

ORIGINAL PAPER

THE ECONOMICS OF PEANUT PRODUCTION IN BULGARIA DURING THE TRANSITION PERIOD**ИКОНОМИКА НА ФЪСТЪКОПРОИЗВОДСТВОТО В БЪЛГАРИЯ ПРЕЗ ПРЕХОДНИЯ ПЕРИОД****Nelly BENCHEVA¹, Stanko DELIKOSTADINOV², Carel LIGEON³, Naveen PUPPALA⁴, Curtis JOLLY⁵**¹ Agricultural University in Plovdiv, Bulgaria² Institute of Plant Genetic Resources in Sadovo, Bulgaria,³ Auburn University, Montgomery,⁵ New Mexico State University,⁴ Alabama Agricultural Experiment Station, Auburn University, Alabama 36849Corresponding author: Curtis M. Jolly- e-mail: cjolly@auburn.edu; telephone: 334-844-45583; Fax: 334-844-2577

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ABSTRACT

We examined peanut production systems and selected factors affecting the development of commercial peanut enterprises in Bulgaria. A survey of 220 individual farms and farm cooperatives engaged in the cultivation of peanuts was conducted during 2000 and 2002. Poor farm structure, low level of technology, and nonconformity to farm decision making impede the financial and economic development of Bulgarian peanut production and farm growth, thus limiting farm enterprises emergence into competitive economic units financially operative in a free-market economy. The underlying cost structure, couple with small farms, averaging 0.8 ha in size, prevent farmers from capturing economies of scale, limit farm profitability and hence farm modernization. The lack of owned farm machinery, equipment and storage facilities renders the restructuring and specialization extremely difficult. However, peanut production is still a viable farm enterprise for Bulgarian farmers.

KEY WORDS: Bulgaria, transition, economics, peanut production**РЕЗЮМЕ**

Изследвана е системата на производство на фъстъци и факторите влияещи върху развитието на фъстъчения сектор в България. Проучени са 220 индивидуални и кооперативни земеделски стопанства произвеждащи фъстъци през периода 2000-2002 г. Неподходящата структура на земеделските стопанства, ниското технологично равнище, несъобразяването с процеса на вземане на решения затрудняват финансовото и икономическото развитие и ръста на производството на фъстъци. По такъв начин се ограничава и процеса на превръщане на земеделските стопанства в конкурентни единици, способни да работят ефективно в условията на пазарна икономика. Структурата на разходите, наред с дребните земеделски стопанства със средна обработваема площ 0.8 ha възпрепятствуват извличането на полза от икономия от мащаба, ограничават продуктивността, а от тук и процеса на модернизиране на стопанствата. Липсата на собствена техника, оборудване и складова база предопределят и големите трудности на реструктуриране и специализация на производството. Независимо от това, производството на фъстъци все още е изгодно за българските фермери.

КЛЮЧОВИ ДУМИ: България, преход, икономика, фъстъци, производство

РАЗШИРЕНО РЕЗЮМЕ

Въведение

През периода 1990-1999 г. производството на земеделска продукция в България намалява. Производството от основни култури претърпява спад, който варира от 37% при зърното до 94% при захарното цвекло. Независимо от значителното намаляване на производството при основните култури, при фъстъците то продължава бързо да се развива. България днес е най-големият производител на фъстъци в Европа. Макар че, фъстъкопроизводството разкрива големи възможности за осигуряване на експортна продукция, все още малко се знае за факторите, които ограничават или благоприятствуват неговото развитие.

Цел

В статията се изследва растежа и развитието на производството на фъстъци в България. Проучва се системата на производство на фъстъци и основните фактори влияещи върху развитието на фъстъчения сектор в България през преходния период.

Метод

През периода 2000-2002 г. са проучени 220 индивидуални и кооперативни земеделски стопанства отглеждащи фъстъци. Данните са анализирани със статистическата програма SPSS. Изследвани са различни физически, социални и икономически фактори оказващи влияние върху разходите и добивите от фъстъци. Обсъдени са ограниченията, които затрудняват развитието на производството на фъстъци.

