropriate to conserve nutrients and reduce losses at particular times within the cropping sequence. Where necessary, a small range of carefully controlled external inputs are allowed. The best methods of assessing soil fertility in organic farming depend upon longer-term and integrative assessments of the system such as crop yields or long-term changes in soil quality and organic matter rather than snapshot measurements of individual nutrient pools. (Source – Watson et al Perspectives in Agriculture, Veterinary Science, Nutrition and Natural Resources, 2008, 3, No. 021, 11 pp.).

Plant nutrient use efficiency in organic farming - consequences of exclusive use of organic manures and untreated minerals - On organic farms, nutrients are applied in organic or sparingly soluble inorganic form, with plants receiving the nutrients they require indirectly through the action of soil microbes. This review examines the implications of exclusive use of organic fertilizers for the sustainability of farming systems, primarily using examples from two contrasting regions, Europe and Australia. In both these regions, mean yields are generally 25-65% lower on organic farms than on conventional farms, primarily because of decreases in plant-available nutrients that cannot be overcome by enhancement of the soil biological community. Overall nutrient inputs are lower on organic farms, although organic farms in Europe are increasingly applying approved commercial fertilizers. However, these inputs simply allow organic farms to acquire nutrients originating from conventional systems. If organic crop production were to be widely adopted, lower yields would require more land (33-100%) to maintain current production levels. In Europe, organic farming increases nitrate leaching, especially if expressed per unit of food produced, because of lower N use efficiency by plants. Despite their aim of maximizing nutrient recycling, organic farming systems recycle only on-farm waste and approved food waste, with most types of municipal waste excluded due to concerns about pollutants. Readily soluble inorganic fertilizers can be extracted from municipal wastes through new nutrient recovery technologies, but current regulations do not allow their use in organic cropping systems. In conclusion, promotion of organic principles does not improve use

and cycling of nutrients and does not reduce leaching of nutrients, but excludes other more effective solutions for nutrient use in agricultural systems.(Source – Kirchmann et al 2007 Perspectives in Agriculture, Veterinary Science, Nutrition and Natural Resources, 2, No. 076, 12 pp.)

Soil Fertility Management and Pest Responses: A Comparison of Organic and Synthetic Fertilization – This chapter reviews the components of soil fertility in the context of organic farming systems and how certified organic practices are used to manage soil fertility. Data from long-term field studies evaluating organic farming are discussed in terms of the components of soil fertility. The changes in soil organic matter with implementation of organic matter management treatments in long-term field experiments conducted in South Australia, Switzerland, Norway, California and Washington (USA), are provided. The concept of soil fertility is also viewed in relation to its relevance to the application of organic farming practices across landscapes and soil types in different climatic zones. In addition, the differences in the physical, biological and chemical characteristics of soil fertility in long-term field trials that include organic farming treatment, are also given. (Source – Hsu et al Journal of Economic Entomology 102(1):160-169. 2009)

Potential alternative disinfection methods for organic fresh-cut industry for minimizing water consumption and environmental impact - Disinfection is one of the most important processing steps affecting the quality and safety and the shelf-life of the end product in fresh-cut processing. Chlorine is the most widely used disinfectant in fresh-cut industry. However, recent outbreaks associated with pathogen contamination in fresh-cut vegetables raised the concerns about the efficacy of chlorine treatment in assuring the safety of the products. Moreover, due to the environmental and health risks posed by the use of chlorine, there is a trend in eliminating chlorine from the disinfection process. Thus, there is a need for alternative sanitizers to be used for the disinfection of fresh-cut vegetables, not only for the organic food sector but also for the conventional food processors. Another challenge for the food industry is the minimization of water consumption and wastewater discharge rates. The United Nations Environment Programme stated that Europe is one of the two global regions where more water is used for industry than for agriculture. Among the different industries, the food industry ranks third in water consumption and wastewater discharge rates coming after the chemical and refinery industries. The adoption of less water consuming systems is required for improved water management in the industry. Therefore the food industry is now seeking alternatives to chlorine which assure the safety of the products, maintain the quality and shelf-life, while also reducing the water consumption rates in processing. Chlorine dioxide, ozone, organic acids, peroxyacetic acid, electrolyzed oxidizing water and hydrogen peroxide are the main alternative sanitizing agents that gained interest in recent years. The effects of these disinfecting agents on the microbiological, nutritional and sensory quality of fresh-cut produce, and also the possible environmental impact and the potential on minimizing water consumption rates in the food industry are reviewed in this manuscript. (Source – Ölmez and Kretzschmar Food Science and Technology Volume 42, Issue 3, April 2009, Pages 686-693)

