

Volume 1, No.3 July, 2016

W e g e l

The background of the cover is a rich, close-up photograph of various fresh vegetables. In the upper portion, there are several bright orange and red bell peppers. Below them, a large white mushroom is sliced, showing its gills. In the center, several stalks of green asparagus are laid out. To the left, a purple onion is partially visible. On the right, there are sliced orange carrots and a single red cherry tomato. The overall composition is colorful and emphasizes freshness and health.

**Healthy Food and
Agriculture Systems for
Productive Citizens**

Wegel: Wegel magazine is a quarterly magazine that focuses on sharing information and experiences that promote ecological agriculture in Ethiopia. It is part of the Agricultures Network working on the same issue in other parts of the world including Africa, Latin America and Europe.

It is prepared jointly by Non-governmental Organizations working around conservation of biodiversity, environment and culture as well as agricultural development in Ethiopia.

Wegel is the name of a traditional agricultural tool in Ethiopia. It is part of a plough that connects the ploughshare with the main wooden frame to be drawn by oxen. As a traditional farming tool it symbolizes traditional ecological farming and also the connection and collaboration that should exist among the various agricultural actors for a healthy and sustainable agriculture.

We used the name Wegel to symbolize that ecological agriculture is a holistic approach that encompasses soil, plants, animals, microorganisms and biodiversity in general.

Partners in preparation of the Magazine

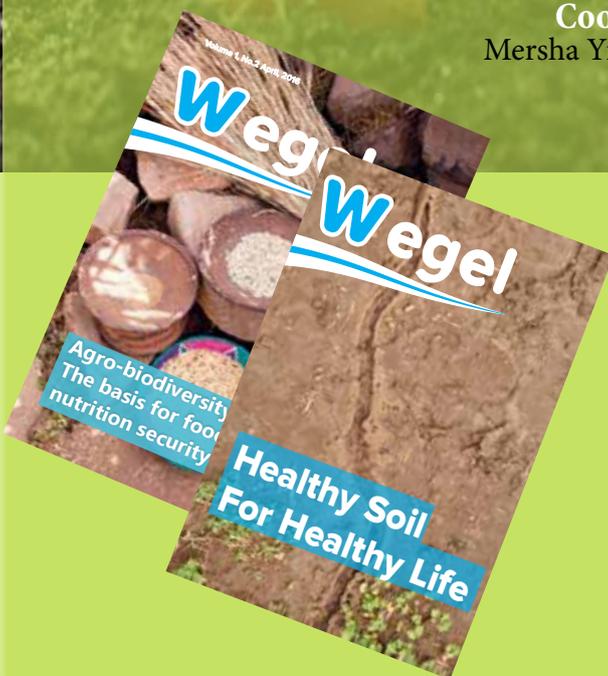
MELCA-Ethiopia
Institute for Sustainable Development-ISD
Pelum Ethiopia
Panos Ethiopia
Pesticide Action Nexus- PAN-Ethiopia
Youth Network for Sustainable Development-YNSD
PHE-Ethiopia Consortium
Mekele University

Editorial team members

Hailu Araya (PELUM Ethiopia)
Ayele Kebede (Panos Ethiopia)
Tadese Amera (Pesticide Action Nexus- PAN-Ethiopia)
Atalo Belay (Pesticide Action Nexus- PAN-Ethiopia)
Eskadmas Alemu (Youth Network for Sustainable Development-YNSD)
Sara Tewoldebirhan (Mekele University)

Coordinating editor

Mersha Yilma (MELCA-Ethiopia)



Design & Print
ZOBEL Multimedia Production
+251 913506462
zobelmp@gmail.com



CONTENTS

5

5- Processing Taro into flour

Current Issues

7

7- Honoring the Champion of Biodiversity conservation

8- Nutrition and Health-IAASTD

Opinion

11

11- Food, Nutrition and Politics

13- What is expected of whom for a just, healthy and sustainable food system?

Agri-survey

16

16- Industrial Agriculture and Malnutrition - Two Faces of One Coin

19- Do agrochemical inputs have adverse impacts?

20- Agriculture and Health linkage interventions for reducing child mal nutrition in Ethiopia

23-The Uncelebrated Crown of grains

Intellectual page

29

29- Only Agro-ecology Can Tackle the Global Food and Health Crisis

33-Searching for agroecology and questioning commercial agriculture and its food systems

Healthy food and Agriculture systems for productive citizens!

The global food system is changing in line with the ever-increasing global population, technological advancements, scarcity of resources and the resultant scramble for the scarce resources. Although research evidences show that our Earth has still the capacity to feed the population provided that there is a just and fair division of resources, we still have a story of about a billion people suffering from food insecurity and hunger while there are another two billion suffering from obesity resulting from overeating. This is because 80% of the global resource is being controlled by not more than 20% of the world population. How long will this grim reality of our world continue to exist? Who is responsible to rectify it?

Initiatives to combat hunger and malnutrition are not new phenomena. Decades ago there were nutrition education programs, school feeding programs, kitchen garden initiatives, with some of them well-integrated into agricultural and rural development and social movements. But all these initiatives could not abolish the problem once and for all. What makes the issue even more upsetting is the fact that those who are being more vulnerable and affected are smallholder farmers who are expected to feed the non-farmers.

Researchers and advocates engaged in the area of food and nutrition claim that the problem can be addressed not by provision of emergency assistances but by rectifying the power balance. During the former times, farmers were owners and controllers of the land and other natural resources. They conduct ecosystem-based agro-ecology. Farmers produce diversified crops using their own seed varieties on their small farmlands and provide balanced nutrition for their family and other consumers.

After the 21st century, however, the industrial agriculture changed all these. It changed the focus from producing healthy foods through ecosystem-based agro-biodiversity to boosting production through use of high external inputs and few genetically modified seed varieties. And its central agenda became maximizing the profit to be gained from the industry. Driven by this agenda, huge corporations not only started to be engaged in the agricultural sector but also controlled the lands and seeds to put them in their own system.

Then the global agricultural system has been diverted from the natural way in to the industrial system influenced by chemical and technological inputs. The global food system has also been changed correspondingly. The legitimate question in relation to these changes is then "Are these food and agricultural systems healthy and just? Can they ensure sustainability of the agricultural sector?"

One of the justifications for the industrial agriculture is that it is the only means to feed the increasing global population. Advocates of ecological agriculture controlled by smallholder farmers, on the other side, argue, by citing evidences, that this thinking is taking the agriculture and food system to a wrong direction. Most of the points they raise to denounce the industrial system are attributable to the effects of the approach to human and ecosystem health.

Non-communicable health problems like cancer, diabetics, hypertension and obesity, for instance, were only prevalent in the western and European countries where the industrial food and agricultural systems dominated. But now, these diseases are becoming common in developing nations in Africa, Latin America and Asia along with the introduction of the industrial system in these regions. They say, "...therefore, this trend is a sufficient evidence to question the system". They also argue that the millions of dollars spent by the corporate and research worlds on producing expensive genetically modified crops in laboratories would have contributed a lot to human and ecosystem health if spent on building the capacity and empowering smallholder farmers.

According to these researchers and advocates, the only way to ensuring provision of healthy and balanced diet to consumers and sustainability of the agricultural system is making the agriculture based on diversity and healthy ecosystem and developing local food systems with short value chains.

In this issue of our Wegel magazine, we will try to present views, opinions and research findings from different angles regarding the changes in the global agricultural system and its implications on the supply of healthy and balanced nutrition as well as the role of various stakeholders in putting the system back in to the right track.

Farmers in Wolayta and neighboring zones of Southern Nations, Nationalities and Peoples Region mostly face food shortage from the month of March to June. Potato, sweet potato, gocho (obtained from false banana root) and taro are some of the staples in the area. Farmers also plant maize, wheat, teff, pea and haricot bean, though not in large quantities.

To solve the periodical food shortage in the area, an innovation to process taro into flour has been introduced by Send a Cow Ethiopia in 2014.

Taro flour gets a better price and it has an extended shelf life. This Taro Flour Project received a grant from the Food Security and Rural Entrepreneurship Innovation Fund (FSRE Fund), financed by the Embassy of the Kingdom of the Netherlands in Ethiopia. Taro flour goes to market after the taro is peeled, chopped, dried, grinded, packed and labelled. The flour can be consumed as bread, enjera or porridge. This is done by mixing the taro flour with other grains like wheat, teff or maize. It can also be used for delicious snacks.

The innovation organized 226 smallholder farmers (70 female) in four Kebeles of Damot Sore and Boloso Sore Woredas in to 15 processing and marketing groups. The farmers are provided with trainings on processing and marketing taro flour. Each group obtained processing tools and equipment, such as Knives, gloves, plastic sheets, water tanks, weighing scales and labelled sacks.



