

ECONOMIC AND STRUCTURAL IMPACT OF CHANGING (HIGHER OR LOWER) INTENSITY IN AGRICULTURE IN PURSUANCE OF THE GOAL OF SUSTAINABLE AGRICULTURE

*Dr. Henrieta Themelko
Dr. Donika Kercini
Dr. Fran Gjoka*

Albania has the potential to use its agriculture as the basis for sustained economic growth and development given its agricultural resource base, the potentially competitive agri-industry and, its human resources. So Albania's economic recovery, as expected should come initially from the agricultural sector.

Historically, the agriculture has played an important role in Albanian economy. Actually, the agriculture remains the most important activity of this economy.

The agricultural sector in recent years accounted for about 56 percent of the GDP (tab 1). About 66 percent of the population lives in rural areas of which 56 percent have been engaged in agricultural economic activities. Agriculture has also been traditionally the main source of employment in the country. The share of employment in comparison of 1981 has changed in favor of agriculture and service sectors (tab 2).

In the total surface of 2,8 million ha, the agricultural land occupies only 25 percent, meanwhile 36 percent is accepted by forests and 15 percent by meadows and pastures. Albania is a mountainous country, where more than 75 percent of the total area is composed of hills and mountains. The major part of this area is not proper to agricultural crop cultivation. (In detail the natural resources are given in Tab 3.)

Agricultural land use in Albania is presented in tab 4. Agricultural production estimates recently have shown a small increase over 1991 production levels, but remain below 1989 levels. In the economic analysis, the 1989 year is been taken as the last comparative year of the centralized economy, where as a consequence of the policy of total isolation as well as of the orientation for an intensive agriculture, it was achieved a certain level of intensification. Production of the main agricultural commodities, except vegetables and livestock, are still about 20 to 30 percent below the 1989 levels.

Presently, the situation of agricultural production in Albania is characterized as highly diversified with no significant increases in productivity. Yields, despite small increases, still remain below those of neighboring countries. The main reasons for these levels are many, but we can stress: the management constraints, the lack of skilled manpower, the low use of fertilizers and other key inputs, and absence of marketing structures.

The economic reform in agriculture, along with the establishment of private ownership on land and other productive capabilities brought about new structures of production such as family farms. There are about 500 family farms with a total land area of about 1,3 hectare each.

The Albanian farmer had no material or financial means other than land and a limited number of livestock to satisfy the needs of individual production activity. Besides that, the available machinery was very old and did not fit the size of family farms. There was also an evident lack of other basic inputs as seeds, fertilizers, pesticides, etc. State had very limited financial opportunities to assist farmers. Finally, we should say that family farms face the following problems:

- ***They are in a great number.*** When the distribution of the land was completed about 480.000 farming families have received about 612.000 ha of agricultural land.
- ***They have limited production capabilities.*** The average size of the farms ranges from 0,6 hectares in the mountainous areas to 1,87 hectares in coastal and low areas. The nation wide average of land per farmer is 1,25 hectares.
- ***There is a pronounced land fragmentation.*** The number of small parcels operated per farm household ranges from 1 up to 10 parcels with an average of about 3,3 parcels per farm. The average parcel index of use is 1,4.(tab 5)
- ***Overpopulation of family farms.*** The total number of household members living from the resources of one farm ranges from a minimum of one to a maximum of fifteen, with an average of about six members per family.
- ***They face financial difficulties in purchasing the necessary inputs of production.*** Actually, those small and fragmented holdings are having serious problems of accessibility for farm machinery, crop and livestock management, and transport of inputs and outputs. For the most of the farmers the only means of transportation is animal transport. The relative long distances among parcels and the diversity of cropping with a variation in the timing of management operations hamper the use of modern inputs and limit seriously the operation of irrigation systems.
- ***They have to pay high interest rates for loans offered by crediting banks.*** It is observed that only 2 percent of farmers in the rural areas are using credit from the banking system. The rates of annual interest vary from 26 to 30 percent. The reasons cited by farmers for not using credit are principally the high interest rates, the high risk involved in repayment the credit, and the low availability of credit during critical seasonal periods.
- ***The diversity of crops.*** It is observed that family farms are characterized from very complex production systems. The number of the crops for each farm is great.