Comparison of soil quality and nutrient budgets between organic and conventional kiwifruit orchards - Three long-term (>10 years) systems of kiwifruit production were compared at 36 sites with respect to simple input/output nutrient budgets, extractable soil nutrient levels, soil organic matter status, the size and

activity of the soil microbial biomass, earthworm numbers and key soil physical properties. These systems were (i) conventional production of the green-fleshed variety 'Hayward' (Green), (ii) organic production of 'Hayward' (Organic) and (iii) conventional production of the yellow/gold-fleshed variety 'Hort 16A' (Gold). Crop yields and nutrient removals were least for Organic and greatest for Gold, with Green being intermediate. The major nutrients removed in the harvested crop were K and N. Simple input/output nutrient budgets showed that inputs greatly exceeded removals in the harvested crop for all nutrients considered (i.e. N, P, S, K, Mg, Ca) in all three systems, suggesting nutrient inputs could be reduced. Soil organic C and total N content were greater under Organic and Gold than Green whilst extractable P was least under Organic. Soluble C, basal respiration and metabolic quotient were unaffected by production system whilst microbial biomass C and N were greatest under Organic. Within systems, organic C, total N, microbial biomass C and N and mineralisable N were greater between plant rows than below the vine canopies whilst the reverse was the case for metabolic quotient and extractable P. Soil bulk density was least and water content at field capacity and earthworm numbers were greatest under the organic systems. It was concluded that long-term soil fertility can be maintained adequately under organic management and added benefits are increased organic matter content, a larger microbial biomass and improved soil physical condition. Although Organic orchards generally produce less fruit than their Green counterparts, mainly because of fertiliser differences and the absence of synthetic growth regulators, comparatively good returns and surpluses can still be achieved. (Karey et al Agriculture, Ecosystems & Environment Volume 132, Issues 1-2, July 2009, Pages 7-15)

The Economics of Smallholder Organic Contract Farming in Tropical Africa - The paper examines the revenue effects of certified organic contract farming for smallholders and of adoption of organic agricultural farming methods in a tropical African context. The comparison in both cases is with farming systems that are "organic by default." Survey data from a large organic coffee contract farming scheme in Uganda are reported and analyzed using a standard OLS regression and a full information maximum likelihood (FIML) estimate of the Heckman selection model. The analysis finds that, controlling for a range of factors, there are positive revenue effects both from participation in the scheme and, more modestly, from applying organic farming techniques. (Source – Bolwig et al World Development Volume 37, Issue 6, June 2009, Pages 1094-1104)

Can GM and organic agriculture coexist?- Coexistence between farmers using different crop production systems needs tolerance, since the growing of plants represents an open system and a perfect separation of plant materials between neighbouring fields is not possible. In the case of genetically modified (GM) plants, the situation is complicated, since not only the farmers themselves are involved. To achieve coexistence, accepted threshold values for labelling and distance measures for separation of fields with different cropping systems have been introduced, as well as rules on how to handle problems. Since organic agriculture is only a production system, the same threshold values for organic products are valid as for conventional products. Nevertheless, different minimum distances are prescribed in Germany for GM maize, the only crop for which released varieties exist for that country. Since GM agriculture is allowed only for varieties that have passed all required safety checks, admixture can only have economic consequences as a result of price differences between organic

and labelled GM products. The restriction to product prices alone is facilitating coexistence. Nevertheless, it should be kept in mind that there remains a clash in basic thinking and consequent practical implementation between organic farming and conventional and GM farming; this can affect even social relationships between neighbouring farmers. Gene flow can be reduced by increasing the distances between fields, buffer zones, the use of genotypes differing in flowering time and taking wind direction into account. However, environmental factors such as wind cannot be predicted in advance. This restricts the value of modelling environmental factors in order to manage gene flow. Since GM plants behave as other plants, gene flow as an important force of evolution cannot be suppressed completely. However, this is not unique to GM crops. (Source – Weber 2008, Perspectives in Agriculture, Veterinary Science, Nutrition and Natural Resources, 2008, 3, 072, 1-8)

Long-term changes in soil fertility in organic arable farming systems in England, with particular reference to phosphorus and potassium. - Organic farming has undergone significant expansion in Europe over the last decade and it is often seen as a sustainable alternative to intensive agricultural systems. If it is to be truly sustainable, it must maintain levels of soil fertility sufficient for economic crop production in the long-term, whilst also protecting the environment. This paper presents results comparing soils managed organically for at least 15 years, with soils under conventional management, on four arable farms in England. There were no significant differences in total soil organic matter, total nitrogen or C:N ratio between the conventionally and organically managed soils. However, concentrations of extractable potassium and phosphorus were significantly lower in soils managed organically. The largest difference between the conventional and organic fields in potassium concentration was on the oldest organic farm. These results support the argument that organic mixed arable systems are mining reserves of potassium and phosphorus, built up during conventional management, and that changes to organic management practices to increase inputs of potassium and phosphorus are required, if long-term declines in soil fertility, and thus, yields are to be avoided. (Source - **Gosling and Shepherd 2007** Agriculture, Ecosystems & Environment, Publication Elsevier Science B.V.)