Processing Taro into Flour

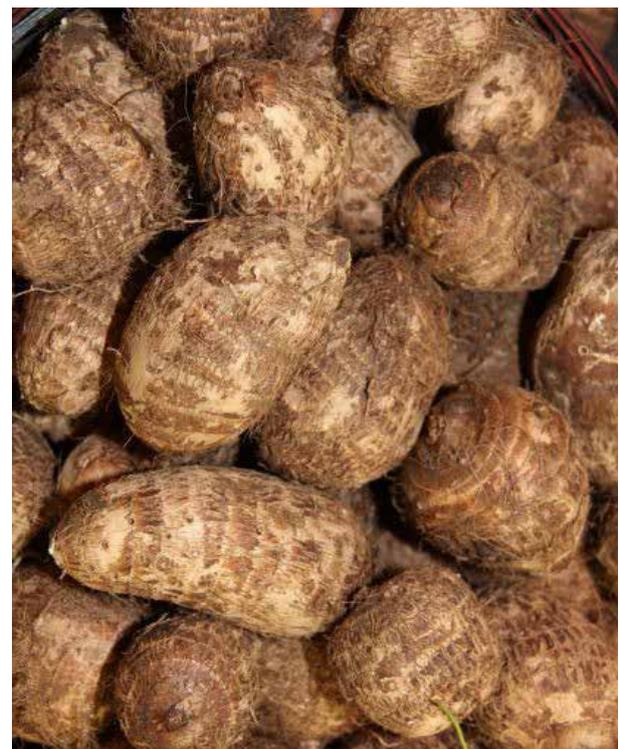
Achieving Food Security by Increasing Shelf Life

Tefera Lencha, 41, is a hardworking proud farmer with high hopes and dreams. Asked why he looks older than his age, he said this is the result of being a farmer - working from dawn to dusk. Though he is proud of being a farmer, and of course for being able to raise and send his five children to school, he doesn't want to leave only the farmland for his heirs. He has plans; he plans to be an Investor. "I will establish grain grinding business here in my kebele. I will also open a shop in the city and be a wholesaler of a variety of grains."

Tefera is the Chairman of Anchocho Chewkele Taro Processing Cooperative – one of the four cooperatives organized and established in Wolayta Zone with the support of Send a Cow Ethiopia under the Taro Flour Project.

"An eye opening innovation"

Smallholder farmers in Wolayta Zone reserve a few plots from their small farmland to grow Taro, a perennial tropical tuber. Especially, to pass that time of year in which they recurrently face lack of food, usually from March to June. Ato Tefera, his wife and their ancestors have been eating Taro for many years just by boiling it and then eat with DaTa (traditional hot sauce,



made of mainly pepper). The Taro Flour Project “opened our eyes”, said Tefera. His family now eats Taro as bread, enjera, snacks, and so on.

‘Setting an example’

Asked how much he earns being the Chairman of his cooperative, he said he is there voluntarily. “I want other farmers to be benefited like me. I want to set an example.” Having learned that taro can be a good way of generating new income, this year he planted it on a quarter of his land. On the rest, three hectares, he plants teff, lentils and green beans. In the past, all the produce would be sold to cover school fees and household costs. Now that the Taro Flour Project brings in additional income, his children can eat Enjera the whole year by mixing taro flour with teff.

“Bereket” – Blessed

Tefera Lencha and his fellow farmers have given a name for the taro seed they are getting through Send a Cow Ethiopia. They call it Bereket, an Amharic word meaning blessed. He explains, “When you mix the Taro flour with other grains, like wheat and teff, it becomes plenty. We bake and eat as much as we need, and yet there is much more.”

Tefera is happy with what he has now. His dream is all about his children. He thinks he is also blessed to raise and send his children to school. He has high hopes that their future is brighter, and he will do his best to achieve that.



FSRE Innovation Fund

Food Security and Rural Entrepreneurship (FSRE) Innovation Fund is financed by the Embassy of the Kingdom of the Netherlands (EKN) in Addis Ababa, Ethiopia and managed by ICCO Cooperation on behalf of AgriProFocus. It was established in 2012 with the overall objective of enhancing food security and rural entrepreneurship. The fund provides financial support for innovative agricultural projects that aim to improve the food security of farming families and enhances income, investment and jobs in smallholder farmers, Producer Organizations (POs) and Small and Medium Enterprises (SMEs).

The fund supported 75 projects under its innovation, matching and up-scaling facilities, focusing on horticulture, poultry, aquaculture, potato, mushroom, taro, coffee, honey, silk, black cumin, chickpea, animal feed, and so on. Project summaries are found at:

www.agriprofocus.com/fsre-fund

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COOPERATION >

AgriProFocus Ethiopia

www.agriprofocus.com/ethiopia

AgriProFocus is an international network with Dutch roots that promotes and drives farmer entrepreneurship among farmers and their organisations. AgriProFocus offers a central place (online and offline) where professionals in agriculture, their companies and organisations meet, do business and share resources and knowledge.

In Ethiopia (as in 13 more countries), AgriProFocus is building a country network, supported by an online platform. In Ethiopia we facilitate active real life Platforms (also called Innovation Communities) on AgroEcology, Soil health Management and on Nutrition Sensitive Agriculture. Here we focus on agricultural practices that promote higher nutritional value of the food that is produced, including traditional varieties.

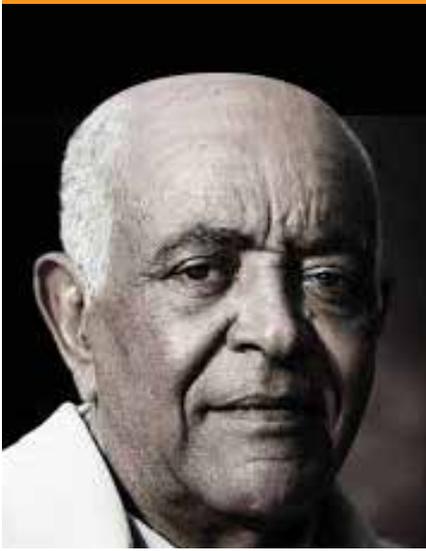
You can be a member!

Sign Up at: www.agriprofocus.com/registration

Then you can also be a member of the Nutrition Sensitive Agriculture Platform. Please have a look at:

www.agriprofocus.com/innovation-community-nutrition

If interested, become a participant!



Honoring the Champion of Biodiversity Conservation

His name is Dr. Melaku Werede. He is a person who dedicated his life to conservation of biodiversity; especially agro-biodiversity. He lived almost all his life teaching, researching and advocating about biodiversity and managing conservation of biodiversity.

Dr. Melaku is the

founder of the first plant genetic resources center in Africa, the former "Gene Bank" current Ethiopian Biodiversity Institute (EBI). He served as the director of the center for almost 16 years, from 1979-1993.

At African level Dr. Melaku was also the first Chair of the African Committee for Plant and Genetic Resources and has been instrumental in the setting up of the African Biodiversity Network. He also served in the international forums at various levels. He has served as Chair of the UN Food and Agriculture Organization's Commission on Plant Genetic Resources and a Board member of (among others) the International Plant Genetic Resources Institute (IPGRI) and the Rural Advancement Foundation International (RAFI).

After retiring in 1994, he joined an NGO named as Seeds of Survival Program of Ethiopia, which he founded and worked on conservation of local seed varieties. He established Community Seed Banks (CSBs) at various parts of the country through the Seeds of Survival program. After totally retiring, Dr. Melaku is still serving as an advisor for activities relating to conservation of biodiversity and traditional ecological knowledge.

Dr. Melaku has won various national and international awards for his scientific researches and contribution to conservation of genetic resources, especially farmers' seed varieties. Among them is the Right Livelihood Award that he got in 1989. He also got the Outstanding International Contribution Award, in 2008, from

the National Green Award Foundation, headed by the ex Ethiopian president Girma Woldegiorgis.

The Ethiopian Biodiversity Institute (EBI) has recently organized an event to celebrate 40th year anniversary of the institute and the 15th international day of biodiversity. The event included exhibiting biodiversity conservation activities undertaken in the country by the institute and its governmental and non-governmental partners. On the closing session of this event, EBI named the building found in the main compound of the institution around Kebena where the head office is situated as "Dr. Melaku Werede Building". The institute called the building in Dr. Melaku's name to recognize his outstanding contributions for the establishment and development of the institution.

We wanted to report the event in this issue of our Wegel magazine as recognizing outstanding contributions in the development endeavors of the nation is something to be commended and Dr. Melaku's works are among those we advocate in this magazine.



Nutrition and Health

International Assessment of Agricultural Knowledge, Science and Technology for Development

The International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD) provides information on how agricultural knowledge, science and technology can be used to reduce hunger and poverty, improve rural livelihoods and human health, and facilitate equitable environmentally, socially and economically sustainable development.

