

LAND FRAGMENTATION AND UTILIZATION OF AGRICULTURAL MACHINERY IN ALBANIAN CONDITIONS

FRAGMENTARIZIMI I TOKES DHE PERDORIMI I MEKANIKES BUJQESORE NE KUSHTET E SHQIPERISE

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Abstract: At the start of the '90s the entire agricultural sector was crippled so badly that it sustained some irretrievable huge damage. Needless to say, this period of time was associated with profound socio-economic and political-cultural upheavals. The rapid dismantling of the cooperative-based system and the abandonment of services in the dinosaur-shaped state-run enterprises as a result of the departure of the labour force and the ensuing unfathomable destructions brought about a complete change of the Albanian agriculture landscape. At the moment around 54 % of the population lives in the countryside and the agricultural production accounts for approximately 22.6 % (year 2004) of the GDP (General Domestic Product). According to data made available from Ministry of Agriculture, Food and Consumer Protection (MAFCP) there are oscillations in respect of the number of farms from one year to the next. We also have a yearly reduction by 1.6% of the number of farms from 1995 to 2000, followed by a small increase in their numbers until 2003, followed by yet another reduction during the period 2004-2005 reaching the figure of 374, 517 farms in 2005. Agricultural land remains over the stretch of years in nearly the same ratio to the total area of land, according to the statistics of 2005 the agricultural land was roughly 698, 780 ha of land, and constitutes 24 % of the total area of land. With the exception of the forage area which has increased on average at 3.5 % each year since 1999, the areas under other crops has experienced steady declines, which can be attributed in part to the change of ratios between the two major branches of agricultural production (agriculture and livestock) in favour of the latter. The up-to-now machineries being used is intended to replace the arduous task of the labour force which uses up much power and time through the traditional aggregates. One peculiarity of agricultural machineries in Albania

is the structure and quality of equipments that are being limited to classical ones such as plows with 2, 3, and 4 blades, discs, sowing machineries for maize and other cereals. The scale of utilization of agricultural machineries for basic operations of land tillage: plowing, milling, and sowing is relatively low and distributed across such values: Mechanically plowed some 42 % of agricultural land or 79 % of the total area tilled; Mechanically milled 39 % of the agricultural area or 81 % of the total are milled; Mechanically sowed 32 % of agricultural land or 68 % of the total area sowed. The expenditures done on the agricultural machineries (with reference to 2005) represent the lowest figure in terms of costs of production, only 6% of total cost.

Permbledhje: Ne fillim te viteve '90, i gjithe sektori bujqesor u paralizua, dhe pesoi shkaterrime te jashtezakonshme. Kjo faze percillet me ndryshime te thella social-ekonomike dhe politiko-kulturore. Shperberja e menjehershme e sistemit kooperativist dhe abandonimi i sherbimeve ne ekonomite dinosaure shteterore si rrjedhoje e largimit te fuqise punetore dhe shkaterrimeve apokaliptike, ndryshuan plotesisht peisazhin e bujqesise shqiptare. Aktualisht ne Shqiperi rreth 54% e popullsise jeton ne fshat dhe prodhimi bujqesor ze afersisht 22.6% (viti 2004) te PPB (Prodhimit te Pergjithshem Kombetar). Sipas te dhenave qe disponohen nga Ministria e Bujqesise, Ushqimit dhe Mbrojtjes se Konsumatorit (MBUMK), ka oshilacione ne drejtim te numrit te fermave nga njeri vit ne tjetrin. Kemi nje pakesim vjetor prej 1.6% te numrit te fermave nga viti 1995 deri ne vitin 2000, e cila ndiqet nga nje rritje e lehte e numrit te tyre deri ne vitin 2003, e pasuar nga nje tjetere ulje gjate viteve 2004-2005, duke arritur shifren 374,517 ferma ne vitin 2005. Toka bujqesore qendron me vite pothuajse ne te njejte raporte ndaj siperfaqes totale te tokes; sipas statistikave te vitit 2005 eshte rreth 698,780 Ha,

dhe perben 24% te sipërfaqes totale te tokes. Me perjashtim te sipërfaqes me foragjere e cila eshte rritur mesatarisht 3.5 % cdo vit qe nga 1999, sipërfaqja me kulturat e tjera ka pesuar rënie te ndjeshme, kjo eshte ndikim i drejtpërdrejt i i ndryshimit te raportit te dy nen-degeve kryesore te prodhimit bujqësor (bujqësi dhe blegtorise) ne favor te ketij te fundit. Mekanizimi i deritanishem ka synuar te zëvendësoje proceset e renda te punes se krahit qe kerkojne me shume energji dhe kohe nepermjet agregateve tradicionale. Vecori e mekanizimit ne Shqiperi eshte struktura she cilesia e mjeteve te mekanikes qe kufizohet ne pajisjet klasike te mekanikes bujqësore sic jane plugjet 2, 3, dhe 4 veshe, disqet, makinat mbjellese te misrit dhe

