Why ALGOA should promote Organic Agriculture

IFOAM – Organics International
The only global umbrella body for the organic sector

People
700 member organizations in over 125 countries worldwide.

2 million certified organic farmers and substantially more uncertified organic farmers.

Sept 28, 2016, Goesan, Korea, André Leu, President
“Regenerative organic agriculture improves the resources it uses, rather than destroying or depleting them.

It is a holistic systems approach to agriculture that encourages continual on-farm innovation for environmental, social, economic and spiritual wellbeing.” Robert Rodale
The New Market Reality

Fortune Magazine
June 2015

Consumers want fresh and organic—and that cost the major packaged-food companies $4 billion in market share last year alone.

Can the giants win you back?

By Beth Kowitt
The Drivers of Market Growth

The $80 billion Organic Sector is Consumer Driven

- The main reasoning for purchasing is health – especially avoiding pesticides
- The authorities say that the pesticide residues in food are safe
- Therefore there is no need or value in purchasing and eating organic food
- This needs to be critically examined
MYTH 1: Rigorously Tested “All agriculture poisons are scientifically tested to ensure safe use”

- Most pesticide formulations sold on the market are deemed safe on the basis of just testing one of the ingredients without testing the whole formulation.

- It is a data-free assumption to assume there is no difference in toxicity between the active ingredient and the whole formulation.

- It also defies scientific credibility when these’ inerts’ are added as synergists and adjuvants to make the active ingredient kill more effectively and then assume that they are not more toxic.

- The limited scientific testing of formulated pesticide products shows that they can be hundreds of times more toxic to humans than the pure single active ingredient.
The Myths of Safe Pesticides

MYTH 1: Rigorously Tested “All agriculture poisons are scientifically tested to ensure safe use”

• There is some testing for acute toxicity for formulated pesticides – the amount that will kill in two weeks from exposure

• The 1400 registered agricultural and veterinary products sold in the USA and 7200 in Australia – the product used on our food – have:

• **no testing for children’s health, reproductive effects, birth defects, cancer, developmental neurotoxicity, endocrine disruption, metabolic disruption and epigenetic mutations**

• and numerous other issues that could be caused by the whole formulation
The Myths of Safe Pesticides

MYTH 1: Rigorously Tested “All agriculture poisons are scientifically tested to ensure safe use”

- Multiple pesticides (insecticides, herbicides, fungicides) are approved for each crop
- Many foods have multiple residues
- Most people have multiple residues in their bodies
- No testing of chemical cocktails
- Many mixtures are synergistic 1+1=3 or much more
- Up to 232 chemicals found in placental cord blood
- It is data-free assumption to assume that there are no additive or synergistic toxic effects from cocktails
The Myths of Safe Pesticides

MYTH 1: Rigorously Tested “All agriculture poisons are scientifically tested to ensure safe use”

- The special requirements of the fetus, the newborn, and the growing child in relation to developmental neurotoxicity are also subject to data-free assumptions.

- Currently the pesticide testing used in the regulatory approval processes does not specifically test for the risks particular to these age groups.

- Peer reviewed testing shows that these groups are particularly vulnerable to the smallest amounts of pesticides.
MYTH 2: Very Small Amount “The residues are too low to cause any problems”

- The smallest amounts of chemical residues can be harmful.

- Given that there are hundreds of studies showing that many chemicals can be endocrine disruptors and therefore more toxic at lower doses, setting the Average Daily Intake (ADI) on the basis of extrapolating it from testing done at higher doses is a data-free assumption.
The Myths of Safe Pesticides

MYTH 3: Breakdown “Modern pesticides rapidly biodegrade”

- All synthetic pesticides leave residues in food, that is why Maximum Residue Levels (MRL) and Average Daily Intakes (ADI) are set.
- Testing shows that the majority of foods and people have pesticide residues.
- Lack of testing for the metabolites formed by pesticides as they degrade.
- Limited testing shows that many of them are more toxic and residual than the pesticide itself.
MYTH 4: Reliable Regulatory Authorities “Trust us — we have it all under control”

- Regulatory authorities are ignoring a large body of peer reviewed science showing the harm of caused by pesticides and are largely basing their decisions on unpublished industry, commercial in confidence studies that are not available for other researchers and stakeholders.