Homemade Soap Spray Insecticide - Rather than have a cupboard full of dangerous, toxic and expensive chemical insecticides why not make your own? These recipes are quick easy and much safer than the commercial alternatives. Do your bit for your wallet and the environment by making your own. (a) **Basic Soap DeBug Spray** - Mix one part soft or liquid soap with 100 parts water. Put into a plant sprayer and use liberally. This is the key ingredient in the gardener's fight against aphids and other insect pests. The spray action will dislodge insects while the soap smothers them preventing them from breathing or eating. The soapy residue left on plants will further discourage other pests from moving onto the plant. Even slugs and snails will avoid eating soapy vegetation. If your garden is suffering from a severe infestation you may wish to 'up the ante' by really putting off those leaf destroyers with a **Garlic** or **Chilli DeBug Spray**. It is quite possible to make your own soft soap too. This is much cheaper than buying liquid soap and you can more easily control how natural the end product is. Simply grate a bar of Castille soap (or some other vegetable based soap) into warm water (four litres should be about right for a 150g bar). Simmer this, stirring for about ten minutes and decant. The soft soap can be used around the home in the laundry or for washing the dishes (adding some lemon juice to cut through grease). In fact making

your own soft soap means you need never buy liquid soap again. Simply refill your old liquid soap dispensers with your homemade soft soap **Garlic or Chilli DeBug Spray** Simply steep a few crushed garlic cloves and / or chillies (fresh/dried/powdered or even Tobasco sauce will be effective) in your basic soap spray. Filter out any lumps before filling a plant spray (to prevent the nozzle getting blocked). The aroma of garlic and the heat of chilli are distasteful to most insect pests so a regular mist with this smelly spray will prevent reinfestation in the long term. However remember chilli heat could burn foliage if applied too liberally so keep an eye on plant reactions, and do not use unless absolutely necessary. Garlic Spray used weekly during the growing period of fruit trees will keep down aphids and other insect infestations. As ants do not like chili or garlic this spray will prevent them 'herding' aphids onto plants such as broad beans too. These sprays can also be used in the home to deter ants from entering - simply spray regularly where ants are coming over the threshold. The Chili Spray is a good way to deter dogs chewing things you don't want them to chew and may even deter deer, rabbits and other grazing mammals in the garden. Admittedly the quantities will be large and reapplication will need to be very regular particularly in wet weather.
(Source – Watkins 2009 at www.articleblast.com/Homemade_Soap_Spray_Insecticide)

Product quality in organic and low input farming systems - The generally beneficial impact of extensive organic production protocols on livestock foods (meat, milk and eggs) composition is becoming increasingly clear and the first studies showing positive health impacts of organic milk consumption have recently been published (Rist et al. 2008; Kummeling et al 2008).

A more differentiated picture has emerged for crop foods, with **(a)** an overall trend for higher levels of nutritionally desirable compounds being detected in organic compared to conventional foods being confirmed by most studies, but **(b)** certain agronomic practices (e.g. netting to protect crops against pests) being linked to negative effects on specific groups of secondary metabolites. Recently published dietary intervention study indicated increased immunological responsiveness and robustness in chicken raised on organic diets based on a mixture of grains and legumes (Huber 2007) and effects on body weight and the immune system in rats and mice raised on organic feed stuff (Lauridsen 2007, Finamore 2004). These studies indicate positive trends of organic food consumption and should be explored further in the future.

Quality expectations of consumers always radiate around four central concepts **(a)** taste (and other sensory characteristics), **(b)** health, **(c)** convenience, and for some consumers **(d)** process characteristics (e.g. organic production, natural production, animal welfare, GMO-free) (Grunert 2005).To what extent improvements in food composition satisfy consumer preferences and hence their willingness to pay for that improved quality is currently being studied under QLIF. Alignments may be needed between consumer expectations and quality improvements to achieve the maximum socio-economic benefits. Alignment could be influenced by governmental policy, marketing strategies and consumer education. (Source – Lueck et al, QLIF Worlshop)