te lashtave. Mekanizimi eshte shtrire kryesisht ne operacionet baze te punimit te tokes: plugim dhe frezim si dhe ne mbjellje. Shkalla e perdorimit te makinave bujqësore per keto operacione, eshte megjithate e ulet dhe konkretisht ne vlerat: Plugohet me mekanike 42% e sipërfaqes bujqësore totale ose 79% e sipërfaqes totale te pluguar; Frezohet me mekanike 39 % e sipërfaqes bujqësore totale ose 81% e sipërfaqes totale te frezuar; Mbillet me mekanike 32% e sipërfaqes bujqësore totale ose 68% e sipërfaqes totale te mbjelle. Shpenzimet e kryera per mekaniken bujqësore (referuar 2005) jane zeri me i ulet ne koston e prodhimit, vetem 6% e koston totale.

Key word: agricultural machinery, land, fragmentation, farm, agricultural area;
Fjalë kyçe: makineri bujqësore, toke, fragmentarizim, ferme, toke bujqësore.

INTRODUCTION

At the start of the '90s the entire agricultural sector was crippled so badly that it sustained some irretrievable huge damage. Needless to say, this period of time was associated with profound socio-economic and political-cultural upheavals. The rapid dismantling of the cooperative-based system and the abandonment of services in the dinosaur-shaped state-run enterprises as a result of the departure of the labour force and the ensuing unfathomable destructions brought about a complete change of the Albanian agriculture landscape. At the moment around 54 % of the population lives in the countryside and the agricultural production accounts for approximately 22.6 % (year 2004) of the GDP (General Domestic Product).

Prescribing solutions and placing back on track the development of the agricultural sector would require some accurate evaluation based on a deep and comprehensive analysis on the status. All measures taken without such an analysis taking precedence would prove unavailing.

Despite the ever-increasing trend of agricultural production one could safely assert that agriculture remains an inefficient sector which is not well-placed to earn the agricultural households a sufficiency of incomes to sustain themselves. The very fact that Albania is characterized by a great dependence on the import of agricultural produce as opposed to the exports points towards a low inefficiency of agricultural output. With close reference to statistics for the period 2003-2005, made available by MAFCP, it turns out that the annual increase of the agricultural production value between 1995 and 2003 is fixed at the 1.6%. The key factors of the inefficiency of the rural economy can fall under the following headings:

Social and demographical factors, structural factors, political factors, economic sectors, legal and institutional factors.

MATERIAL AND METHODS

This study is made in order to evaluate and analyze some concepts, considerations and indicators which are referred to Albanian agricultural mechanization.

This study is realized according the official statistic data, published or not and taken in the studied area using questionnaires and interviews on the situation of agricultural mechanization, its distribution and function, agricultural land and its utilization, the size of farms etc. The study includes whole Albanian districts based on generalized averages where on focus are the differences between those different districts.

The main objective of this study is to make a full analyze and evaluation of technical-economical problems in the development of agricultural mechanization in order to support further analytic studies for the organization of the most suitable structures in mechanization and management of agricultural machineries.

RESULTS AND DISCUSSIONS

Land area and farm structures

The basic agricultural production unit in the country is the agricultural farms. They were established right after the privatization and distribution process of land. This in turn was accompanied by profound economic, social, legal and institutional problems. At the close of such a process a huge number of farms were created in proportionate compliance with the population in a certain rural area and the land made available from the former state farms and cooperatives. The size of the farms depended to a large degree on the number of the family members benefiting from land distribution as well. Thus in 1995 the total number of agricultural farms came to 420,000. This huge number of farms coexisting in limited areas with declining tendencies in agricultural land is reflected upon the size of the farm as the basic unit of production and the in the application of cutting-edge techniques and technologies. In real terms in 1995, 62,2 % of farmers owned up to 1 ha of land, 30,1 % between 1,00-2,00 ha of land and only 4.7 % of them own an area of over 2 ha of land. The key functions of the farms are to satisfy the farmer's needs and to take any produce in small quantities to the local and regional internal market. This function gave to the farms a multi-crop and multi-functional nature. A structure made up of small-sized and fragmented farms does not allow the application of cutting-edge technologies and introduction of machineries.

The dynamics of land area changes that farms possess between 2000 and 2005 in the country is depicted in table1

Table1.