- The lack of a transparent system where stakeholders are denied access to the studies and decision about this studies is a huge concern. The public has The Right To Know about the studies and decision used to justify poison residues in food.

- The scientific credibility of pesticide regulatory authorities has to be seriously questioned when they are approving the use of pesticides on the basis of data-free assumptions and not on the published peer reviewed science.
The Myths of Safe Pesticides

Children, newborn and the fetus

Pesticide damage in developing children causes:
• Lower IQs
• ADHD
• Autism spectrum disorders
• Lack of physical coordination
• Loss of temper – anger management issues
• Bipolar/schizophrenia spectrum of illnesses
• Depression
• Childhood obesity
The Myths of Safe Pesticides

Number of children (6-21yrs) with autism served by IDEA plotted against glyphosate use on corn & soy

\[ R = 0.9886, \ p \leq 6.646 \times 10^{-9} \]
The Myths of Safe Pesticides

The US President’s Cancer Panel
80% of cancers are caused by environmental toxins, especially chemicals and pesticides.

Exposure to chemical cocktails
‘…Leukemia rates are consistently elevated among children who grow up on farms, among children whose parents used pesticides in the home or garden, and among children of pesticide applicators.’

‘Yet over the same period (1975–2006), cancer incidence in U.S. children under 20 years of age has increased.’
Are the current residues in food safe?

Thyroid Cancer Incidence Rate (age adjusted)

plotted against glyphosate applied to U.S. corn & soy crops \( R = 0.988, p \leq 7.612e-09 \)
along with %GE corn & soy crops \( R = 0.9377, p \leq 2.152e-05 \)
sources: USDA: NASS; SEER
The Myths of Safe Pesticides

The Rigorously Tested Myth
Children, newborn and the fetus

The US President’s Cancer Panel
‘Children also can be harmed by genetic or other damage resulting from environmental exposures sustained by the mother (and in some cases, the father).’

‘There is a critical lack of knowledge and appreciation of environmental threats to children’s health and a severe shortage of researchers and clinicians trained in children’s environmental health.’
Exposure to chemical cocktails

- Porter et al. showed that pesticide, herbicide and fertilizer mixtures effected the endocrine (hormone) system.
- Causes changes in the immune system and affects fetal brain development.
- Of particular concern was thyroid disruption in animals.
- This has multiple consequences including effects on brain development, sensitivity to stimuli, ability or motivation to learn and an altered immune function.
The Myths of Safe Pesticides

Children, newborn and the fetus

• Scientific research shows that pesticides effect the normal development of the nervous system in the fetus and children

• The brain is the largest collection of nerve cells

‘These results indicate that chlorpyrifos and other organophosphates such as diazinon have immediate, direct effects on neural cell replication.’ (Qiao 2001)
The Myths of Safe Pesticides

PESTICIDE EFFECTS ON CHILDREN

Differences in drawing ability at the same age between exposed and unexposed children were astonishing

1. Representative drawings of a person by 4-year-old Yaqui children from the valley and foothills of Sonora, Mexico.

The Myths of Safe Pesticides

The Rigorously Tested Myth
Children, newborn and the fetus

• Four recent studies show that prenatal exposure to organophosphate insecticides (OPs) adversely affects the neurological development of children.
  (Rauh et al., 2011, Rauh et al., 2012, Bouchard et al., 2011, Engel et al., 2011)

• Each study was conducted independently; however they all came up with very similar results.
• This was that fetal exposure to small amounts of OPs will reduce the IQ of children.
The Rigorously Tested Myth
Children, newborn and the fetus

• Parents should have considerable concern that the Columbia University study found that there was no evidence of a minimum level of exposure in the observed adverse impact on intelligence.

• This means that very low levels of exposure could lead to reductions in a child's intelligence

• Most people get their exposure from residues in food
The Rigorously Tested Myth
Children, newborn and the fetus

‘Our findings indicate that prenatal CPF [chlorpyrifos] exposure, at levels observed with routine (nonoccupational) use and below the threshold for any signs of acute exposure, has a measureable effect on brain structure in a sample of 40 children 5.9–11.2 y of age.’

