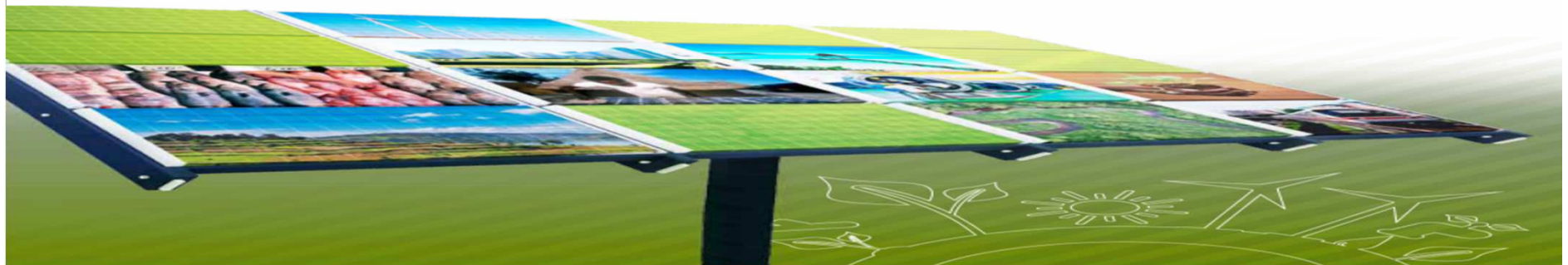




EaP GREEN PROGRAMME



# Towards a **GREEN** economy



## Greening the Economy with Agriculture Global Overview and A Case Study of Organic Farming in Moldova

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# Towards a **GREEN economy**

## What is a green economy?

- A **Green Economy** is one that results in increased human well-being and social equity, while significantly reducing environmental risks and ecological scarcities.



GREEN economy



**Agriculture**  
Investing in natural capital



# Overview of the Agriculture Sector

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- Agriculture is the **single largest employer** in the world, providing livelihoods for 40 per cent of today's global population. It is the largest source of income and jobs for poor rural households.



- **500 million small farms** worldwide, most still rainfed, provide up to 80 per cent of food consumed in a large part of the developing world. Investing in smallholder women and men is an important way to increase food security and nutrition for the poorest, as well as food production for local and global markets.





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## Two worlds of agriculture

### One, generally

- Large scale
- Well supplied by nutrients, technological advances, innovation, irrigation,
- Subsidized
- High productivity
- High emissions
- Damaging biodiversity
- Natural soil fertility
- Small contribution to respective national economies

### Two, generally

- Small scale
- Natural nutrients
- Cultivates about 60% of arable land by 525 mil farms
- lack access to tech, innovation, credit, capital
- feeding most of the hungry,
- Hosts majority of the poor
- Contributes to large part of economy and employment

**Different realities, different solutions**





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## Agriculture is facing a multitude of challenges

### Demand side Challenge

- Food security
- Population growth
- Changing pattern of demand driven by increased income
- The growing pressure from bio-fuels.

### Supply side challenges

- Limited availability of land
- Water
- Mineral inputs
- Rural labour
- Increasing vulnerability of agriculture to climate change
- Pre-harvest and post-harvest losses.





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## Business as Usual is not an option

Industrial agriculture **consumes on average 10** exosomatic energy calories **for every food** **endosomatic energy calorie** that is produced and delivered to the consumer.

Water consumption & pollution

bio-diversity losses

Extraction of soil nutrients on small farms

shrinking agricultural labour force

Shrinking profits despite increasing prices

Slowing productivity growth

Loss of soil fertility





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### **Business as Usual is not an option**

#### **Estimated annual costs of agricultural externalities**

- UK: GBP £ 5.16 billion (a cost greater than annual net farm income)
- USA: USD 34.7 billion
- Germany: USD 2 billion
- China: US D 1.4 billion (only from pesticides for rice)
- In China agriculture is larger source of water pollution than industry.
- Flow of phosphorus to the oceans: approximately 10 million tonnes
- Millions of cases of pesticide poisoning, thousands of death