The farming systems prevailing in rural areas are characterized by cropping systems composed of annual, perennial, and livestock systems which include major end small ruminants and poultry. The dominant crops are wheat, maize, alfalfa, vegetables, beans and orchards. They are practiced across the country, by about 59 percent of farmers in low land areas and by 45 to 50 percent of farmers in the mountainous areas. Livestock systems are dominated by cattle and poultry in the low land areas, and by sheep and goats in mountainous areas. Main outputs from annual . and perennial crops include grain, seed, straw and fresh fodder for animal feeding, fruits, grapes and olives. Main outputs from livestock are meat, milk, and manure used as byproduct for fertilization.

Wheat is grown in almost all Albanian districts. Average yields range from 19,6 quintals/ha under rainfed conditions in the mountain areas to 29,4 quintals/ha in the low land. The average national wheat yield is estimated as 26,9 quintals/ha. (tab6)

The estimated average production of cow milk per farm in low land areas was about 1965 kg in one year, or 1700 kg per cow.

Summary indicators of performance estimated from the survey data are presented in tab 6. It is observed that farms in zones 1 and 2 have the highest grain unit. This reflects the actual situation in Albania where high intensive production of crops is occurring in low land and plain areas of zones 1 and 2. Alternatively, mountainous farms have about equal value in animal units as farms in low lands although farming units are much smaller. This reflects the potential and comparative advantage of the mountain areas for livestock production. Those areas also have potential in forage production and pasture development for cow-milk and cattle meat production.

Summary results of economic performance of the farms and farming systems practiced in the five zones across the country are presented in table 7. Farms on low land areas operate at much higher variable costs than farms in the mountains. Farmers are using more expensive inputs (i.e. fertilizer, seed, animal feed) and pay more rent for machinery for plowing and harvesting. Analysis of the performance of the farms in terms of the total gross margins shows better performance of farmers in zone located in low land areas. Generally, gross margins per farm for annual crops and livestock and total farm gross margins decrease noticeable in mountain areas. Total net income per farm is also higher in farms on zone on low land areas.

Indicators of economic performance per farm are expressed also in terms of value per hectare. A general observation of these indicators across the zones tend to show higher values in gross margins of livestock per unit area in mountainous areas than in low land areas. This indicates in a general way the potential value and comparative advantage of promoting and implementing management techniques on animal-crop systems for sustaining families living in mountainous areas.

The growth of farm productivity in Albania and incomes depend on yield increasing and production innovations, together with complementary investments and infrastructure, or by intensification of agriculture. There are physical factors constraining farm productivity and its intensification. These are characterized as follows:

- Poor infrastructure characterized by lack of irrigation. Most of the irrigation systems are damaged and there are only partially functioning irrigation systems.
- Low investment characterized by low mechanization, coupled with unfavorable conditions for renting machinery and animal traction.
- Low investment and low use of agricultural innovations. There is not adequate use of mineral fertilizers principally in mountainous areas. The low use of this key input is increasing deterioration of soil fertility.
- Lack of seeds, adequate varieties, and animal feed resources.(tab 8)

- Small size of farm. Under such constrain, the Albanian farmers realized that it is hard to meet market economy goals on individual basis, hence deciding to get organized into private associations of production.

Fertilizers is mentioned by farmers as a major input constraint in crop production in our country. Compared with other countries, in our country there has been a low use of fertilizer. Some of data for fertilizers use (in kg of active substance per hectare) are presented below:

1992	about 20 kg.a.s/ha
1995	about 25 kg.a.s/ha
1996	about 33 kg.a.s/ha

There are many constraints to fertilizer use in the country. Results in Tab. 9 show that main constraints are economics due to high prices (34%), and lack of cash or credit (30%).

Also according to the data of the Ministry of Agriculture, during the last years, there hasn't been used more than 0,3 kg active substance per hectare of pesticides (which compared with other countries figure is very lower), while the use of pesticides against the pests has been at minimal level. The overall quantity of pesticides used from 1993 to 1996 is as followed (in ton active substance):

YEAR	1993	1994	1995	1996
Insecticides	70	116	145	150
Herbicides	5	7	8	10
Fungicides	43	74	93	96
Rodenticides	2	3	4	4
TOTAL	120	200	250	260

The Ministry of Agriculture and Food has already a very clear strategy for pesticides using. This strategy aims at:

- The introduction in the structure, through the registration of pesticides that present a lower risk for the human and animal health and for the environment in general. Our legislation forbids the import and use of non registered pesticides. In our country can not be used those pesticides, whose use in western countries is forbidden.
- The application of technologies that are based on the combination of different methods of protection from diseases, weeds and pests, with the intention to minimize the use of pesticides.