National and International Events

International Seminar on "India Organic – Strategies to Surge Ahead" – A two days International Seminar on "India Organic – Strategies to Surge Ahead" is being organized during 10th and 11th September 2009 at University of Agricultural Sciences, GKVK Campus, Bangaluru, Karnataka. The seminar is being organized jointly by the National Centre of Organic Farming, University of Agricultural Sciences, Bangalore, Organic Farming Association of India, Goa and International Competence Centre for Organic Agriculture, Bangalore. The important issues to be deliberated in the seminar are: (a) Strategies and technologies for improving organic production through organic soil nutrient management, (b) Strategies and technologies for improving organic production through organic management of pests and diseases, (c) How to make strategies: Success stories of progressive farmers (d) Standards and regulation: How to simplify export/ trade requirements, (e) Processing with care: Post harvest handling/ processing, (f) Market access issues: Markets in EU and USA and (g) Growing markets in India and Asia. National and International Experts are invited to present papers related to the theme. Abstracts can be submitted latest by 15th July 2009. For further details contact: Organizing Secretary, International Seminar, C/O International Competence Centre for Organic Agriculture, 951C, 15th Cross, 8th Main, Rajarajeshwari Nagar, Bangalore 560 098 or Director, NCOF, CGO-II, Kamla Nehru Nagar, Ghaziabad, UP 201 002.

South Asia Conference on "Outstanding Organic Agriculture Techniques" - A two days South Asia Conference Seminar on Outstanding Organic Agriculture Techniques is being organized during 10th and 11th September 2009 at University of Agricultural Sciences, GKVK Campus, Bangaluru, Karnataka and is being organized by Organic Farming Association of India, NCOF and Third World Network, Malaysia. The conference is being organized as an independent event parallel to International Seminar on India Organic – Strategies. This conference is designed as a knowledge sharing between outstanding organic farming practitioners from India, Sri Lanka, Bangala Desh, Myanmar, Nepal, Bhutan and Pakistan. Majority of the speakers will be pioneering organic farmers. Important issues to be disc used during the conference are: (a) Living farms- Overview of the Best of Organic Practices in India, (b) Living soils – Techniques for bringing life back to the soil, (c) Living soils – Techniques for protecting soil life, (d) Living fields – Insect-Plant harmonies, (e) Healthy fields – Managing diseases, (f) Water management on organic farms and (g) Organic seeds. For further details contact Miguel Braganza, Organic Farming Association of India, G-8 Britto' Apartments, Feira Alta, Mapusa, 402 507, Goa.

BioFach India Togather with India Organic 2009 - The first BioFach India together with India Organic – 2009 takes place in the Bombay Exhibition Centre in the Indian metropolis of Mumbai from 18th to 20th November 2009. Domestic organic stakeholders and suppliers, State and Government Pavillions, Commodity Boards as well as international traders and producers are invited to showcase their products at this unique and central trading platform for organic in India. The BioFach India section will accommodate: Indian and International organic producers showing 100% organic products. Exhibitors need to follow in principal the BioFach admission criteria for food as well

as for personal care, fabrics and non-food items. The India Organic Section will accommodate: Organic stakeholders from India, in particular Central/ State Government Pavillions and farmer groups with products without actual internationally recognized or Indian domestic certification. For further details contact: Indo-German Chamber of Commerce Representative NurenbergMesse, German House, 2 Nyaya Marg, Chanakyapuri, New Delhi – 110 021 and International Competence Centre for Organic Agriculture, 951C, 15th Cross, 8th Main, Rajarajeshwari Nagar, Bangalore 560 098.

1st International IFOAM Conference on Organic Animal and Plant Breeding - BREEDING DIVERSITY - Sante Fe, NM, USA; August 25-28, 2009, The time is right to bring together all endeavors to focus on organic breeding. Fostering the sustainable development of new successful low input breeds is urgent in the face of future challenges of food insecurity and massive threats to the livelihoods of millions of people caused by climate change. Through the conservation and promotion of Agro-Biodiversity of both animal and plant genetic resources, organic agriculture will again prove to be a viable alternative to genetically modified organisms. Both organic plant and animal breeding are therefore gaining momentum in several parts of the world. Successful organic breeding is the basis of organic production, but it is only in early phases of development. This conference provides for the opportunity to revive traditional knowledge from the global North and South and connect it with the current international organic research. Through the fusion of traditional breeding knowledge and newly developed organic breeding methods, there is a great opportunity of intercultural learning and also valuing knowledge which was kept through generations for the well-being of communities. Because of the key role women play in the selection of seeds and management of small livestock the conference will center around their knowledge and contributions. Bringing all together in one international conference explicitly highlights important thematic and geographic interdependences and strengthens the holistic approach of organic agriculture in respecting and including the voices of the world's regions in their full diversity. For further details contact Ms Zoe Heuschkel at the IFOAM Head Office. Tel: +49 (0) 228 92 650 12 Fax: +49 (0) 228 92 650 99 email: z.heuschkel@ifoam.org