Dynamics of farm size changes over the years across prefectures
(Source: Statistical Yearly Book 2005- MAFCP)

Albania	VITET					
	2000	2001	2002	2003	2004	2005
Farms (ha)	1.04	1.09	1.16	1.06	1.13	1.10

In close reference to statistical data for separate prefectures, the farm size is the biggest in the costal plain areas because there has been more agricultural land available and the smallest in the other areas reaching minimum values in the prefectures of both Diber and Kukes. According to data made available from Ministry of Agriculture, Food and Consumer Protection (MAFCP) there are oscillations in respect of the number of farms from one year to the next. We also have a yearly reduction by 1.6% of the number of farms from 1995 to 2000, followed by a small increase in their numbers until 2003, followed by yet another reduction during the period 2004-2005 reaching the figure of 374, 517 farms in 2005. These oscillations might be attributed to two phenomena that have to do with:

Demographic changes of population, departure of households towards urban areas or overseas, accompanied with sale of land and increase of average size of farms;

Phenomenon of dividing traditional families into nucleus households, a process that has led to reduction of the of farms average size.

As the following graph 1 shows until 2000 there had been a reduction in the number of small-sized farms and a corresponding increase of the farms owning up to 2 ha of land, which could be ascribed more to the reunion of families than to a supposedly active land market geared towards production. After that period one could easily see a stagnation period

settling in along with a declining trend of big farms. In analyzing the above data it could be concluded that:

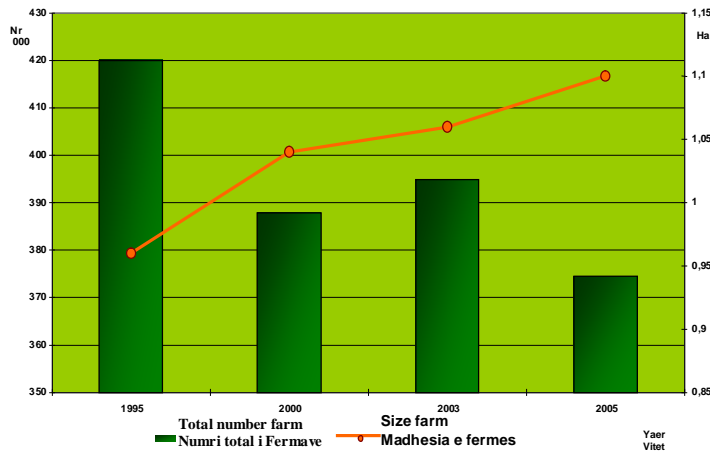


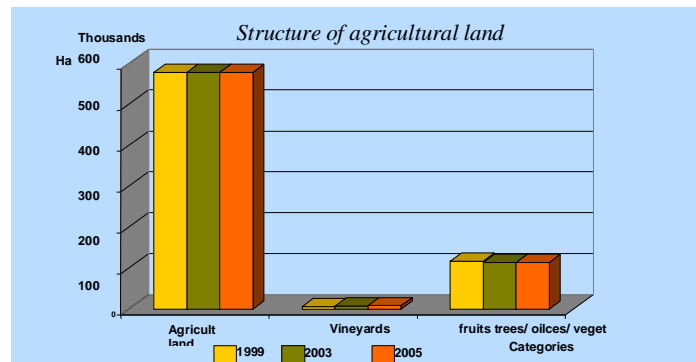
Chart 1. Dynamics of change of number and size of farms over years

Fund of agricultural land and the tendencies of the changes in the sowing structures

Agricultural produce in our country after the '90s is being done under the conditions of a free but imperfect market which is being characterized by a comparatively inadequate infrastructure of transportation and market and from an incomplete information on the market of inputs and agricultural products, from a liberal market with no protective barriers in place, from the lack of protection of the state from the agricultural producers. So subsequently the structure of agricultural produce has endeavoured tremendously to fit in with these circumstances. The existing agricultural structure is an expression of the tendency on the part of the farmer to shun all risks in agricultural production, which depends a great deal on climatic conditions, instability of prices in the market and the relatively high costs of transportation and marketing of products. Agricultural land remains over the stretch of years in nearly the same ratio to the total area of land, according to the statistics of 2005 the agricultural land was roughly 698, 780 ha of land, and constitutes 24 % of the total area of land. As for the physical conditions it covers 43 % in the plain areas, 34 % in the hilly areas and 13 % in the mountainous areas. There is a lack of statistical data on the classification of land based on the mechanical content at the prefecture, district and commune level; The following graph depicts the changes over the years in agricultural land based on the cadastral data of 2005.