The United Nations, the World Bank and the Global Environment Facility (GEF) sponsored the assessment. Five

UN agencies were involved: the Food and Agriculture Organization (FAO), the UN Development Program (UNDP), the UN Environment Program (UNEP), the UN Educational, Scientific and Cultural Organization (UNESCO) and the World Health Organization (WHO).

As it deals with a current issue of food and nutrition, we have presented a summary of the report containing the gist as follows:

The components of health are multiple and their interactions complex.



The health of an individual is strongly influenced by genetic make-up, nutritional status, access to health care, socioeconomic status, and relationships with family members, participation in community life, personal habits and lifestyle choices.

The environment – natural, climatic, physical, social or workplace – can also play a major role in determining the health of individuals. Agricultural knowledge, science and technology (AKST) can play an important role in improving human health and nutrition. Although current global production of food calories is sufficient to feed the world’s population today, millions suffer from health

problems relating to food and nutrition. And these problems are mainly positioned at two extremes.

At one of the extremes we find millions suffering from health problems relating to lack of food and malnutrition and at some parts of the world even die of hunger while at the other extreme we find many people suffering from health problems resulting from over eating.

The following is an overview of health problems resulting from lack of food and eating too much food as well as solutions suggested by researchers involved in the area of food and nutrition.



Under Nutrition

Food insecurity arises when people do not have physical and economic access to sufficient safe, nutritious and culturally acceptable food to meet their dietary needs. An adequate intake of calories does not ensure that the need for micronutrients has been met.

Being underweight due to wasting (i.e., low weight-for-height, indicating acute weight loss) or stunting (i.e., low height-for-age, indicating chronic restriction of a child's nutrition), micronutrient deficiencies, as well as

being overweight, are forms of malnutrition. The prevalence of malnutrition and infectious disease among the young has important implications for the health and well-being of the population, because ill health in childhood can affect an individual's physical and mental development, susceptibility to disease, and capacity for work.

Approximately 852 million people around the world are unable to obtain enough food to lead healthy and productive lives.

Chronic health problems resulting from over eating

Over-nutrition is associated with increasing rates of worldwide obesity and chronic diseases, including heart disease, diabetes, stroke and some cancers. These chronic diseases account for nearly half of the global burden of disease, with the burden growing fastest in low and middle-income countries.

More sedentary, urbanized lifestyles are expected to contribute to the trend. It is estimated that by 2020, 60% of the disease burden in developing countries will result from non-communicable diseases exacerbated by obesity.





The following are some practices and policies for moving toward improved health and nutrition:

- Use an integrated agro-ecosystem and human health approach to increase food security and safety, decrease the incidence and prevalence of infectious and chronic diseases, and decrease occupational exposures, injuries and deaths.
- Invest in robust agricultural, public health, and veterinary detection, surveillance, monitoring and response systems to identify the true burden of ill health and cost-effective, health promoting strategies and measures.
- Promote policies and programs to improve micronutrient intake and diversify diets.
- Increase food safety via effective, coordinated and proactive national and international food safety systems; legislative frameworks for identification and control of biological and chemical hazards; and farmer-scientist partnerships for the identification, monitoring and evaluation of risks.
- Support policies that explicitly recognize the importance of improving human health and nutrition, including regulation of food product formulation and pesticides in foods and drinking water; international agreements and regulations for food labeling and health claims; and creation of incentives for the production and consumption of healthy foods.
- Strengthen the capacity of agricultural, veterinary, and public health systems to reduce the spread of infectious diseases, reduce exposure to immune-compromising factors and toxicants.



Food, Nutrition and Politics

Million Belay (PhD): From MELCA-Ethiopia

About a year ago I was invited to speak on a conference called EAT; held in Stockholm, Sweden. Renowned nutrition experts from Sweden and Norway organized the conference. The main agenda of the meeting was "Is our food and eating style sustainable?" Many experts in the area, including those from Sweden and Norway, have participated on the meeting.

During the session to present my speech, I got the chance to speak together with a lady representing Melinda and Gets Foundation. After the session, the lady and I sat to discuss in the presence of a mediator. She was speaking about a program her organization is planning to implement as a pilot project in five African countries, including Ethiopia. According to her explanation, the program aims to provide balanced nutrition to children. While we were discussing, I asked her "When my wife gives birth to a baby, my mother brings a food prepared out of about ten types of grains to feed the baby. Have you consulted African mothers when you plan such a feeding program?" She did not have an answer. And I know she would not have one. I asked the question deliberately to give a lesson to her, the other listeners and possibly the Melinda and Gets foundation.

These days, we are witnessing that in any market of commodities the conflict of interest among stakeholders around the commodity to make more profit out of it is becoming like a battlefield. Food and nutrition are not exceptional to this. One thing that all involved in the area of food and nutri-

tion agree up on is the fact that now a days, non-communicable diseases such as obesity, diabetics, hypertension, heart problem and cancer resulting from lack of healthy and balanced diet are increasing at an alarming rate. This is becoming a serious problem. And the absence of consensus among the concerned organs on the root causes of the problem and the solution is even a more serious problem.

One side of the problem is the fact that giant international companies involved in the area are not only considering health problems arising out of lack of healthy and balanced nutrition as good market opportunity but also contributing to its aggravation. In terms of supply, processed foods and drinks labeled as "rich in minerals and vitamins" are abundantly available in the supermarkets. The companies are also controlling the natural sources of the foods and drinks. Health problems arising from lack of healthy and balanced food are becoming the sources of profit for medical industries and pharmacies. They also invest a lot of money to promote this. Customers will be attracted by this and eventually fall in their trap.

Opponents of the foregoing system criticize it as follows:

They call those who advocate increasing agricultural lands and products through use of new technologies to feed the increasing global population 'Neo Malthusians'. Malthusian is a scientist who predicted that there would be a human catastrophe resulting from famine, unless world's population is controlled. Neo Malthusians claim that in



addition to shortage of food, increase in the global population will bring about conflict and tragedy resulting from the scramble for land and natural resources. Neo Malthusians advocate this with the purpose of getting good market for their chemical fertilizers, drugs, pesticides and processed foods and drinks. They say, the end result of this is creating people suffering from lack of healthy and balanced diet and use it as an opportunity to make wealth.

After criticizing the system in the foregoing manner, they suggest the following as solutions to the problem;

- The first solution is to support, both by policy and finance, food system based on diversity and organic farming, as well as eradication of use of chemicals that pollute the environment.
- The second solution is to strengthen food sovereignty at local levels. People should limit their food sources to diversity based locally produced organic foods. The community should build its living and eating style on its own culture. As much as possible, we should opt for foods that we know their sources rather than processed foods that we do not know their sources. Smallholder farmers produce 70% of the global food. So they should be supported by policy and finance.

- In order to solve problem of lack of healthy and balanced food, empower communities to determine their own future direction. Support supply of balanced diet to pregnant mothers, educate the community about healthy foods and food systems and enable employees to purchase and supply healthy and balanced food to their families.

- These days, international forums or policy frameworks are making huge corporate companies that have controlled the agriculture and food industry their members in the name of "stakeholders' participation". This is creating an opportunity for the powerful companies to influence the policy directions in their own interest. Hence, the participation should be limited to "right holders" instead of "stakeholders" so that these forums should be controlled by those who stand for the rights of the majority people.

- Finally, it should be well understood that international agreements should be public health and rights centered.

Now we have seen that how big and powerful international companies are benefiting from the problems they have designed and placed in the food and agriculture sector. I hope all of us understand now that lack of healthy and balanced food has political aspects in it and try to contribute our part in shaping laws and policies in relation to food and nutrition in our desired form.

What is expected of whom for a just, healthy and sustainable food system?

Gebremedihin Birega: Consumer Rights Advocate

Food is an essential basic need for all living organisms, in general and for human beings in particular. The origins of food products is directly or indirectly agriculture. Farmers produce food and sell directly to consumers or to food processing plants that preserve and transform it into a variety of food products.

History tells us that around 10,000 years have passed since humans began to practice agriculture. Since then, farming has undergone dramatic changes. And we are witnessing that the changes are still going on. In this century alone, new technologies and methods have been developed which have greatly increased the variety of agricultural inputs available to farmers and also enhanced the productivity of farming. As a result, a constantly declining population of farmers is feeding today's rapidly growing world population.

There is a general consensus among those actors engaged in the agriculture, food and nutrition sector that a food believed to be highly beneficial to health is a food grown organically and free of chemical additives. A food is believed to be good for one's health when it has no artificial ingredients. Professionals in the health sector also confirm that people who eat healthy foods free from chemical additives are less vulnerable to non-communicable health problems such as cholesterol, hypertension, diabetics, stroke, infections and cancer.