* * *

Albania is now embarking on a fundamental transition from a centrally planned economic system to a market-oriented one. The actions and policies to support this transition need to be intricately linked to those for improving environmental management if either is to be effective.

Agricultural production can only be sustained on a long-term basis if the land, water and forests on which it is based are not degraded. In Albania's case policies that mean to protect the resource base are being put into place. What is missing is information which identifies land according to "best use criteria", and delineates them according to whether they should become enhancement areas, prevention areas or restoration areas. Only the first category can support intensive cropping.

The major environment issues facing Albania include deforestation, soil erosion, air, water and ground pollution, and loss of biodiversity.

In our country only some of them are related with agriculture development:

Deforestation and soil erosion: Albania is rich in forests. Its forests consist of 1.045.000 hectares of forest and bushes which cover about 36 percent of the whole territory. Most of them can be found on slopes of 20-50 % and play an important role in soil protection and the hydrological balance of the country. Most of the forests (about 90 percent) are natural. As a result of the great growth of the population which during the last 50 years has increased by 3 times, the forests have been overexploited. Their overexploited and especially uncontrolled cutting for fuelwood and private construction, has been further aggravated by the recent economic situation and has led to the degradation of considerable forest areas. For example, about 50 percent of oak woods are considered as degraded forest because of their overexploitation and overgrazing

During the last 50 years more than 280.000 hectares of forests have been destroyed. The most serious damages have been caused to the bushes and low forests. High remote mountainous regions have old natural forests (about 150.000 hectares of 100 years old) which from view point of exploitation are over matured, which stand inaccessible in remote highland forests due to lack of roads. However they have values for their fauna, biodiversity and recreation purposes.

The main concern for forestry development based on environmental principles is the solution of energy supplies for domestic heating and cooking. So far, 100 % of cooking and heating demands are met by using fuelwood in the countryside, and 90 % in urban areas. This situation has brought about striking local overexploitation of forestry resources in some areas. the situation was very grave during the winter 1991-1992, when the canals of normal supply and distribution of fuelwood stopped. During this period, more than 5.000 hectare of forests were illegally cut down.

A rehabilitation and improvement of forest resources should be achieved, in order to avoid further degradation of forests.

The reforested surface is estimated to be 150.000 hectares. The objectives of the reforestation programme have been soil protection in regions of degraded lands and to some extent production of wood for industrial and construction purposes.

Similar to other Mediterranean countries, soil erosion is a great problem in Albania, especially in the agricultural and forest areas. Most of the forests are easily eroded. The erosion of forest areas is aggravated as a result of overexploitation, neglect of forest regeneration and intensive grazing.

Estimates suggest that 120.000 hectares of land are already barren. Soil erosion is caused also by the lack of terrace maintenance.

Soil erosion constitutes an important environmental problem leading not only to the reduction of agricultural productivity but also causing damage to rivers, irrigation canals and reservoirs due to progressive situation.

Loss of biodiversity: Loss of biodiversity is a result of the lack of effective management of natural resources, national parks and protected areas. In addition the non-enforcement of hunting standards and the practices of banned hunting further contribute to the aggravation of the problem. Deforestation is another cause for biodiversity loss. Furthermore urban areas are witnessing a serious decrease of parks and green recreational areas which are being rapidly occupied for building purposes, mainly private (hotels, bars, shops) either with or without licensed permits.

Human interventions to the flora have had harmful consequences to flora and fauna. The main causes for this have been cultivation and irrational exploitation. In particular:

- Cultivation of new lands by destroying natural pastures and deforestation;
- Exploitation without any criteria of the medical aromatic plants has led to maximum rarity and threats for some species like mountain tea, certain kinds of orchids, *salvia officinalis*, and *Colchicum autumnale*.

Although there have been no studies about the impact of pollutant on flora, it has been noticed that the use of herbicides, pesticides and fertilizers has threatened as secondary effect extinction of some special plants or plant families.