Organic Expo featuring the Green Show 24- 26th July 2009 Royal Exhibition Building, Carlton Gardens, VIC Now in its 5th year, the Organic Expo continues to be Oceania's leading and most comprehensive Organic & Green Show. Over 200 exhibitors from across Australia and overseas will be taking part. Discover thousands of exciting products & services, see exciting demonstrations from renowned chefs Kylie Kwong and Tobie Puttock, and hear the latest from industry experts. Any business interested in organic and green products cannot afford to miss the Organic Expo featuring the Green Show. As Andre Leu, World Board Member, IFOAM states, "The Organic Expo plays a crucial role in allowing producers and traders to access the rapidly growing Australasian and South Pacific markets. This region offers enormous opportunities for organic & environmental businesses.IFOAM is proud to support The Organic Expo." Please register for your free 3 day trade pass via the organic expo website. For more information and a not-to-be-missed seminar program, please visit: www.organicexpo.com.au

2nd International conference on the organic sector development in Central/Eastern European and Central Asian countries' in Tbilisi, Georgia September 10-11, 2009 This 2nd International conference follows the successful 1st International conference in

Kyiv, Ukraine held in April 2008 with more than 220 participants from 25 countries attending. Participants of the 1st conference stressed their intention to continue fruitful discussions of topics which are in the interest for the region. The 2nd International conference will encompass various aspects of agricultural production focussing on practical experiences and research of plant production and wild collection, horticulture and viticulture, animal husbandry, wine making and processing. The new EU Regulation on organic farming as well as certification aspects - including others then organic - will present the second focus of the conference. The third focus will include domestic and export market experiences and developments. The Organisers (the Biological Farming Association "Elkana" and the Georgian State Agrarian University (Georgia), Organic Federation of Ukraine (Ukraine) and Organic Services GmbH (Germany)) call for contributions and invite interested speakers to submit their proposal until June 15, 2009. For more information see the conference website, or send an email to conference@elkana.org.ge

BioFach America 24-26, September 2009 in Boston - U.S. citizens consume 42% of the organic production worldwide whereas the U.S. market has only 4% of worldwide acreage. Therefore raw materials and finished products are imported to meet consumers organic demand. Nearly all market sectors would grow at much higher rates if sufficient supply were available. At a time when few businesses are growing organic products market in the U.S. continues to increase. Nearly 5 % annual growth is forecast for 2009 and 2010 in the organic business. Become a supplier of the U.S. organic market and join the biggest organic platform at the east coast: BioFach America 2009! Book your stand for BioFach America from 24-26, September 2009 in Boston now and secure your well located stand position as soon as possible, but at the latest by 31st May 2009. BioFach America, the integrated show in Natural Expo East succeeded in 2008 with nearly 340 exhibitors and thousands of products on display. 88 % of Expo East and BioFach America attendees have a role in purchasing products for their company and 82% found new companies to do business with. Boston Convention and Exhibition Center, Boston (MA), USA 24-26, September 2009 (Thur. - Sat.) For further details contact the organizer: Nürnberg Global Fairs GmbH Messezentrum 90471 Nürnberg

Second round of Natural and Organic Cosmetics Congress How green is the whole cosmetics sector becoming? What strategies are successful in marketing, sales and trade? These and many other issues will be discussed by international decision-makers from the fields of cosmetics manufacture, marketing, sales and trade in the CongressCenter Nürnberg from 22-23 September 2009, when the Natural and Organic Cosmetics Congress takes place for the second time. The 2009 congress will be appreciably more international in terms of participants and speakers. Last year's event offered over 110 participants, top speakers and media representatives an ideal forum for exchanging views on current trends and generating new impetus for the strategic development of the whole cosmetics market. Well-known speakers from science, market research, trade and industry have been engaged again for this year's two-day programme, which will be simultaneously translated into German and English. Udo Funke, Director of the Natural and Organic Cosmetics Congress: "The market for natural cosmetics is developing extremely dynamically, so it was only logical to follow up the successful premiere with a more international congress in 2009. We are delighted to have obtained the support of noted guests, such as the global consultant and market researcher Kline Group of New York, and a number of other top speakers." These