Nutrition professionals usually do not use the term "healthy foods". That is because the fact that a food is healthy or not will very much depend on how much we eat of it how often, what our nutritional needs are, what else we eat in the diet. In food system, there is no single complete food that provides all the nutrients we need. So including a variety



of different foods (vegetables, whole grains, fruits, dairy products, legumes, lean meats, poultry and fish and enough fluids like water) and watching portion sizes is key to a healthy diet.

Another understanding of healthy food is through sustainable eating, which combines healthy food with environmentally friendly food. The two are seen as complementary, not separate entities. In 2010, the FAO defined a sustainable diet as: ...those diets with low environmental impacts, which contribute to food and nutrition security and to healthy life for present and future generations. Sustainable diets are protective and respectful of biodiversity and ecosystems, culturally acceptable, accessible, economically fair and affordable; nutritionally adequate, safe and healthy; while optimizing natural and human resources.

To ensure health of the food, all the chains from farm to fork should be taken into account. The

different stages of the food production practices and procedures should be examined to ensure the safety of our food. The complex process by which food reaches the consumer's table and the systems and technologies that ensure the quality and safety of food from farm to fork should be explained.

During the former times, farmers produce variety of foods that they consume or sell directly to the consumers. The value chain was so short: from the farmers (producers) to consumers. But now, the industrial revolu-



tion, and more recently, modern food technology has changed all this. The majority of people today are far removed from the sources of food they eat on daily basis. They do not know where the food they eat is produced, who produces it, how it is processed and how long it has stayed out there.

Demographic and social changes have contributed a lot to the food industry's evolution. The fast pace of modern lifestyles, the increase in single-person households, the increase in one-parent families and working women have led to an increasing demand for convenient and processed and packed foods, in addition to their nutritional value. But, while there is more awareness of the connection between food and health, there is less time available for cooking. The pres-

ervation and transport of food has become an essential industry supplying the consumer with a wide variety of products.

However, each time a consumer picks up any processed and packed food at the local supermarket, he or she is unaware of the complex food chain through which the product has evolved. Modern food technology is a sophisticated industry. Yet, despite all the innovations and ever-higher levels of food safety, food borne illnesses have increased across the population.

Major factors for this increase are: diversion of the food production from ecological practices on the one hand; and lack of careful food preparation in the home due to the reduced awareness and the detachment of the consumer from the "roots" of the food supply chain. For this reason, food safety has become even more important than ever before.

Tweaking practices can improve some of the specific outcomes of industrial agriculture, but will not provide long-term solutions to the multiple problems it generates. What is required is going back to a fundamentally different model of agriculture based on diversifying farms and farming landscapes, replacing chemical inputs, optimizing biodiversity and stimulating interactions between different species, as part of holistic strategies to build long-term fertility, healthy agro-ecosystems and secure livelihoods, i.e. diversified agro-ecological systems. Diversified agro-ecological systems can also pave the way for diverse diets and improved health.

Although at a slow pace, change is already happening. Industrial food systems are being challenged on multiple fronts, from new forms of cooperation and knowledge-creation to the development of new market relationships that bypass conventional retail circuits. Political incentives must be shifted in order for these alternatives to emerge beyond the margins. A series of modest steps can collectively shift the centre of gravity in food systems. Diversified systems produce diverse outputs, making it difficult to gage

their implications for global production volumes of staple crops and for food security in the narrow terms in which it is often understood.

As indicated in the recent publications of FAO, Consumer interventions are crucial to improve efficiency of food systems. Consumers can be agents of change with regards to sustainable consumption and adopting sustainable diets. They can influence the whole food chain to a certain degree by making sustainable dietary choices, which will influence what, where and how producers produce and who produces. In addition, consumer behavior also contributes to how much food is consumed and wasted.

In order for consumers to make healthy food choices and change their behavior, awareness needs to be raised through provision of information and education. Consumers need to be educated on where their food comes from, how it was produced, how many and which resources were used and what is the impact on the environment, so that they are able to make informed choices that are healthy, nutritious and sustainable. Different governments are taking varying measures to ensure the supply of healthy foods in different countries.

The government of Brazil, for instance, has issued a National Plan for Agro-ecology and Organic Production. The plan is focused on fostering organic and agro-ecological production as a contribution to sustainable development. The scheme targets increased consumption of healthy food, and

looks to achieve this in part by using and conserving traditional plant and animal genetic resources. European governments like Denmark and France are also levying special taxes on industrial foods that affect human and environmental health.

Food safety is best ensured by the shared responsibility of everybody involved with food from the professional to the consumer. All along the food chain, various procedures and good practices are implemented to ensure that the food that reaches the consumer's table is fit for consumption. To this end, consumers should be aware of the fact that the best way to practice food safety is to be well informed about the basics of food: natural processes and, especially, the hazards to food from chemicals - both those naturally occurring and those coming from the environment. The underlying principle should also be limiting our foods to locally produced and unprocessed foods as much as possible.

Ultimately, everyone benefits from being better-informed and practicing healthy food production and healthy eating, which implies healthy and productive citizens. Even for producers, supplying healthy foods guarantees consumer confidence and thereby continued demand for healthy food products, which ultimately results in profitable business in food production.





Industrial Agriculture and Malnutrition - Two Faces of One Coin

Yonas A. Yimer: AFSA

Early in June the International Panel of Experts on Sustainable Food Systems (IPES-Food) released a ground-breaking report titled, 'From Uniformity to Diversity: A paradigm shift from industrial agriculture to diversified agroecological systems'. About two weeks later The Global Nutrition Report 2016 was released. Not so surprisingly, these two reports agree on the scale of the global malnutrition challenge, which according to the latter directly affects one in three people.

Malnutrition is a broad term commonly used as an alternative to 'under nutrition', but which technically also refers to over nutrition. People are malnourished if their diet does not provide adequate nutrients for growth and maintenance or if they are unable to fully utilize the food they eat due to illness (under nutrition). They are also malnourished if they consume too many calories (over nutrition).

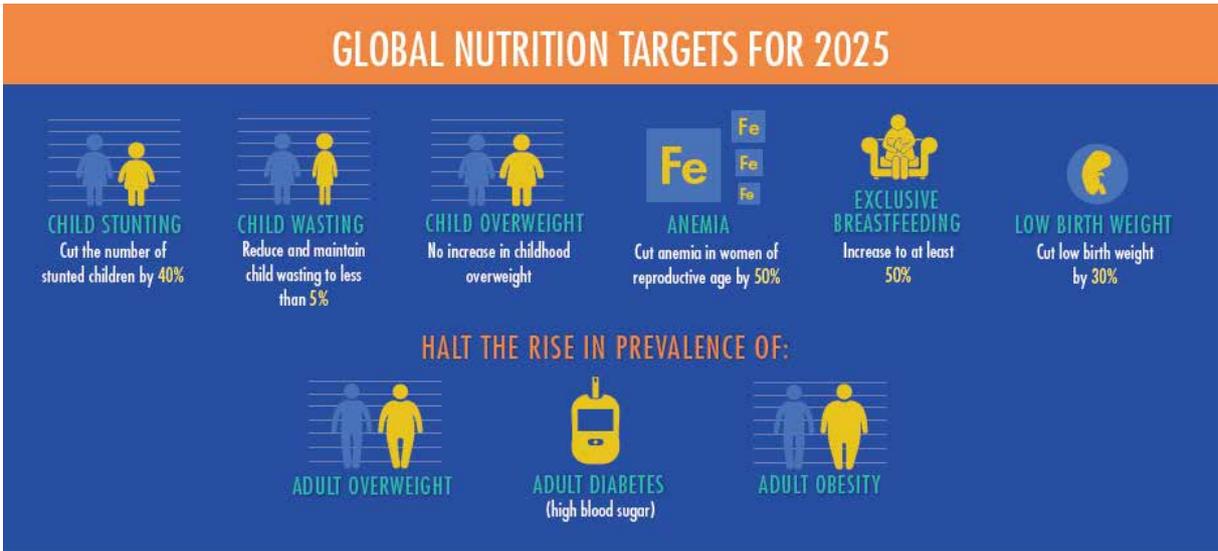
The Cost of Hunger in Africa (COHA) study which informs policy makers on how economic growth is affected by undernutrition reported in 2014 that stunted children as having a higher risk of repeating grades in school and dropping out of school. Grade repetitions are costly to the education system and to families. For instance, undernutrition costs Ethiopia about USD 4.7 billion which is estimated to be 16.5 percent of its GDP, Egypt USD 3.7 billion and Uganda USD 899 million. Within the five years prior to 2014 the number of deaths associated with child undernutrition in Ethiopia was 378,591 while the total child mortalities associated with undernutrition amounted 28 percent.