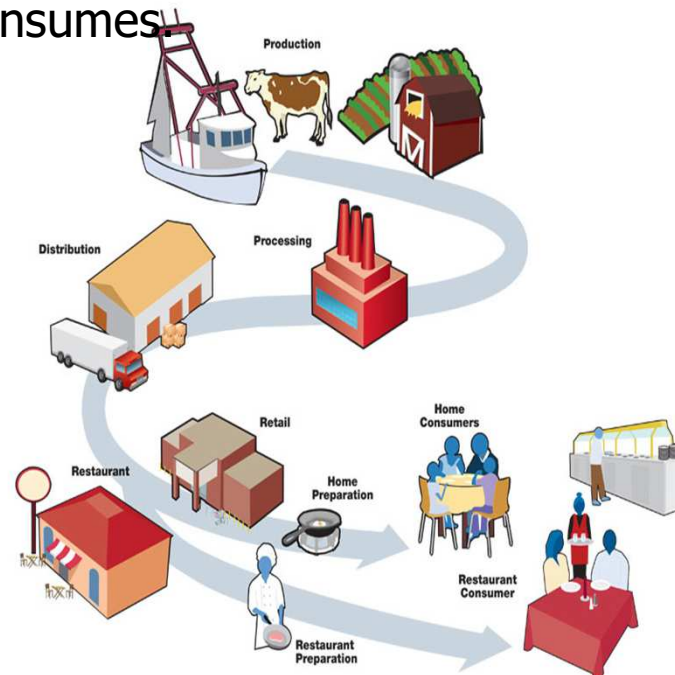
# Food Loss and Food Waste

**One third of the food** produced for human consumption is lost or wasted globally, which is equivalent of about 1.3 billion tons per year.

**Negative environmental impacts** because of the energy, biodiversity, greenhouse gases, water, soil and other resources embedded in food that no one consumes.

## Food Supply Chain:

- Primary production
- Post-harvest handling and storage
- Processing
- Distribution
- Consumption





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**Greening of Ag is needed, possible and profitable**

## **Greening agriculture.....what is that?**

.....the implementation of farming practices, knowledge, science and technologies (innovations):

- maintain and increase farm productivity and profitability while ensuring the provision of agricultural goods and services on a sustainable basis;
- reduce negative externalities and gradually lead to positive ones; and
- rebuild ecological resources (i.e. soil, water, air and biodiversity “natural capital” assets) by reducing pollution and using resources more efficiently.





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## Greening of Ag - Investment priorities

- **Investments in R&D**
- **Farm mechanization**
- **Investing in maintaining and building soil organic matter**
- **Crops and livestock diversification**
- **Improving water and energy management**





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## Benefits of Greening Agriculture

### Profitability & productivity of green ag

“The overwhelming majority of cases (analyzed in the USA) show that **organic farms are more economically profitable.**” Nemes, 2009.

Published by FAO

Average **yield-increase of nearly 80%** as a result of farmers in 57 countries. The study covered 12.6 million farms, encompassing over 37 million hectares (3 per cent of the cultivated area in developing countries). Of projects with pesticide data, 77 resulted in a decline in **pesticide use by 71%**.







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## Benefits of Greening Agriculture

### Energy efficiency

Growing organic rice: **4 times more energy-efficient** than the conventional method (Mendoza 2002).

Energy consumption in organic farming systems is **reduced by 10 to 70 per cent in European countries** and by **28 to 32 per cent in the USA** compared with high-input systems, with the **exception of certain crops** including potatoes and apples, where energy-use is equal or even higher





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## Benefits of Greening Agriculture

### Macroeconomic benefits

Investments aimed at increasing the productivity of the agriculture sector have proved to be **more than twice as effective in reducing rural poverty** than investment in any other sector

10% increase in ag productivity is estimated to **reduce poverty by 5% in Asia** and **7% in Africa**. Green practices can increase productivity, on average, by 79% on small farms.





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## Benefits of Greening Agriculture

### Macroeconomic benefits

Green practices create **more employment** opportunities and provide higher return on labour inputs.

Greening agriculture can **relax the foreign-exchange constraint** by reducing the need for imported inputs and by increasing exports of sustainable agrifood products.





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## Benefits of Greening Agriculture

### Climate Benefits

The FAO has documented that widespread conversion to organic farming could mitigate 40 per cent (2.4 Gt CO<sub>2</sub>-eq/yr) of the world's agriculture GHGs emissions in a minimum implementation scenario.

Organic agriculture yields environmental advantages valued at \$220-270 per hectare per year.

German organic farms annually **sequester 402 kg carbon/hectare**, while conventional farms experience **losses of 637 kg** (Küstermann et al. 2008 and Niggli et al. 2009).