include the keynote speakers Prof. Dr. Marcus Schögel from the Institute for Marketing at the University of St. Gallen, Switzerland, and Ted Ning, Director of Conscious Wave/Lohas, USA. Prof. Dr. Marcus Schögel's talk deals with strategic marketing, distribution management and innovative sales forms. Ted Ning, an expert on sustainable corporate practices and their market prospects, LOHAS markets and consumer behaviour, examines the question of how LOHAS influences the world of consumption, and presents new approaches to marketing and sales with cross-marketing. The spectrum of topics for the presentations, interesting discussion panels and round-table talks ranges from best practice examples and the latest market research results to international trends and developments. Dr. Eike Wenzel, Senior Future Consultant and member of the management board of the Zukunftsinstitut, Internationale Gesellschaft für Zukunfts- und Trendberatung in Kelkheim, Germany, regards LOHAS as a core target group for natural and organic cosmetics: "Body care is just as essential for LOHAS as healthy and sustainable food. Both food and cosmetics are personal things that are physically very close to the body. Here the LOHAS community values products that give them a high degree of security with a focus on proven quality." The organizer of the Natural and Organic Cosmetics Congress is NürnbergMesse, which with its world-leading exhibitions, BioFach for organic products and Vivaness for natural personal care and wellness, stands for know-how and expertise in this market segment. The congress management is in the hands of Organic Services GmbH, and the programme director is Elfriede Dambacher, the owner of naturkosmetik konzepte. Contact for participants: Organic Services GmbH, Mildred Steidle Congress management on behalf of NürnbergMesse Tel + 49 (0) 89. 820 759 08 Fax + 49 (0) 89. 820 759 19

World Congress on Organic Cotton – From Fashion to Sustainability September 21 – 25, 2009 Casino Kursaal, Interlaken – Switzerland On the occasion of the UN Year of Natural Fibers 2009 the International Congress on Organic Cotton „From Fashion to Sustainability" is organized by Helvetas, in collaboration with the international partners Organic Exchange, Institute for Market Ecology IMO, International Trade Centre ITC, Max Havelaar and the Swiss State Secretariat for Economic Affairs SECO. The congress provides a unique platform to practitioners of the whole textile value chain, offering the opportunity to discuss and learn about innovations, challenges, successful business models and to establish new partnerships in the field of organic and fair trade cotton. Main agenda points will be: More than 30 workshops, key-note presentations and panel discussions, A marketplace with up to 50 exhibitors, Flash presentations of companies and projects working in the field of organic and fair trade cotton, A large fashion show presenting organic cotton collections from African and European designers, A selection of different excursions, including a visit to Swiss textile companies and organic farms, A gala dinner on Lake Thun. Registration is carried out online. For detailed information and online registration please visitwww.fashiontosustainability.org

Bio Fach America Latina - São Paulo, Brazil's number one business location, again becomes the meeting-place for the Latin American and international organic industry from 28-30 October 2009. ExpoSustentat will present its sustainability products and projects for the fifth time parallel to BioFach América Latina. The organizers expect more than 350 exhibitors and the lively interest of international trade visitors. 7.874 visitors from 28 countries were delighted with the range of products in 2008. "Environmentally orientated action is of great international relevance. The organic

industry is known for its commitment in this area, as it has supported the preservation of natural resources right from the start. Sustainability and Fairtrade projects make an important contribution in this respect. We are proud to offer an international platform for trading products produced by organic, sustainable and fair methods at our Brazilian BioFach, the parallel ExpoSustentat and the accompanying conference," says Herta Krausmann, Managing Director of Nürnberg Global Fairs. "The market for sustainable products is currently experiencing a strong upward trend," confirms Ming Chao Liu, Project Manager of the Brazilian marketing initiative Organics Brasil. The project increased the number of its member companies by 25 % to 54 last year. The export volume rose by 15 % to 21 million US dollars. "Brazil has the potential to meet the industrial countries' growing demand for food with added organic and social benefit," says Ming Chao Liu. The spectrum of products at ExpoSustentat ranges from raw materials for food and natural personal care, products from FSC-certified forestry or sustainable fisheries to craft products. Official organizations promote the documentation and preservation of biological variety in the regions – for example, by supporting small family farms in the Amazonas region. Development aid institutions like the German Gesellschaft für Technische Zusammenarbeit, GTZ, also participate in projects of this kind.

International trends and regional best-practice examples - The conference at BioFach America Latina and ExpoSustentat takes up topical market issues parallel to the exhibitions. The outstanding development of the international markets for natural personal care and natural textiles is one issue the conference examines. Others include the strongly growing bulk consumer sector. Speakers from various pioneering countries describe their experiences. The BioFach América Latina and ExpoSustentat exhibitions invite the industry to experience the Latin American organic market and its great variety of products and sustainable projects.