Unfortunately, malnutrition is inter-generational. Babies born to underweight or stunted women are likely to be underweight or stunted. In this way, malnutrition passes from one generation to another as a grim inheritance.

The Global Nutrition Report says that in the



year 2016 out of the world population of seven billion about two billion people suffer from micronutrient malnutrition, nearly 800 million people suffer from calorie deficiency. Similarly, the IPES-Food, quoting FAO and WHO, reports 795 million people as hungry, two billion people as micronutrient deficient, nearly two billion people as obese and overweight. Of course, there are some overlaps between those suffering from hunger, micronutrient deficiencies and overweight and obesity, but the fact remains that the problem is of a massive extent.



What needs to be done?

The Sustainable Development Goals (SDGs) enshrined the objective of ending all forms of malnutrition by 2030. But how can that be achieved? Change course.

When it comes to the real question of what it will take to end malnutrition in all its forms IPES-Food is bold and unapologetic. It states, 'tweaking practices can improve some of the specific outcomes of industrial agriculture, but will not provide long-term solutions to the multiple problems it generates.' Citing studies by noted scholars, the report recognizes the rise of industrial agriculture having impacts on the nutrient content of foods. The excessive emphasis on promoting energy-rich staple cereals resulted a decline in consumption of pulses and other minor crops with high nutritional value. With excellent evidence the IPES-Food report warns that if we do not entirely shift

our food systems from industrial agriculture to diversified agroecological systems it is impossible to achieve our goals of realizing a world of healthy people.

It is common knowledge that we only reap what we sow. And malnutrition is at least partly caused by the limited varieties of foods the global industrial food system provides humanity. Few crops have dominated the production of food. For instance, maize, wheat and rice account for 50 percent of plant-based food intake despite the fact that 7,000 plants are used by humans as food. This undoubtedly reduces our diet choice and ultimately exposes us to malnutrition.

Industrial agriculture keeps a vicious cycle that can now only be broken by shifting our food systems toward diversified agroecological systems. IPES-Food elaborates on how a diverse and balanced diet can ensure exposure to a broader set of nutrients and non-nutrients which have antioxidant, anti-cancer and other beneficial properties.

'To completely end malnutrition in all its



forms' it is necessary that we shift our farming systems toward diversified agroecological systems which can provide diversified food items and thus balanced diet. The first key message of the IPES-Food report reads, 'today's food and farming systems have succeeded in supplying large volumes of foods to global markets, but are generating negative outcomes on multiple fronts: wide-spread degradation of land, water and ecosystems; high GHG emissions; biodiversity losses; persistent hunger and micro-nutrient deficiencies alongside the rapid rise of obesity and diet-related diseases; and livelihood stresses for farmers around the world.'

Similarly, the Global Nutrition Report points out that 'diet is now the number-one risk factor for the global burden of disease. The diet choices available to us are shaped by our food systems, which are not sufficiently well geared toward enabling us to consume high-quality, healthy, and nutritious diets.

Plausible ideas exist on how to make food systems work harder for nutrition while enhancing sustainability'. That plausible idea can only be agroecology as José Graziano da Silva, FAO's Director-General said in 2014 at the International Symposium on Agroecology for Food Security and Nutrition, 'Agroecology continues to grow, both in science and in policies. It is an approach that will help to address the challenge of ending hunger and malnutrition in all its forms, in the context of the climate change adaptation needed."

Unlike industrial agriculture which focuses on maximization of yield/economic returns from a single product or limited number of products, agroecology maximizes multiple outputs which enhance diversity on the farm and at the table. Therefore, it is time for us to shift from uniformity to diversity to realize a world free of malnourished people.

Do agrochemical inputs have adverse impacts?

Atalo Belay: PAN-Ethiopia

Food is one of the basic necessities for human beings to live and agriculture is an economic sector which serves as the main source of food. The agricultural sector has different challenges which are setbacks that reduce its production and productivity. Climate change, reduction of soil fertility from time to time due to various reasons, land degradation and moisture scarcity are among the abiotic factors while crop pests, disease, and weeds are among the biotic factors which can also affect

crop production in terms of both quantity and quality. To reduce the adverse impacts of these challenges on agriculture, farmers use different mechanisms which they think and believe can help to maximize their production. Farmers use agrochemicals including fertilizers and pesticides as soil fertility enhancement and pest management options respectively. Despite the benefits of agrochemicals for crop production, they have adverse impacts on human health, the environment and



biodiversity as a whole.

Pesticides are among the widely used agrochemicals which can also pose more adverse impacts on human beings, cause environmental pollution and affect non-target organisms. Pesticide exposure and poisoning of human beings can be caused directly or indirectly. Direct exposures can be caused during transportation, storage, preparation for application and during application when people come in direct contact with pesticides. Direct pesticide exposure can be reduced and/or avoided by taking proper precautions especially by using proper personal protective equipment while handling pesticides. On the other hand an understanding and awareness about the properties of pesticides being used is vital to take the necessary precautions to avoid exposure.

Once pesticides are applied and entered into the environment, human beings can be exposed to pesticides through contaminated soil, water, air and by consuming food which are grown with the use of pesticides. Different studies showed that crops grown with the use of pesticides, most of the time, have pesticide residues on them. Human beings get exposed to pesticides while consuming food which have residues, hence may cause short term or long term health problems.

Adverse impacts of agrochemicals on human health, the environment and biodiversity can be reduced by implementing ecological farming techniques which included environmentally sound soil fertility enhancement and pest management techniques. These alternative environmentally sound ecological farming tech-

niques can be implemented by smallholder farmers but smallholder farmers need to be trained on the practical application of the farming techniques to show the effectiveness of the farming systems.

In Ethiopia, a number of NGOs are involved in training smallholder farmers on the use of ecological farming techniques to reduce the impacts of agrochemicals by implementing alternative farming techniques. PAN-Ethiopia is among those NGOs working with smallholder farmers mainly training farmers to raise their awareness on the negative impacts of pesticides, responsible use of pesticides and use of personal protective equipment during pesticide application. In addition to that the organization also provide training for farmers on practical application of ecological farming techniques especially the use of integrated pest management and natural soil fertility enhancement techniques. Farmers are trained in a season long training sessions via farmer field schools which is participatory and discovery learning. These learning techniques increase the capacity of farmers in implementing environmentally sound farming systems.

Training farmers on the practical use of ecological farming systems is among the sound techniques to reduce the use of agrochemicals as agricultural inputs. This can help farmers produce crops which are free from pesticide residues which can play a vital to reduce and /or avoid human health problems which can be caused by agrochemicals.

Agriculture and Health linkage interventions for reducing child malnutrition in Ethiopia

Girmay Ayana: Ethiopian Public Health Institute

Inadequate dietary intake and disease are directly responsible for malnutrition; but there are multiple underlying determinants that exacerbate these direct causes, including food insecurity and inadequate childcare practices.



These underlying causes of malnutrition mainly concern the household and community level. Given the range of drivers of nutrition, spanning multiple sectors, tackling malnutrition demands a multi sectoral response.

Agriculture is of fundamental importance to human nutrition, both as a direct determinant of household food consumption and through its role in livelihoods. No other sector is better placed to address food production and consumption than agriculture. But how to make agricultural production work more for nutrition is one of the challenges

within the global food and nutrition security. The leading principle is that households should aim to invest resources in diversified agricultural production or in off-farm activities, in order to positively affect their nutritional intake. In addition, agricultural production must guarantee food and nutrition security for the population while maintaining their natural resource base.

Linkages between production diversity and dietary diversity (quality) are different at different levels. From a macro perspective, higher dietary diversity requires higher production diversity. However, this does not always hold true at the micro level. The cor-



relation between on-farm production diversity and household nutritional quality can be positive or negative dependent upon market access and efficiency, plus various social factors. Agricultural development initiatives have the potential to improve the nutrition of most vulnerable to malnutrition, especially mothers and children from conception to 2 years of age.



Agricultural interventions can make important contributions in the form of increasing production and income and, often, household food consumption. However, health and environmental conditions, health status, and childcare and feeding practices will ultimately determine whether increased food access and consumption has a positive effect on nutritional status.

In Ethiopia, institutions operating in the agriculture and health sectors have little interaction, and there is little knowledge available on how inter-sectoral solutions are facilitated and sustained. The extent of coordination in delivering nutritional services between the health and agriculture sectors very is limited and lack of knowledge, commitment, resources, and competing intra-sectoral work priorities are ag-



agriculture-health linkage barriers to nutrition interventions in Ethiopia.

The Ethiopian public health institute is one of the major sources of health and nutrition evidence for policy makers, nutrition planners and program implementers.

Currently the Ethiopian public health institute in collaboration with Ministry of health, ministry of agriculture and different partners in agriculture and nutrition sectors has designed a project, which can link agriculture

and health sectors for reducing under nutrition sustainably in the country.