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## Benefits of Greening Agriculture

### Some environmental benefits

Additional ecosystems resulting from greening of agriculture include **better soil quality** with more organic matter, **increased water supply**, better **nutrient recycling**, wildlife and **storm protection** and **flood control** (Pretty et al. 2001, OECD, 1997). Systems that use natural predators for pest control also promote **on-farm and off-farm biodiversity** and **pollination services**.





Year		2011	2050				
Scenario	Unit	BAU	B2	B1	BAU	G1	G2
<b>Agricultural sector variables</b>							
Crop production	Bn \$/Yr	449	570	538	500	550	593
Livestock production	Bn \$/Yr	313	498	499	499	502	506
Employment	M people	1087	1689	1610	1533	1653	1732
<sup>d</sup> Soil quality	DmnI	0.92	0.73	0.75	0.81	0.98	1.03
<sup>e</sup> Agriculture water use	KM3/Yr	3423	5365	5209	4929	3220	3221
Harvested land	Bn Ha	1.20	1.33	1.32	1.30	1.25	1.25
Deforestation	M Ha/Yr	15	25	21	15	7	7
Calories per capita per day (available for supply)	Kcal/P/D	2787	3178	3273	2981	3238	3382
Calories per capita per day (available for household consumption)	Kcal/P/D	2081	2476	2406	2227	2414	2524

# Final Remarks

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- Economically, environmentally, scientifically and technologically a paradigm shift in agriculture and food is viable, doable and needed.
- Technologies, new farming practices and innovations do not work under perverse policies, subsidies and investments.

**You cannot solve the problem with the same kind of thinking that created the problem.**

*Albert Einstein*





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# ORGANIC FARMING IN REPUBLIC OF MOLDOVA