BioFach Japan! Tokyo Big Sight (Ariake), West Hall October, 7-9, 2009 (Wed. - Fri.) LOHAS – the lifestyle of health and sustainability remains to be a growing trend in Japan with lots of golden business opportunities: From gourmet organic food and beverages to natural cosmetics, personal care and organic textile products – Japanese consumer are eager to find top quality products in compliance with their healthy life-style attitude. BioFach Japan is the one and only organic trade show in Japan and will again present a trade platform for organic products and natural personal care products of highest quality from around the world. Join this unique event and expand your business in Japan - the world's third largest natural and organic market. BioFach Japan – A *must-exhibit* trade show for you to grab business opportunities in Japan.

International Centre for Research in Organic Food Systems- The International Centre for Research in Organic Food Systems (ICROFS) is a newly established centre without walls funded by the Danish Ministry of Food and Agriculture. ICROFS has the objective of supporting the production and use of organic food through research. The centre initiates, supports and coordinates research of high quality in Denmark, Europe and internationally by involving researchers from a large number of universities and research institutions. The centre builds on the 10 years of experience of DARCOF (www.darcof.dk) but will have an international mandate and board with members from Africa, Asia, America and Europe.

Book Reviews

Organic Crop Production - Ambitions and Limitations by Kirchmann, Holger; Bergström, Lars (Eds.), 2009, X, 240 p, ISBN: 978-1-4020-9315-9 - Many people believe that organic agriculture is a solution for various problems related to food production. Organic agriculture is supposed to produce healthier products, does not pollute the environment, improves the fertility of soils, saves fossil fuels and enables high biodiversity. This book has been written to provide scientifically based information on organic agriculture such as crop yields, food safety, nutrient use efficiency, leaching, long-term sustainability, greenhouse gas emissions and energy aspects. A number of scientists working with questions related to organic agriculture were invited to present the most recent research and to address critical issues. An unbiased selection of literature, facts rather than standpoints, and scientifically-based examinations instead of wishful thinking will help the reader be aware of difficulties involved with organic agriculture. Organic agriculture, which originates from philosophies of nature, has often outlined key goals to reach long-term sustainability but practical solutions are lacking. The central tasks of agriculture - to produce sufficient food of high quality without harmful effects on the environment - seem to be difficult to achieve through exclusively applying organic principles ruling out many valuable possibilities and solutions.

Organic Farming for Sustainable Horticulture : Principles and Practices/P. Parvatha Reddy. Jodhpur, Scientific, 2008, x, 384 p., tables, ISBN 81-7233-501-4. - Horticulture is fast emerging as a major commercial venture, because of higher remuneration per unit area and the realization that consumption of fruits and vegetables is essential for health and nutrition. In the last one decade, export potential of horticultural crops has significantly increased attracting even multinationals into floriculture, processing and value added products. Since the horticultural produce especially fruits and vegetables are consumed afresh, consumers expect residue-free produce. In modern society where consumers are becoming increasingly health conscious and environmentally aware, a major market for organic foods has developed. The organic sector, in particular, has sprung back into life to become one of the most dynamic sectors in the international food market. The present book is an attempt which comprehensively deals with both principles and practices. It is divided into two parts. An entire chapter is devoted for sources of critical inputs used for organic farming which would be very much useful to the organic farmers to procure the same. This book is a practical guide to practicing organic farmers of horticulture crops. Further, it is a useful reference to policy makers, research workers and students. The material can also be used for teaching undergraduate and post-graduate courses." (jacket)

Profitable Organic Farming By Newton, Jon Publisher Wiley Black, p-192, 2004, Price Euro 47.10 - The demand for food produced from sustainable and organic farm enterprises continues to grow worldwide, with demand exceeding supply for many items. This second edition of an extremely well received and successful book covers every aspect of an organic farm enterprise that can have an influence on profitability. As such the book is an essential purchase for all those involved in organic and sustainable farming. Topics covered in this second edition of Profitable Organic Farming include grassland productivity, production systems for dairy,

beef, sheep, pig, poultry and arable farms, farm size and enterprise combinations, organic standards, financial management, marketing, success factors and progress by organic farmers. The book concludes with a new chapter covering potential future scenarios for organic farming. Drawing on new information available in the area and including case studies from successful organic farm businesses, the author Jon Newton has written a book that is of great commercial use to a wide range of workers including organic farm managers and those wishing to commence organic farming operations. The book is also of great use and interest to agricultural scientists and students and those working in government and regional agricultural advisory services worldwide. Libraries in research establishments, universities and colleges where agricultural sciences are studied and taught should have several copies of this important and useful book on their shelves It is an essential volume for any commercial organic farmers or budding organic farmers bookshelf. It will no doubt also be a very popular read and provide much food for thought amongst many agricultural students : New Farmer & Grower .