The project help to create inter-sectoral coordination for realizing nutrition sensitive agriculture, emphasizing the need to better understand how the agriculture sector might coordinate with health sector in the delivery of nutrition-related services for greater impact in reducing stunting using the existing health and agriculture extension systems.



THE UNCELEBRATED CROWN OF GRAINS

Bekelech Tola (Prepared exclusively for Wegel)

Bekelech Tola is a social development worker. She is an advocate of farmers' seeds and sustainable agriculture as well as nutrition content and medical value of traditional crop varieties. She has written some books in Amharic language around same issue. Some of her books are: Traditional medicine at home, preparation of fodder and traditional medicine at home, About plants-for children and youth, Injera from variety of crops and also the recently published "Teff Yenia Bereka" meaning 'Teff our blessing'. She has also prepared an article on millet for this Wegel Magazine.

Hope you will enjoy reading it.

Forward

Finger millet (scientific name *Eleusine coracana*) is an Ethiopian crop by origin. They say it has got its Amharic name from its quality. "Degu" means the good, comfortable or generous. The farmers say the name "Degu" has been gradually changed to "Dagusa". Now it is called Dagusa in Amharic, Daguja in Oromiffa and Dagusha in Tigrigna.

The value of finger millet as food is not well recognized both by the farmers (producers) and urban consumers. Not much research has also been conducted regarding its nutritional value. A few researchers, who have studied the grain, however, have much to say about it. So far it is being used merely for the preparation of traditional drinks like "Tella" and "Araki". But how long will this valuable grain will stay ignored?

Finger millet, the crown of grains, grows at mid land and wet low land agro-ecologies. It belongs to the grass family and is a seasonal crop. It produces the seeds on finger like structures at the top of the plant. That is why it is called finger millet.

The varieties of Finger millet found in Ethiopia include the white, brown, reddish brown and black finger millets. The white is not much available on the market except in Adiarka district of North Gondar, low lands of Tigray and around Bahir dar in Gojam. The brown or reddish brown is available in Gojam, Welega and around Shashemene town.

Finger millet is a crop that originated from Ethiopia; yet its food value is not much known. It is used only for preparation of traditional drinks in few areas. However, Finger millet is the crop for preparation of best food in other countries, like India, that have taken it from Ethiopia.

The renowned Indian environmental advocate and activist, Vandana Shiva has been in Ethiopia in 2012. She was invited to make a public speech at the National Theatre in Addis; and on that occasion, while she was talking about smallholder traditional farming and agro-biodiversity, she said

"Our grandfathers brought Finger millet from Ethiopia to India. Now it is one of the lovely foods in India; but you made it trivial..."

Finger millet is a crop resistant to draught. It has even done well during the recent long dry spell that destroyed many crops across the nation as a result of the El Nino.

Finger millet is among the crops very rich in nutrition content. The purpose of this article is to inform the public, supporting with research evidences, the fact that the grain is a nutritious food and it can well contribute to the food security and balanced diet supply to our community.

The grain being acclaimed for its rich content of calcium and iron is teff. But the calcium and iron content of Finger millet is even more than that of teff.

The other quality of Finger millet is its resistance to pest. Producers of the crop testify "it can be stored for up to ten years without being affected by pests like weevil". They also say other crops susceptible to pests (weevil) can be stored safely for a long time if mixed with Finger millet.

In urban areas of Ethiopia, especially around where it is not produced, Finger millet is commonly used for preparation of traditional drinks. It is not among the crops regularly used for food, though its nutrition content is richer than the others. In terms of preparation for food, it is fit to be prepared in the form of any food commonly eaten in Ethiopia, like injera, bread and porridge.

A research conducted about Finger millet in



Ethiopia some 30 years ago explains that its nutrition content is so rich. The following information is taken from a book entitled "Health treatment at home: Home made traditional natural medicines" published in Amharic;

Food items in 100gm	Energy Calori	Protein gram	Fat gram	Carbohydrate gram	Calcium m. gram	Iron m. gram
Barley	334	9.3	1.9	75.4	47	10.2
Maize	356	8.3	4.6	73.4	6.0	4.2
Oats	336	12.4	2.3	72.2	55	8.8
Wheat	339	10.3	1.9	71.9	49	7.5
Finger millet	326	7.2	1.4	77.1	386	85.1
Sorghum	338	7.1	2.8	76.5	30	7.8
Teff (white)	339	11.1	2.4	73.6	156	18.9
Teff (brown)	331	8.1	4.1	72.1	153	87.0

Source: Nutrition education 2nd edition, Ethiopian Food Research Institute, 1981, Addis Ababa

As can be seen from the table, the carbohydrate and energy content of Finger millet is almost equal to that of the other grains. Its calcium content, however, is, double that of teff, 8 times that of barley and 60 times that of maize. Iron content of Finger millet is almost equal to that of brown teff, 20 times that of maize and 11 times that of wheat.

This is according to a research conducted 30 years ago. One can guess the result may not be the same if a similar research is conducted now. That is because lots of chemical fertilizers and pesticides that affect the soil and the ecosystem are being used currently.

Finger millet in the eyes of others

The UN Food and Agriculture Organization (FAO) said the following about Finger millet: Finger millet with scientific name "Eleusine coracana" is a common food grain in many

countries. It is called kurrakan millet in India and African millet or rapoko in South Africa. Special qualities of the crop are:

- Its being gluten free
 - Its high content of calcium and iron
 - Its being abundant in grain production
- Finger millet has also some good qualities that make it the ideal crop for smallholder farmers. These are:
- Its being suitable for intercropping
 - Its being productive even on poor soil and unfavorable weather conditions

Source: Food and Agriculture Organization of the United Nations Traditional Crop of the Month

An article on Finger millet entitled Finger Millet: A Once and Future Staple and prepared by the Indian based organization called Nourishing the Planet and posted on Matt Styslinger reads as follows:



“Finger millet is not much known by the westerns. But it is known in many other parts of the world, especially South Asia and Africa. It is being produced in these areas for the past thousands of years. The centers of origin of the African Finger millet are the highlands of Ethiopia and Uganda. Finger millet is among the major crops rich in mineral and nutrition content.

Starch content of the grain is high and its protein is easily digestible. In terms of iron content, Finger millet is the third crop next to Amaranth (Katila) and Kinuwa. Some varieties of Finger millet in Uganda and South Sudan have high methionine (amino acid) content.

There is severe lack of this amino acid in communities that use high starch root foods such as Cassava.

Finger millet is a preferred crop in lowland areas where the moisture content is low. After being sown, it can stay in the soil for several weeks until it gets some water to germinate and grow.

It also matures in about two months. Yet, it is a crop lacking the attention of farmers,

researchers and the public at large.

Finger millet in Ethiopia for Injera

Process of preparation

Follow the following steps to make good injera from Finger millet mixed with teff or other grains commonly used for making injera.

Pound the grains gently to remove the husks.

Also wash to remove the dust and put it in the sun to dry. Then mix it with the other



grain at an appropriate proportion and get it ground to flour. It can be mixed with brown teff, barley or cassava.

Nutrition content of Finger millet

The following table shows nutrition content in 100gm of injera or bread made of Finger millet as compared to the same amount of injera or bread from brown teff:

Injera or bread	Food energy Calorie	Water content %	Protein Giram	Carbohydrate Giram	Calcium m. Giram	Phosphorous m. Giram	Iron m. Giram
B. Teff	155.9	60.2	3.4	34	50	115	14.5
F. Millet	174.2	55.8	3.9	38.3	122	86	18.9

Source: Food composition table for use in ethiopia: Ethiopian Health and Nutrition Research Institute

Finger millet as medicine

- It is good to solve problem of anemia as it has high iron content. It can be prepared and taken in any form of food like injera, bread or porridge.
- It also has the potential of healing swelling of pancreas resulting from chronic malaria.





Conclusion

Ethiopian farmers have been producing Finger millet for a long time now. Yet, the crop has not got much attention by researchers and nutrition experts. Some of the few researches show that it is an ignored nutritious food that can contribute to tackling the problem of food security and malnutrition. Besides, it has a medicinal value, a cure to some diseases.

It can also be used as fodder for livestock. It is also an ideal crop that can well adapt to the current climate changes. Dear readers; please ponder on the following questions or discuss them with someone to contribute your parts in the future of Finger millet in Ethiopia:

- What are the factors hindering us from not producing or using Finger millet as a common food crop?
- What shall we do to improve the status of the crop as food in the future?
- Who is responsible to introduce its values as food?
- What do local researches on Finger millet tell us?