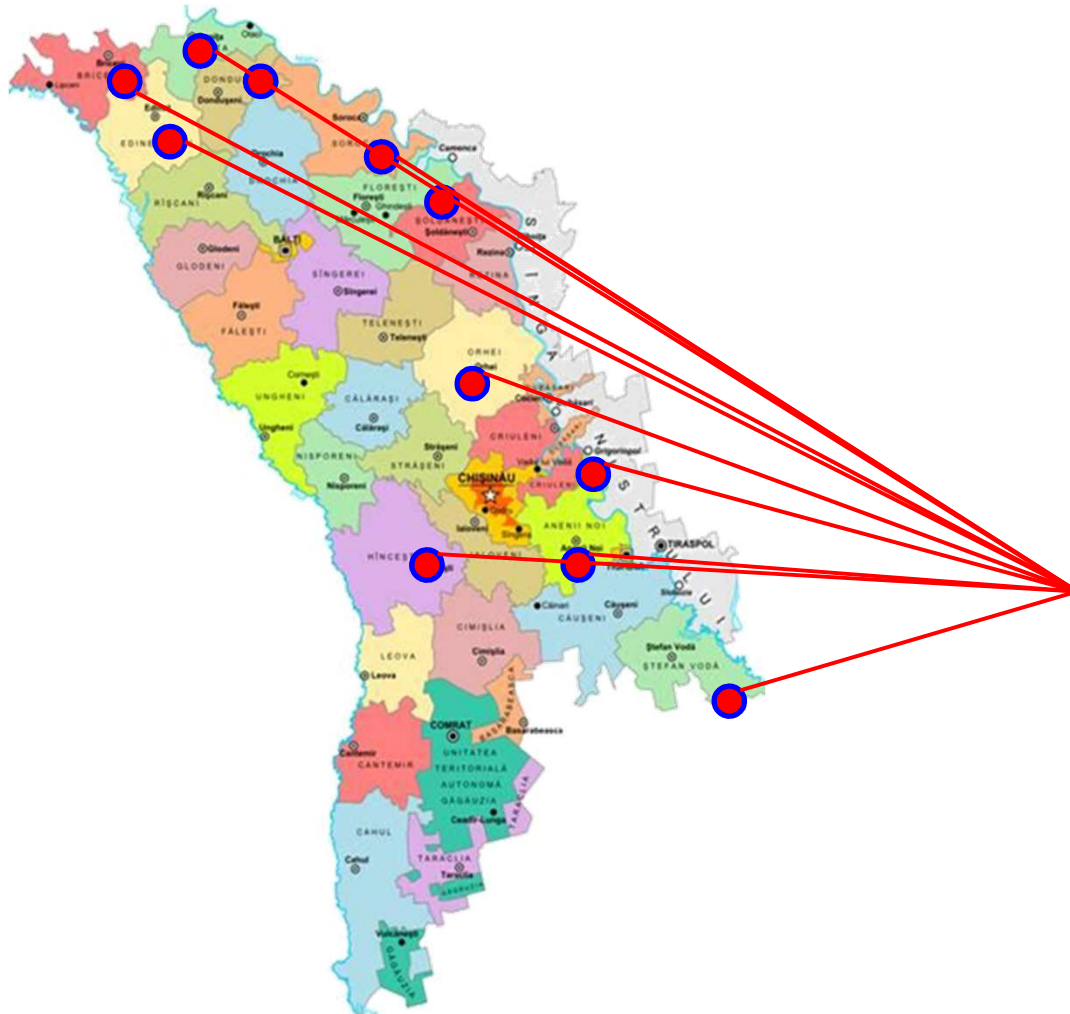


May 06th, 2014  
Viorel Gherciu,  
ProRuralInvest





# Organic Agriculture on Republic of Moldova



Sours: [MA/RM](#)



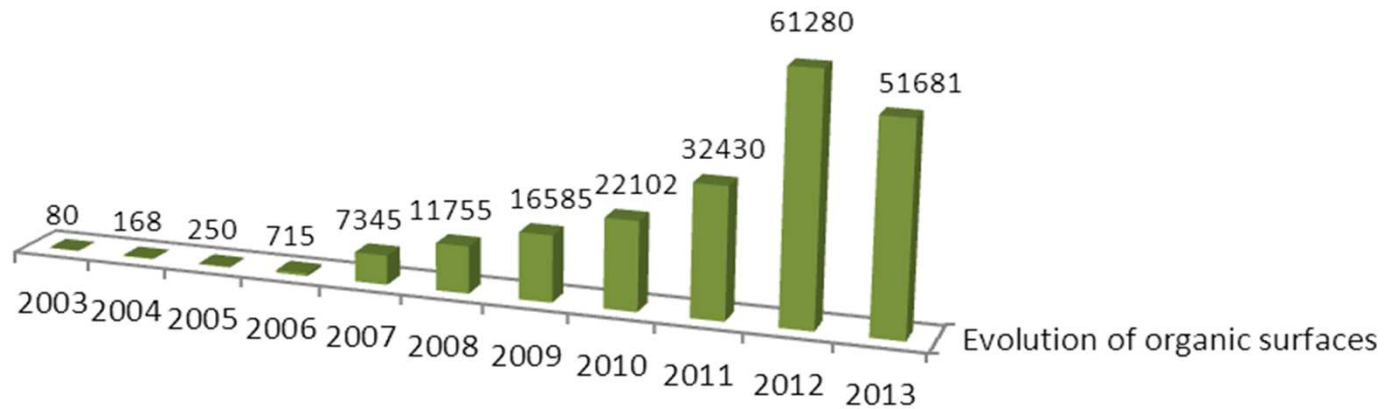
## Organic Agriculture on Republic of Moldova

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- In 2013 the total area under organic production was 2.87 per cent of Moldova's total arable land in 2013
- It is estimated that approximately two per cent of the agriculture labor force is engaged in organic farming, 60 per cent of which are women
- The incomes of these employees are almost the same as the salaries in conventional agriculture, varying from USD 100-250 per m