Our country suffered the degradation of environment in some other aspects such as air and water pollution. It is important to stress the fact that this pollution is caused from the factors outside the agriculture. (Increasing use of old motor-cars using the low grade-fuel is expected to turn most cities into very polluted areas with serious health repercussions for their inhabitants).

Estimates suggest that nitrates from fertilizers are not yet a problem in the main rivers of Albania and their deltas.

* * *

The Albanian society involved in a complex process of reformation is trying to be developed according to the universal principles of sustainability. The agriculture has also been included in this progressive movement. All the conditions for achieving the objectives of sustainability for a general social development already exist. These are:

- political and democratic system;

- decentralization and privatization of national economy, in general, and agriculture, specifically;
- the capability of integrating our productive and economic structures with the western consume markets;
- the existence of some elements in our traditional agriculture that can be integrated in a sustainable production scheme;
- the sanitary condition of agri - ecosystem, favorable for developing a sustainable agriculture;
- the climate and land conditions are favorable for adapting the techniques of a sustainable production;
- starting the development of tourism (echo and agriturism);
- starting the increase of consumer incomes;
- the existence of an intellectual potential and free labor force in agricultural area can be used for maintaining a certain level of extension;
- developing the programs of softening the poverty and starting the control of population increase.

The Albanian society of today is hoping in a qualitative improvement of life in its all aspects, a rapid regeneration of natural resources and an reintegration of the ecosystems on sustainable landshapes. The last one requires the institutionalization of a study under the national level with the objective of a reclassification of land funds structures according to the principles of the so-called “Land Use”.

The development of a sustainable agriculture, considered as a complex movement, requires a contemporary infrastructure, conform well excepted principles. This will include: actors, NGO and state institutions integration, in an action plan for developing a sustainable agriculture on the national level; a promoting legal framework for the application of sustainable agriculture forms; a financial support for the households that apply the principles of sustainable agriculture. The orientation of Albanian agriculture toward the sustainable forms is specifically important, because:

- The actual needs of the society have to be fulfilled without putting in danger the capability of future generations to fulfill their needs, while the indicator of arable land per capita is 5 times lower than the world average and has a tendency of further aggravation;
- Taking in consideration the social and economic circumstances, this has been evaluated as the most suitable form of agriculture, in our country, where about 65% of population is at the same time consumer and producer of its own products. A sustainable agriculture will serve for regenerating incomes for rural population through their diversification. Utilization of production capacity of rural area (land, climate, live stock and labor force) and their integration in a production process, which is in harmony with the environment, is one of the main directions of economic reform of agriculture;
- The impact that the application of different cultural practices bring, will be balanced with the natural recuperating capability of ecosystems themselves. One of the most positive effects that come along with the production process, based on the principles

of sustainability, is the erosion and pollution control. In this way, the quality of all the environment components will be increased and the status of fertility of arable land, as a main factor of sustainable agriculture, will be improved. If we take in to consideration the humus content, the arable land fund of our country can be presented as followed: 44,6% poor, 45,6% middle and 9,8% rich. One of the main priority of the scientific institutional policy is to change the above composition on the favor of middle and rich humus land. This is because, the humus content of arable land compared with some other countries is lower(2 - 2,5%). According to the data, a positive result in the humus balance is expected because the area of land in the stock - breeding disposal is about 50% of the total arable land.

- This will also help the rehabilitation of refused lands whose area is been calculated about 7 - 9% of existing arable land fund. Such a process will require the technological aspect (the application of sustainable production schemes) to be coordinated with the financial aspect (financial support for the rehabilitation projects). Starting this projects as soon as possible is very important, first of all, for softening the social problems of rural areas through the diversification of labor and incomes, and secondly, for protecting the arable land from the action of natural and antropoghenius factors.

Evaluating the data for fertilizer and chemicals used we can arrive to the conclusion that a higher intensity of actual agriculture is needed to rich the expected standards of sustainability. Any change in the amount of fertilizers used must be justified in both economic and environmental aspects.

Practically, there does not exist any official policy for promoting the sustainable forms of agriculture. Despite, the movement for a sustainable agriculture in our country has already started. The initiators of the sustainable agriculture in Albania are the specialists of National Association of Cooperatives. This association in collaboration with the National Association “Albanian Consumer” are leading the “A NGO sustainable agriculture development strategy in Albania” project, supported from the Regional Center of Environment, REC.