‘We found significant abnormalities in morphological measures of the cerebral surface associated with higher prenatal CPF exposure, after adjusting for possible confounders.’ (Rauh et al., 2012)
The Myths of Safe Pesticides

Effects of CPF Exposure on Sexually Dimorphic Brain Regions

- Sex x Exposure Group Interaction
- Normal Sex Effects
  - Low Exposure Group
  - High Exposure Group

- IPL
- SMG
- SFG
- Post STG
- STG
- MTG

- Distance (mm)
  - low CPF: 3, high CPF: 2
  - low CPF: 6, high CPF: 4
  - Female: -3, Male: -1
  - Female: 3, Male: 0
  - Female: -6, Male: -3
  - Female: 3, Male: 0

- Graphs showing comparisons for different exposure and sex groups.
Measuring total nutrition from a farming system is a very important and critical methodology that is needed to measure food security and nutrition rather than the current system that is just based on measuring only the calories.

Most of these calories are empty of real nutrition – the vitamins, minerals and other nutrients that we need for good health.

This is a very real problem. There are over 850 million people who are classified as food insecure.

This means there are periods of the year when they do not have any food to eat.
• There are more than one billion extra people in the world who get enough calories however they are deficient in key nutrients.

• For instance the majority of women in rural India, hundreds of millions, have anemia due to iron deficiencies in their diet.

• This leads to a while suite of health and reproductive problems.
The reality is that iron deficiencies in rural women can easily be corrected by growing a few green leafy vegetables and including them in their daily diet.

It is the same with beta carotene deficiencies. Growing leafy and yellow fruits and vegetables can easily correct this.

The research conducted Health Per Acre showed that converting all of India’s farms into biodiverse regenerative organic farms would not only correct all these deficiencies,

There would be enough nutrition to feed two Indias with a diverse diet of healthy nutritious food.
Benefits of Organic Food

Organic Food has Higher Nutrition

• The largest and most comprehensive peer reviewed scientific study comparing organic food and conventional food

• Published in British Journal of Nutrition by a team of international experts under the auspices of Newcastle University, UK.

• It clearly established that organic foods are more nutritious.
Benefits of Organic Food

Organic Food has Higher Nutrition

• This meta-study analyzed 343 published peer-reviewed studies

• Found that levels of antioxidants were between 18-69% higher in organic food compared to conventional food.

• The study showed that the levels of toxic heavy metals such as lead and cadmium as well as nitrites and nitrates were significantly lower in organic food.
Benefits of Organic Food

Organic Food has Higher Nutrition

• Antioxidants are important in preventing oxidative stress.
• Oxidative stress is one of the hallmarks of cancer and a contributing factor to many chronic diseases.
• It is caused by an imbalance between free radicals and the body’s ability to repair the damage caused by free radicals.
• Free radicals damage many types of body cells and tissues by oxidizing them.
Benefits of Organic Food

Organic Food has Higher Nutrition

• Antioxidants ‘break up’ the damaging free radical compounds, preventing them from doing damage.

• There are numerous scientific studies showing multiple benefits of diets rich in antioxidants

• Protective benefits in preventing and reducing cardiovascular, neurodegenerative, autoimmune, premature aging, cancers and numerous other diseases.
Organic Food Protects Against Birth Defects

• Research shows that by eating organic food, women can protect the health of their children before they are born.

• A large epidemiological study, published in Environmental Health Perspectives

• Found that the consumption of organic food resulted in baby boys with decreased rates of hypospadias (penile malformations) and cryptorchidism (undescended testes), both common types of male urogenital birth defects.
Benefits of Organic Food

Organic Food Reduces Pesticide Exposure

- There are many scientific studies showing that eating organic food results in significantly lower levels of pesticide residues in people, particularly children.

- Researchers found that the urinary concentrations of the specific metabolites for organophosphorus pesticides decreased to undetectable levels immediately after the introduction of organic diets.

- Remained undetectable until the conventional diets were reintroduced.
Organic Food Reduces Pesticide Exposure

• “In conclusion, we were able to demonstrate that an organic diet provides a dramatic and immediate protective effect against exposures to organophosphorus pesticides that are commonly used in agricultural production.

• We also concluded that these children were most likely exposed to these organophosphorus pesticides exclusively through their diet.”
Thank You