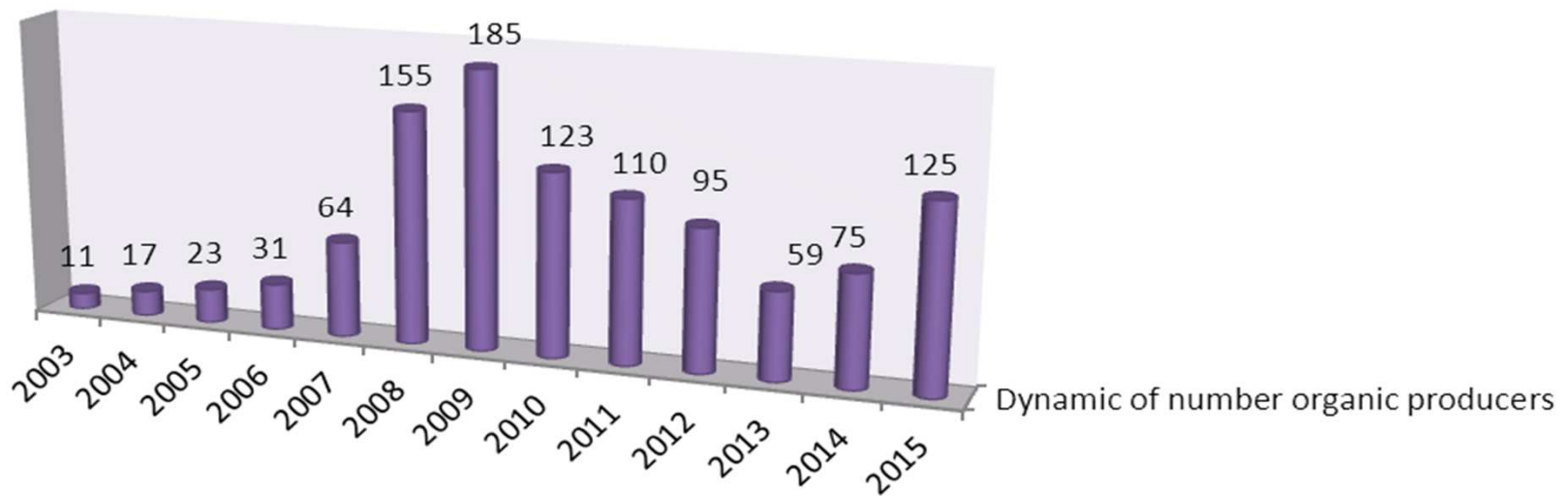
# Evolution of organic surfaces 2003 – 2013