The objective of this project is to inform the farmers, specialists and consumers and get them know the principles of a sustainable agriculture in a national level(according to the NGO concept and in collaboration with state and scientific institutions).

Because in Albania, high quality products (chemically pure) are produced and techniques of sustainable agriculture have to be promoted.

* * *

Agriculture remains the most important activity, industrial activities are in decline, while tertiary activities, trade, transportation, medium-size business, tourism, seem to offer more prospects for future economic development.

For Albanian conditions, the intensive way of production growth in agriculture, combined with the elements of environment protection, is a priority in the rural development strategies.

Regarding the crop production development strategy, the main approach is the increase of the yield and the quality of the production and the establishment of right policies concerning efficient agricultural land use through:

- a) Improving the management of the private farms and promoting the establishment of voluntary Private Farmers Associations either for producers or traders;
- b) Improving the technology through insuring the efficient use of inputs and machineries, increasing irrigation capacity, as well as farmers trainings programmes;
- c) Development of agricultural business and marketing, supporting the establishment of necessary infrastructures.

Regarding this strategy, there are considered these main approaches:

- Wheat: it is foreseen to occupy 32 percent of arable land in order to satisfy the demand for cereal crop for bread production.
- Forage: Together with maize for animal feed it is foreseen to occupy about 45 percent.
- Vegetables, potatoes, beans: 10-11 percent in order to supply the domestic market, the processing industry and the external market.

While the economic recovery in the short and medium-term is based on the agricultural sector to assure food security and provide rural income and employment, the Government, actually is faced the following constrains: a decline in food and agricultural production per capita in the country; a decrease in crop productivity resulting in insufficient food production to meet increased demand; and a decrease in arable area for crop production for livestock undermining agriculture's capacity to cope with future food demand in the country.

In the short-term the country will continue to face food crisis periods which will undermine food security and macroeconomic policies in Albania. This situation will persist in the future unless there are improved institutions to serve agriculture, conducive policies in food production and environment , and appropriate infrastructure for processing, storage and marketing.

Observations indicate that toward the year 2000, under prospective government policies, agricultural output should increase by at least 7-8 percent per year to meet the increasing challenges in food nutrition, create employment, provide raw material for agri-industrial development, promote regional investment and development, and create foreign exchange.

ANNEX

Tab 1 - NATIONAL INCOME

In %

ITEM	YEAR				
	1990	1992	1993	1994	1995
GROSS DOMESTIC PRODUCT (GDP)	100	100	100	100	100
AGRICULTURAL PRODUCT	40	54	56	56	56
INDUSTRIAL PRODUCT	37	17	14	13	12
SERVICES	23	29	30	31	32

Source: Ministry of Finance, INSTAT

Tab.2 EMPLOYMENT BY SECTORS

In %

Share of employment	1986	1991	1993	1996
- Agriculture	49,7	47,3	56,3	57,5
- Industry	21,6	18,3	8,8	7,2
- Services	28,7	29,4	34,9	35,3

Source: Agricultural Production in Albania. Socioeconomic Survey

Tab.3 NATURAL RESOURCES

In %

YEAR	Land (in thousands of km ²)	Agricultural land (in thousands of hectares)	Agricultural land (as % of land surface)	Inhabitants per hectare	Land under water	% of agricultural land in cereal crops
1994	28,7	702	24,4	4,6	48,5	43
1995	28,7	702	24,4	4,6	48,5	44,5

Source: Institute of Statistics.

Tab. 4 LAND USE AND CROP PRODUCTIVITY

Land use	1981	1991	1993	1996
	000 ha	Change (1981= 100)		
Arable and perman. crops	706	99,2	99,8	101,0
Cereals	343	92,1	95,3	98,1
Roots and tubers	16	56,3	56,3	57,0
Pulses	51	47,1	49,0	51,2
Sunflower seed	26	76,9	76,9	70,0
Permanent crops	118	105,9	105,9	106,0
Permanent pastures	410	98,3	104,8	105,0
Irrigated land	378	111,9	-	-
Forest & woodland	1020	102,5	102,3	103,0
Crop productivity	kg/ha	Change (1981=100)		
Cereals	2500	88,8	113,3	114,0
Roots and tubers	6967	88,8	95,7	97,3
Pulses	493	103,7	113,6	115,0
Sunflower seed	1214	116,4	56,4	56,0

Source: Agricultural Production in Albania. Socioeconomic Survey

Tab 5 - NUMBER OF PARCELS PER FARM AND PARCEL USE INDICATORS

ZONES *	1	2	3	4	5
Average farm area (ha)	1,87	1,18	0,93	0,60	0,55
Average number of parcels	3,1	3,3	3,3	3,9	2,6
Parcel use	1,8	1,4	1,2	1,4	1,0

Source: Agricultural Production in Albania. Socioeconomic Survey 1993-1994.