Animal Health and Welfare in Organic Agriculture by Vaarast et al 2007 CABI, 2004 ISBN 085199668X, 9780851996684, 426 pages – The rapid growth of organic farming has been among the most remarkable changes in global agriculture in recent decades. However, more attention was initially aid to the crop side of organic systems, and animals are a lower priority in formal research and the development of organic farming. But now, that has changed. There is now greater recognition of the need to understand animal health and welfare better. The purpose of this book is to further the understanding of organic animal husbandry and to demonstrate practical solutions and innovative methods, drawing mainly on research and practical experience with organic farming in Europe.

Sustainable Agriculture Reviews: Organic farming, pest control and remediation of soil pollutants by Eric Lichtfouse (Editor) 2009, Publication Springer, P-400 - Sustainable agriculture is a rapidly growing field aiming at producing food and energy in a sustainable way for humans and their children. Sustainable agriculture is a discipline that addresses current issues such as climate change, increasing food and fuel prices, poor-nation starvation, rich-nation obesity, water pollution, soil erosion, fertility loss, pest control, and biodiversity depletion. Novel, environmentally-friendly solutions are proposed based on integrated knowledge from sciences as diverse as agronomy, soil science, molecular biology, chemistry, toxicology, ecology, economy, and social sciences. Indeed, sustainable agriculture decipher mechanisms of processes that occur from the molecular level to the farming system to the global level at time scales ranging from seconds to centuries. For that, scientists use the system approach that involves studying components and interactions of a whole system to address scientific, economic and social issues. In that respect, sustainable agriculture is not a classical, narrow science. Instead of solving problems using the classical painkiller approach that treats only negative impacts, sustainable agriculture treats problem sources. Because most actual society issues are now intertwined, global, and fast-developing, sustainable agriculture will bring solutions to build a safer world. This book series gathers review articles that analyze current agricultural issues and knowledge, then propose alternative solutions. It will therefore help all scientists, decision-makers, professors, farmers and politicians who wish to build a safe agriculture, energy and food system for future generations.

Soil Fertility, Renewal and Preservation : Bio-Dynamic Framing and Gardening/Ehrenfried Pfeiffer and E.B. Balfour. Delhi, Asiatic Pub., 2006, 196p., ISBN 81-87067-73-X - "The purpose of this book is to stress the importance of this life process and to show, as the practical experiences of the author have also shown, that the farm or garden must be considered as a biological organic unit, rather as a series of unconnected processes. When the farm or garden is operated on this basis, it will be seen that which is biologically correct is also economically the most profitable. The book also purposes to show how the biological unity of the farm may be achieved and developed. Its contents are based on the author's own experiences of many years in dealing with the problems of his own farms, as well as with those of hundreds of other farms and gardens in practically all countries of Europe. The author has also studied farming conditions in North America, Egypt, and Palestine. Thus the author believes that he has been able to arrive at a comprehensive judgment of the possibilities of a method of agriculture which has become known as the Bio-dynamic method." (jacket)

Sustainable Farming and Soil Fertility

People call the soil … mineral matter, but some one hundred million bacteria, yeasts, moulds, and other microbes live in just one gram of ordinary top soil. Far from being dead and inanimate, the soil is teaming with life. These microorganisms do not exist without reason. Each lives for a purpose, struggling, cooperating and carrying on the cycles of nature. The seminal principal of sustainable farming is that instead of trying to feed the plant, directly the objective should be to nourish the soil. The objective of sustainable agriculture is not mere non-chemical agriculture. It is depending upon local resources, it is making best use of nature's products and processes, and it is replacing the external chemicals with farmer's knowledge, management skills and labor. Sustainable agriculture involves the integrated use of variety of seed, pest, nutrient, soil and water management technologies and practices. These are usually combined on the farms to give practices finely tuned to the local biophysical and socioeconomic conditions of individual farmers. Most represent low-external input options. Natural processes are favored over external inputs and by-products or waste from one component of the farm become input to another. In this way farms remain productive as well as reducing the impact on the environment. In plants "protein production" is a biosynthesis, a synthesis by life itself requiring interaction of all the essential elements including trace elements. For the nutritive value of crops and health of the plants we must first look to the soil – to the geological, the chemical, the biochemical and the biological performances by which the numerous streams of life take-off from the soil and continue to flow through the many species of plants and animals. Protein producing plants demand a long list of elements from the soil; nitrogen, sulphur, and phosphorus are required to make part of the protein molecule; calcium and lime also required; and magnesium, manganese, boron, copper, zinc, molybdenum and other elements are needed in connection with protein construction, even if only in such amounts as are called "trace". If the soil is not properly fertile, not teeming with microorganisms, the whole process grinds to halt. To keep the microorganisms alive great quantities of decaying organic matter needed to be added to the earth and that is the crux of entire success.