Evolution of organic surfaces

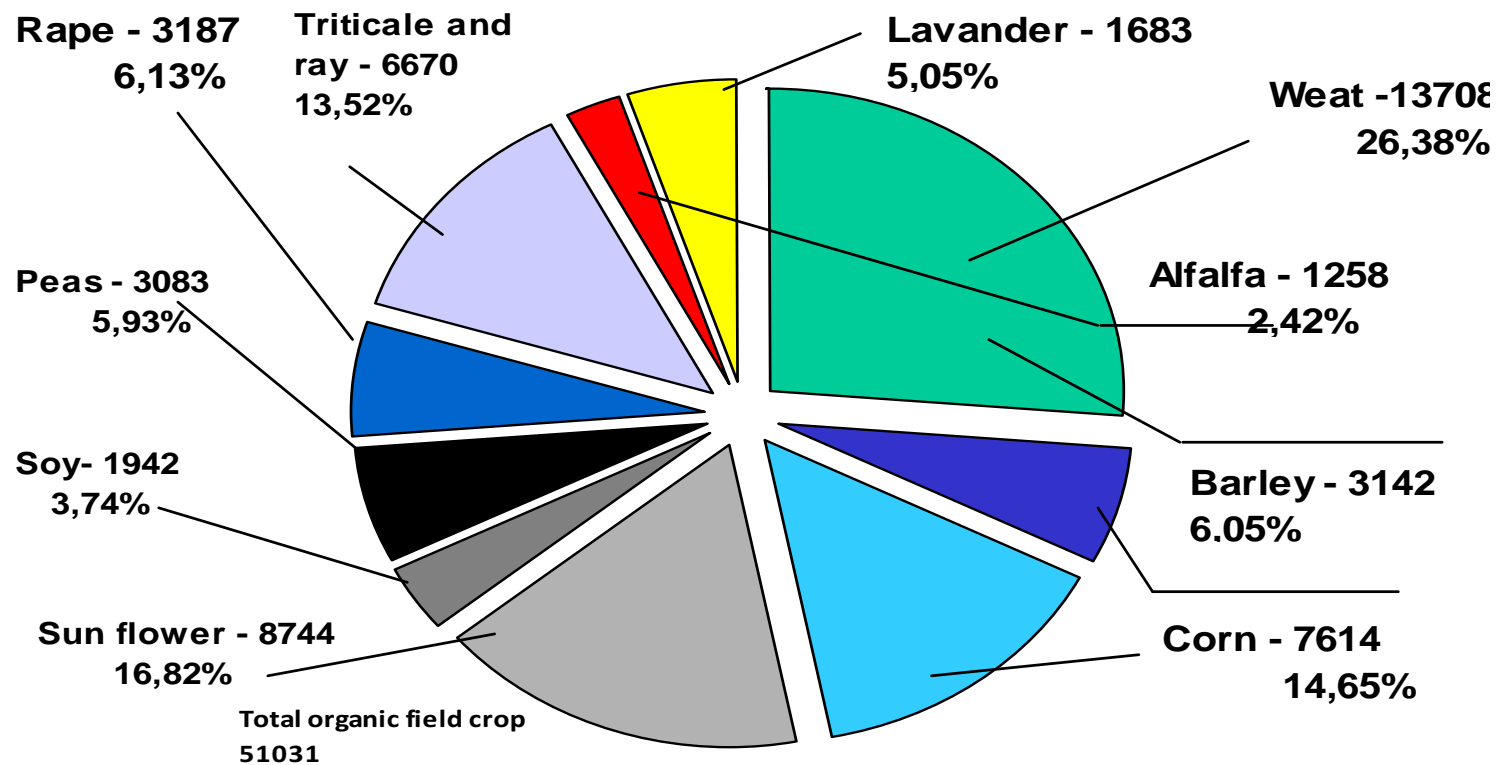


# Dynamic of number organic producers

Dynamic of number organic producers



# Proportion of organic field crops 2013





# Organic regulations and standards

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- June 2005, the government adopted the Law on Ecological Agro-Food Production Nr.115-XVI

**This law includes:**

- the National Plan for Organic Agriculture
- regulations on principles and methods of organic agriculture
- regulation of the inspection and certification systems of the Republic of Moldova; and
- regulation on the import and export of organic products.





## Logo for Moldovan organic food

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- in 2008, a new regulation entered into force, the “Organic agro-food production and labeling of agro-food products”, Nr. 1078 (22.09.2008).





## Subsidies for development of organic sector

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- support farmers during the conversion period of three years
- Organic agricultural producers who invest in plantation of intensive orchards will receive EUR 300 more per ha than conventional farmers.
- Organic producers investing in plantation of vineyards will receive EUR 300 more per ha than conventional producers.
- Organic producers will receive 10 per cent more than conventional producers for insuring their crops.
- The ceiling of credit being offered on subsidized rate for organic farmers will be EUR 3'000 more than the conventional producers.



## Markets and trade of organic agriculture products

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- The export of agro food products in 2013 ( mln USD 987,9) comparing with 2012 ( mln USD 878,9 ) registered in increase with 12,4%
- Import registered value of 783.7 mil. USD and increase to with 5,4%

Moldova has positive trade balance with agro food products and it is a possibility to improve that, substituting some products which can be easily produced by local farmers

- The trade balance is positive and has a value of 204.3 mil. USD, have an increase of 51% comparing to 2012
- The share of agri food exports in total exports is 40.6%.



## Markets and trade of organic agriculture products

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Over the past five years, Moldova experienced rapid growth in export of organic certified products.

- In 2013, 80,817 tons of organic products, valued at LEI 5880.7 million (EUR 31.45 million) were exported
- Representing 3.18 per cent of the total agriculture export value.



## Exported products

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- Walnuts,
- Wild fruits (aronia, cornel cherries, rosa canina, etc...)
- Dried fruits (apples, cherries, peach, pears, etc...)
- Wheat, sun flower oil seeds, corn, soy

The main markets for Moldovan organic products are EU countries, in particular Austria, Germany, Holland, Italy, Poland, Switzerland, Slovakia, Czech



## Domestic markets

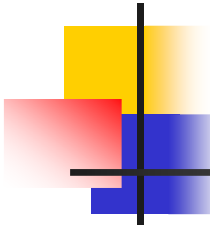
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- Recently appeared specialized shops selling organic products in Moldova
- One small organic dairy shop with local products
- One specialized shop trading with imported products

Prices in the local market do not vary much between organic and conventional agriculture



# Organic Farm



Organic LML “Gloria Bios”  
v. Gura Bîcului, Anenii Noi





## Potential and objectives of Organic Agriculture in Republic of Moldova

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- The government start to accord attention to organic producers but not sufficient
- The section of organic agriculture was created at the Agrarian University
- Ministry of Agriculture is supporting organization exhibitions-festivals with trade of organic product
- **International companies are invited to invest in organic agriculture and transfer of know how in organic technologies**



## Potential and objectives Organic Agriculture in Republic of Moldova

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The agro-ecological potential of Moldova is 10-20% of the agricultural area (150 000 – 375 000 ha);

In the year 2020, the COUNTRY would be able to cultivate the organic system 120 000-150 000 ha (*8 – 10%* of the agricultural area ) and you can get organic food and agricultural products in the amount of at least 120 million Eur.



# Thank you!



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