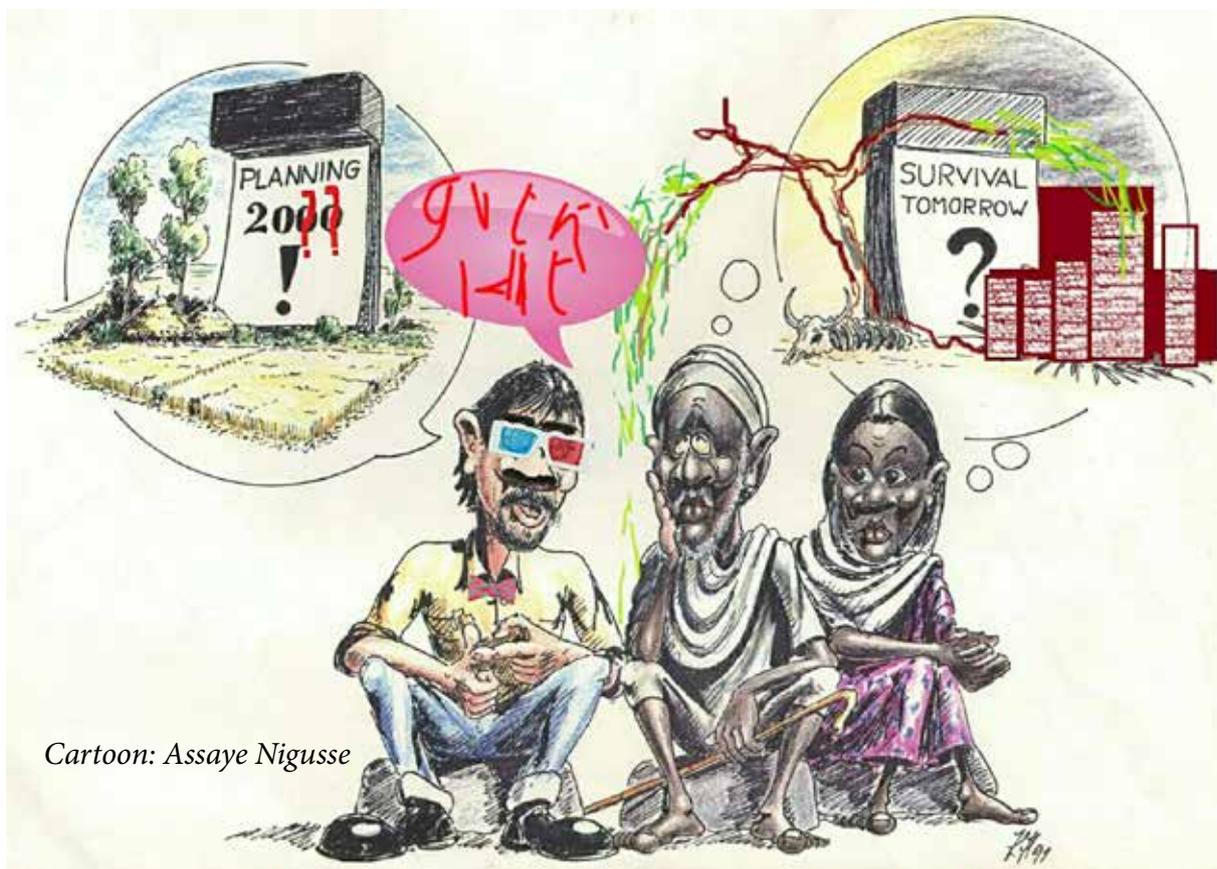


INTELLECTUALS' ANALYSIS

Only Agro-ecology Can Tackle the Global Food and Health Crisis

Julia Wright (PhD)

Dr. Julia Wright is Senior Research Fellow in Agro-ecological Futures at the Centre for Agro-ecology, Water and Resilience (CAWR), Coventry University. She has worked for 3 decades in sustainable agricultural development in the UK and internationally, including for the UN, the UK Government, the CGIAR network, and the private and third sectors. Following doctoral research on the coping strategies of the farming and food system in Cuba when petroleum and food imports ran out at the end of the 1990s, Wright wrote a book that both dispels and corroborates the myths surrounding that country: 'Sustainable Agriculture and Food Security in an Era of Oil Scarcity, Lessons from Cuba'.



Cartoon: Assaye Nigusse

Our industrialized food system is killing us.

The current global food crisis is simple and complex at the same time. Simple because all we need is sufficient, healthy food to eat and to share, for our medicine and to commune with nature, simple because it's technically possible to have an abundance of healthy food. Yet we have made it a complex issue. We overeat, we don't have enough to eat, we sell and buy cheap 'food like substances' whilst watching the rich and famous - who we aspire to - choosing not to eat these foods.



We mechanize farms to reduce labor costs, we worry about the lack of rural jobs, and we go to gyms for exercise, fuelled by sugary 'energy drinks'. We refine carbohydrates and become addicted to them yet we apply no regulation to manufacturing or accessing these 'drugs', we overeat again...

Globally, we produce double the amount of calories required for the current population, or 4,600 kcal edible foods per person per day, which is the right amount for the future peak population of 14 billion. So in one sense there has been success with the prevailing food system in terms of producing sufficient quantity of food.

However the world isn't 'being fed'. In fact the recently published Global Nutrition Report shows that almost all countries are facing a serious public health risk due to malnutrition. This issue of food quality is inarguably the major fault in the food system that the industrial agricultural sector has avoided addressing. It is pretty well accepted that much dietary-related disease is caused by the overconsumption of processed foods, and more recent ev-

idence especially that gathered by the United States pediatrician Dr Robert Lustig, identifies processed carbohydrates in the form of sugars and modern grain varieties as being particularly causal.

A flawed production approach

This in itself creates a quandary when, under current economic conditions, farmers can best survive by adding value to a product rather than selling the raw-more healthy-primary produce. The implications of this alone would be for more technology development and implementation around processing techniques that maintain or enhance the nutritional quality of the raw material, such as fermentation, freezing, dehydrating or germinating.

Meanwhile, in terms of production, relatively little research and development has been undertaken on the relationship between agricultural production approach and food nutritional quality. The few studies that have attempted to analyze fluctuations in levels of nutritional content in foods (specifically fruit and vegetables) in Europe and the USA since post WW2 all point to a sharp decline in the percentage of vitamin and mineral content of up to 80%. So even if one eats unprocessed foods, one would today need to eat perhaps half as much again as food-produced pre 1950 in order to obtain the same nutritional value. This fact is never mentioned in debates around global food forecasts.

The authors of these studies have suggested that the main reasons for this nutritional decline are poor soil and crop management combined with plant breeding programs that have aimed for high yield traits but may have selected-out nutritional characteristics. The latter has been termed the 'genetic dilution effect', where in the case of wheat for example,



the breeding of higher yielding varieties has led to a decrease in their mineral concentration.

Soil, plants and human health

The other areas of research that have attempted to link production practices with human health have focused on the impacts of agrochemical usage, and on comparative analyses of certified organic products which represent the outputs of one type of agro ecological production approach.

The most recent and comprehensive scientific review of organic versus non organic products concludes that production method affects quality, that organic crops and foods have more desirable antioxidants and less potentially harmful cadmium, nitrogen and pesticide residues (Baranski et al, 2014).

One of the neatest examples of the relationship between soil, plant and human

health is around antioxidant content of vegetables. If pesticides are applied to the crop, they inhibit the release of the plants' own self defense mechanism against pests and diseases. These defenses include the release of chemicals we know of as secondary metabolites or antioxidants - which help build our defense against cancer and other illnesses. In fact organic foods contain 10-50% higher concentrations of these metabolites.

Nevertheless we still only have a patchy understanding of much of the soil-plant-human relationship. For example in the case of mineral pathways, we know that mycorrhizal fungi take up minerals from the soil and make these available to plant roots, up to 80% of certain minerals in fact. We also know that roots colonized by mycorrhizae in organic farming systems are 40% longer than in industrial systems, which suggests that organic systems provide more opportunity for soil-mineral uptake.

The agro-ecological approach

We can also work at the level of best practice systems, and it is enticing to believe that if we get the system balanced, then quality issues will take care of themselves.



One high potential, agro-ecological system that confers quality food outputs is showing to be holistic grazing management or 'mob grazing', whereby livestock are grazed intensively for very short periods of time, and a diverse pasture is encouraged that is left to juvenile stage before being grazed again.

This system is indicating to be the fastest way to sequester carbon and build topsoil, as well as increasing stocking density, reducing veterinary bills and having zero fertilizer costs. This leads to improved sward, improved soil water retention capacity, and increased nutritional content of the milk and meat coming from this system. Similar results in terms of milk and meat quality improvements are showing for agro-silvo-pastoral systems.

Malnutrition isn't surprising, given that the chief goal of the majority of players in the food system, from farmers upwards, is not to produce nutritious healthy foods for the people, but to make a profit.