* Zones from 1 to 5 represent sample from a survey made by MOAF and IFDC, starting from low and coastal land (zone 1) to low mountain areas with limited agriculture (zone 4) and high mountain areas with little or no agriculture (zone 5)

Tab. 6 - ESTIMATES OF PHYSICAL PERFORMANCE AND FARM INDICATORS FOR ZONES

Characteristics	Zones				
	1	2	3	4	5
Average crop produc.(q/ha)					
Wheat	29,4	26,9	22,8	19,6	-
Maize	27,9	25,3	23,2	19,8	15,1
Alfalfa	308,2	212,5	234,8	196,2	157,5
Potatoes	88,9	102,3	96,6	80,3	65,0
Vegetables (dry beans)	10,2	8,0	8,3	7,4	8,1
Milk production Kg anim./year					
Cattle	1694	1427	832	743	619
Sheep	46	43	49	41	40
Goats	72	84	73	69	60
Farm index (average)					
Total grain units	119,1	116,4	110,3	90,8	58,8
Total animal units	3,6	2,7	2,7	2,6	3,1

Source: Agricultural Production in Albania. Socioeconomic Survey 1993-1994.

Tab. 7 ECONOMIC INDICATORS OF AGRICULTURAL ACTIVITIES IN FIVE ZONES

Indicator	Unit *	ZONES				
		1	2	3	4	5
Annual crop output value	leks/ha	61461	55696	57255	53464	58317
Livestock output value	leks/ha	41008	40049	49445	68018	73480
	leks/AU	33698	26254	22638	22673	20306
Variable cost ann. crops	leks/ha	29731	21973	17889	13191	14357
Variable cost livestock	leks/ha	5351	8762	10346	13480	14336
	leks/AU	4397	5744	4680	3851	3943
Gross margin ann. crops	leks/ha	31730	33723	39336	40272	43960
Gross margin livestock	leks/ha	35657	31287	39099	54358	59504
	leks/AU	29301	20511	17688	18821	16364

* The exchange rate is 1 \$ US = 100 leks.

Source: Agricultural Production in Albania. Socioeconomic Survey 1993-1994.

Tab. 8 - MAIN PHYSICAL CONSTRAINTS IN CROP PRODUCTION

ZONES	Number of farmers	Constraints	Score mean
Zone 1	209	Irrigation	7,6
		Mechanization	5,0
		Fertilizers	3,7
		Seed	2,3
		Other	1,1
Zone 2	179	Irrigation	9,1
		Mechanization	4,1
		Fertilizers	2,6
		Seed	1,9
		Other	1,2
Zone 3	179	Irrigation	8,8
		Mechanization	4,2
		Fertilizers	3,5
		Seed	2,3
		Other	1,0
Zone 4	55	Irrigation	7,0
		Mechanization	5,3
		Fertilizers	6,5
		Seed	3,1
		Other	1,4
Zone 5	25	Irrigation	5,7
		Mechanization	7,1
		Fertilizers	4,9
		Seed	1,0
		Other	1,0

Score used: Very limiting = 10,0
Limiting = 7,5
Somewhat limiting = 5,0
Low limitation = 2,5
No limitation = 0,0

Source: Agricultural Production in Albania. Socioeconomic Survey 1993-1994.

Tab 9 - MAIN CONSTRAINTS IN FERTILIZER USE BY FARMERS

In %

Constraint	High prices	No money	No transportation	No available	No land	No irrigation	High price of transportation	Do not know how to use it	Total
	34,2	29,5	8,5	12,7	3,9	4,1	3,0	4,2	100

Source: Agricultural Production in Albania. Socioeconomic Survey 1993-1994.