The one thing that comes to the surface from the comparison of the planting structures of the land is that between 1995 and 2005 the one prevailing tendency is the gradual reduction of the cultivated land which at any given point prior to the '90s has been a priority with the centralized economy and the top-down policies. With the exception of the fodder-planted area which has increased on average at 3.5 % each year since 1999, the areas under other crops has experienced steady declines, which can be attributed in part to the change of ratios between the two major branches of agricultural production (agriculture and livestock) in favor of the latter. Yet another phenomenon of agriculture is the gradual reduction of the cultivated area by way

of leaving the land barren and uncultivated. The reasons are plentiful, chief among them being: conflicts arising from ownership distance from place of residence, low fertility, lack of labor, lack of infrastructure and irrigation etc. The pastures which are used mainly for grazing has increased significantly since 1995, pastures encroaching upon agricultural land as well. There is no doubt that the rate of exploiting agricultural land can not be attained through obligatory measures or through direct taxation (particularly when such a land is shrinking alarmingly in size). At times the forms and means of imposing obligation or the economic stimulus promoted to better use the land have led to utilization of poor land which has given rise to erosion. The use of wasteland as agricultural land should first of all tie in with the economic interests of the farmer. The role of the state is to set in place the stimulus economic instruments that would allow for the inclusion in production of that part of land which falls under the high-fertility land and which is easily accessed by the market.



Size of farm and the utilization of the agricultural equipments/machineries

The size of the farm, as one of the basic elements, proves very important in terms of knowing it so as to be able to analyze the extent of introducing the machineries. For this reason alone we specifically refer to the agricultural area. The Albanian agriculture is centred around 698, 780 ha (MAFPC), which has been divided on the basis of the title of ownership under 374517 farm with activity. Division under classes of SBP and utilization of the agricultural equipments (for tillage of land) is provided as follows below table 2:

From the above it could be stated that:

Only 1.4 % of NJ.E.B owns over 3 ha SBP and out of them some 117 farms turn out to be big, 91 farms (or 0.00024%) have 8.1 – 15 ha SBP and 26 farms (or 0.00007 %) have > 15 ha SBP

The majority of units, 54 % of NJ.E.B own 0 – 1 ha SBP. Machineries has been used extensively with classes comprising 1.1 – 2 ha and > 2.1 ha. Such sizes of units are not only a serious impediment to the emergence of purely effective machineries (from the economic standpoint), in the use of tractors, are they of medium engine power). For this alone it is critical for the attention to be shifting on other new forms of organization and administration that might be in the form of establishing the farmers' association for the collective use and sharing of agricultural equipments.

Table 2.

Division according to classes of SBP and the utilization of machineries

Classes of SBP (ha)	Farm		Units that use machineries (tractor used in plowing)	
	Number	% against total	% against classes	% against total
0.1 – 1	202737	54	57	31
1.1 – 2	133342	36	85	30
> 2.1	38438	10	94	10

The scale of utilization of agricultural machineries in tillage

The up-to-now machineries being used is intended to replace the arduous task of the labour force which uses up much power and time through the traditional aggregates. One peculiarity of agricultural machineries in Albania is the structure and quality of equipments that are being limited to classical ones such as plows with 2, 3, and 4 blades, discs, sowing machineries for maize and other cereals. Hence, machineries suffer the same impacts as the other agricultural inputs characterized by relatively low quality.

Farmers who are not well positioned economically with no jobs outside agriculture and with no ready cash in their hands can't afford to pay for such agricultural inputs, thus they are forced to till the land on their own bringing the level of agricultural machineries down. Moreover, the small farmers lack in knowledge in utilizing small areas under crop from the standpoint of maximizing benefits. In their small farms, farmers have to sustain themselves with what they produce, and on the other hand have to supply the market. Given the current circumstances this seems to be next to impossible. At times, one of the policies being pursued around the election campaigns has been the fiscal facilitation of fuel agricultural prices. Undoubtedly, the removal of the taxes has a direct impact on the reduction of tillage fees in agricultural machineries, in promoting tillage of land which currently is not being cultivated and subsequently enhancing agricultural yields. The same level of impact is on the increase of number of tractors and agricultural machineries through the state programs (such as the 2KR project). But, in this respect, the introduction of the new tractors from the state will have to be done in compliance with the concrete conditions of the current state of agricultural development in the country, the introduction of the big-sized farms, the priorities of the agricultural cultures, types of land (topography and machineries) in order for the farmers turning into otherwise new owners to be able to pay off the loan. Thus, use of agricultural machineries has extended mainly to the basic operations of land tillage: plowing, milling, and sowing. The scale of utilization of agricultural machineries for these operations is relatively low and distributed across such values:

Mechanically plowed some 42 % of agricultural land or 79 % of the total area tilled;

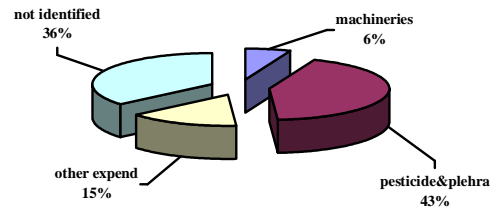
Mechanically milled 39 % of the agricultural area or 81 % of the total are milled;

Mechanically sowed 32 % of agricultural land or 68 % of the total area sowed. The extent of machineries being used in the above operations (harvesting, spraying, fertilizing, irrigation etc) is at very insignificant levels. The use of machineries in fertilizing is almost nil, thus there is no robust statistics to the opposite in terms of volume of work done and physical numbers. The situation is depicted in brighter colours when it comes to use of harvesting combines and other threshing and cutting/reaping machineries. With reference to the area under cereals the load for ha per harvesting machinery is normal, while a good part of farms mainly in the rural areas use threshing machines set in motion/operated by a tractor.

Expenses for agricultural machineries

The role that agricultural machineries play in agriculture is infinitely indisputable.

One could easily discern an imbalance between the ratios of costs of machineries against total costs of farming. Generally speaking, the costs of machineries are much bigger than all the other costs of producing crops but the costs of land itself. The costs of using machineries run up to 50 % of the total cost of production. It's clear that the gaps in turnover from one farm to the next could be attributed to the level of selecting and using machineries as well as to the way how they are operated and managed. The current situation in the agricultural farms is utterly the opposite. The expenditures done on the agricultural machineries (with reference to 2005) represent the lowest figure in terms of costs of production. Affirmed ratios of costs of production in Albania are:



Of course, in view of the market economy, the agricultural machineries as a property of labor means and production is a matter that is especially relevant to owners, who should try hard to manage it effectively. The state, on the other hand, should try equally hard to implement its own agricultural policies at any given time and to contribute to the increase in the efficiency of the agricultural units through the use of agricultural machineries. What is being needed is not only efforts towards satisfying needs with machineries, but also the establishment of the organizational structures along with the management ones fixed on the suitable legislation framework. It's important that the government identifies a strategy on the introduction of agricultural machineries in general. The aim is to create the necessary conditions in order to allow the private sector to be further developed so that it better responds to the needs of farmers and consumers in the agricultural sector. As from the above the policies of the state should be oriented towards: Promoting lending on purchase of agricultural machineries from farmers or from a group of farmers who use it in a collective manner; Establishment of the agricultural infrastructure particularly in terms of services for agricultural machineries and undertaking efforts to introduce it in farms where it's lacking;

Running training courses for farmers, in terms of getting acquainted with new agricultural machineries, selection of the suitable type of tractor and other machineries in compliance with the concrete conditions where they are being operated, used and maintained, and in helping them to tabulate the costs of production for themselves and other parties possessing such machineries.

CONCLUSIONS

The reduction rate of the number of farms accompanied with an increase in the area which appears to be slow, on average in the course of the past 10 years at 1.08 per annum. By all indication this is inadequate in order to bring about a huge change in terms of development of agricultural produce, application of new techniques and up-to-date technology, an increase of competitiveness of Albanian agriculture.

Size of farms has a direct bearing on the introduction and mainstreaming of mechanization into all types of processes, reduction of production cost, increase of efficiency of farms, increase of its capability to resist competition in the market, an increase in the scale of cooperation with the processing industry.

Use of agricultural machineries has extended mainly to the basic operations of land tillage: plowing, milling, and sowing. The extent of machineries being used in the above operations (harvesting, spraying, fertilizing, irrigation etc) is at very insignificant levels and the machineries use in fertilizing process is almost nil.

The fragmentation of productive structures could be shortened, or softened through the setting up of farmers' association. From the various observations conducted there exists the possibility for cooperation to lead to a reduction in physical fragmentation of the land through the exchange of parcels of land at the free will of farmers who have come to grips with the concepts of advantages in cooperation.

Setting up the appropriate conditions in order to eliminate the factors that aid this structure, this will eventually lead to application of modern techniques of production, the wide-scale mechanization of all the labour processes, the reduction of costs and the increase of profitability of the agricultural produce.

As from the above the policies of the state should be oriented towards:

Promoting lending on purchase of agricultural machineries from farmers or from a group of farmers who use it in a collective manner;

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