Further, the medical profession has divorced itself from food issues, which is ironic given that doctors swear on the Hippocrates Oath, and it was Hippocrates who stated: "Let food be thy medicine and medicine thy food."

Yet research into agroecological farming and food systems still isn't being done to any large degree, the food industry isn't interested to change if the way forward is a move away from the highly processed foods where the greatest profits are to be made. The other reason why little advance has been made is that one would need a certain level of ecological literacy to be able to identify the opportunities to work on, and this literacy is simply not present: it is neither taught in our agricultural colleges and universities and nor is it practiced in our research centers and agricultural support sector.

Yet there is a lot at stake, including economically, in 2011 poor diets were costing the NHS £6 billion a year. The business case for taking action to redress these imbalances and improving crop and livestock nutritional quality - whilst at the same time building the resilience of our natural resource base - is agro-ecological

Searching for Agroecology and Questioning Commercial Agriculture and its Food Systems

Fassil Gebeyehu (PhD): African Biodiversity Network (ABN)

Agriculture's role in achieving food security and economic growth has been generally recognized by a number of scientific communities and development practitioners. However, there are differentiated views towards the appropriate agricultural policy approaches. These differentiated views can be generally categorized in to two:

Some suggest that agriculture needs to



tional companies. In the aftermath, the World Bank has doubled its assistance for research and development in the sector.

However, there is a growing concern with respect to the way the increased attention in the agriculture is developing in Africa and beyond. Ruben (2005) states that: "Agricultural research systems in Africa have produced technologies that are inappropriate to the factor endowments (such as land, labour and capital) of most

be mechanized and high technologies should be applied so as to feed the fast growing population; while others suggest an integrated strategy in which the local-specific and experiential knowledge-based agricultural system could be integrated with the scientific and research-based approaches to achieve food security and economic growth.

Identifying, based on information and knowledge, the better way and supporting that with legal and policy frameworks is critical for nations, especially for those whose economy is largely dependent on the agriculture, including Ethiopia.

Following the food crises in 2008, the agricultural sector has attracted the attention of many governments and interna-

LFA [Less Favoured Areas] smallholders.

Often there has been too much emphasis on increasing land productivity and not enough on the need for sustainability, stability (reduction of annual fluctuations in output) and multiple outputs (crop diversification in order to reduce income risks)". This shows that the future of agriculture for development is spearheading towards a market-oriented and high input agricultural system, whereas alterna-



tive agro-ecological practices, which are mainly integrated with social, cultural and agro-ecological situations, seems underestimated by donor communities and the developed world.

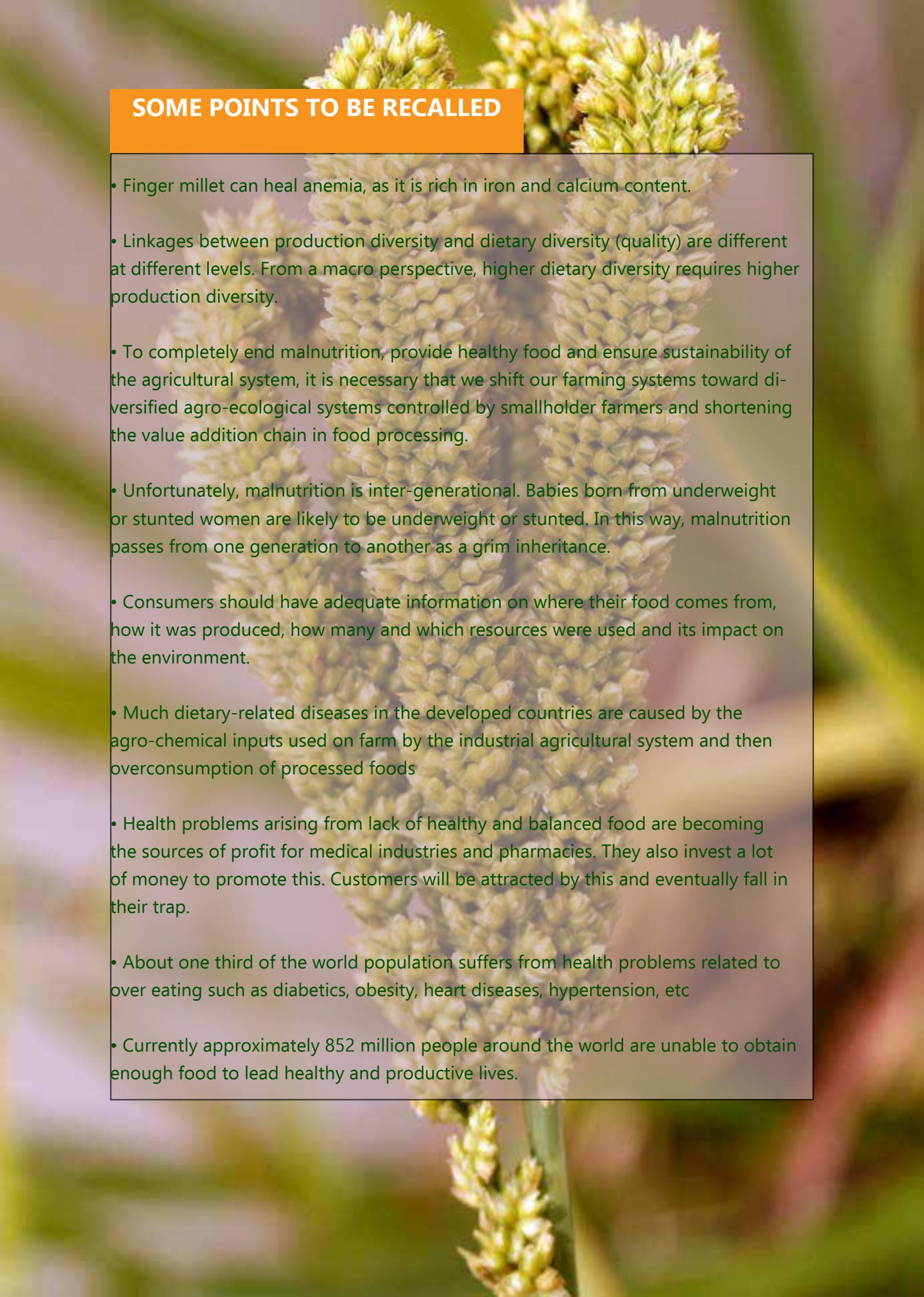
Peter Hazell and Diao (2005) explained that there is a significant influence to shift the direction of African development towards industrialization. During the past decades, globalization and free market economy with development ideas such as importation of substitute grains and food-stuff emerged to shift the focus of African countries towards industrialization; diversification of income for rural communities through the increased rural-urban mobility and migration. As a consequence, African farmers have stopped producing their staple foods and their food sovereignty is at stake.

It seems that many African governments are increasingly adapting technolo-

gy-based and market-oriented agricultural systems to achieve industrialization for their economic growth. As an African country, Ethiopia cannot be immune to the impact of globalization. Rather, we are feeling that the pressure is persistent.

Hence, it is time for us to critically analyze whether the industrial food and agriculture systems can ensure sustainability of our agriculture, provision of healthy and balanced nutrition to our people and maintain our food sovereignty.

Unlike some other African countries that are already overwhelmed by the industrial system, we still have time to see in to the advantages and disadvantages of the system from long-term development perspective and choose the right direction.



SOME POINTS TO BE RECALLED

- Finger millet can heal anemia, as it is rich in iron and calcium content.
- Linkages between production diversity and dietary diversity (quality) are different at different levels. From a macro perspective, higher dietary diversity requires higher production diversity.
- To completely end malnutrition, provide healthy food and ensure sustainability of the agricultural system, it is necessary that we shift our farming systems toward diversified agro-ecological systems controlled by smallholder farmers and shortening the value addition chain in food processing.
- Unfortunately, malnutrition is inter-generational. Babies born from underweight or stunted women are likely to be underweight or stunted. In this way, malnutrition passes from one generation to another as a grim inheritance.
- Consumers should have adequate information on where their food comes from, how it was produced, how many and which resources were used and its impact on the environment.
- Much dietary-related diseases in the developed countries are caused by the agro-chemical inputs used on farm by the industrial agricultural system and then overconsumption of processed foods
- Health problems arising from lack of healthy and balanced food are becoming the sources of profit for medical industries and pharmacies. They also invest a lot of money to promote this. Customers will be attracted by this and eventually fall in their trap.
- About one third of the world population suffers from health problems related to over eating such as diabetics, obesity, heart diseases, hypertension, etc
- Currently approximately 852 million people around the world are unable to obtain enough food to lead healthy and productive lives.



MELCA-Ethiopia



PESTICIDE ACTION NEXUS ASSOCIATION (PAN-Ethiopia)