Резултати

Проучването на производството на фъстъци показва, че неподходящата структура на земеделските стопанства, неефективното разпределение на ресурсите, ниското технологично равнище както и несъобразяването с процеса на вземане на решения, затрудняват финансовото и икономическото развитие и ръста на производството на фъстъци. По такъв начин се ограничава и процеса на превръщане на земеделските стопанства в конкурентни единици, способни да работят ефективно в условията на пазарна икономика. Въпреки, че фъстъците се отглеждат в най-благоприятните почвени и климатични райони, техническата и икономическата ефективност са все още лимитиращи фактори. Преобладаващите маломерни земеделски стопанства с около 0.8 ha средна обработваема площ възпрепятствуват извличането на полза от икономията от мащаба, ограничават продуктивността, а от тук и процеса на модернизиране. Производствените разходи са положително повлияни

от подготовката на площите, посевната норма, използването на торове и разходите за прибиране. Негативно е влиянието на препаратите, разходите за напояване, разходите за ръчен и механизирен труд. Фермерите трудно сключват договори за наемане, въпреки сравнително ниските цени на земята отдавана под наем. Обикновено фермерите избягват тази възможност за разширяване поради несигурността на пазара и неясната система на договориране. Липсата на собствена техника, оборудване и складова база предопределят и изключително големите трудности на реструктуриране и специализация на производството. Трудностите по осигуряване на оборотен капитал и инвестиции са сериозно ограничение за повечето производители.

Извод

Съществуват редица физически, социални и икономически ограничения, които влияят върху производството на фъстъци. Значителна част от тези ограничения могат да се преодолеят на фермерско равнище. Размерът на земеделските стопанства остава основен проблем, но стопанствата със среден размер от 1.0 ha все още могат да подобрят земеделския си доход от производство и маркетинг на фъстъци.

Introduction

In the beginning of 90s, a long process of transition from centrally planned to market economy began in Bulgaria. As a result of the implemented political and socioeconomic reforms, and the radical changes in land reform, agricultural output experienced a decline. The reforms have been directed toward the elimination of the existing economic and institutional structures of land and resource ownership that restricted industrial growth, and the development of new macroeconomic support policies [4].

The agrarian reform had the following main objectives: land restitution; liquidation of the former cooperative farms; privatization of the state enterprises in agriculture and food-processing industries; price and trade liberalization; and the development of policies for accelerated progress in the agricultural sector. The prolonged period of changes connected with the reform has had an adverse effect on the production of almost all agricultural commodities [15].

In 1999, farm output of some major agricultural crops declined compared to that of 1990. For example, grain-production decreased by 37%, fruit-production by 60%, tobacco by 60%, sugar beet production by 94%, and wine production by 50% [14].

In spite of the major reduction in the production of most crops, peanut production continued to experience

Table 1: Demographic and Farm Characteristics of Peanut producers in Bulgaria, 2001 to 2002

Characteristics	Frequencies (Numbers) Total N=211	Percent (%)
Age		
Less than 30 years	4	1.9
Between 30 and 40 years	53	25.1
Between 45 and 60 years	91	43.1
Over 60 years	56	26.5
Total	204	96.7
Education		
Elementary education	86	40.8
Secondary education	105	49.8
Secondary agricultural education	3	1.4
Post secondary education	8	3.9
Total	202	95.7
Peanut Areas		
0.1 to 0.5 hectare	108	51.2
0.51 to 1.1 hectares	47	22.3
1.11 to 1.60 hectares	21	10.0
1.61 to 2.1 hectares	18	8.5
Greater than 2.1 hectares	10	4.7
Total	204	96.7
Yield		
1350 to 1800 kg/ha	13	6.2
1801 to 2300 kg/ha	94	44.5
2301 to 2800 kg/ha	80	37.9
2801 to 3300 kg/ha	14	6.6
Greater than 3300	3	1.4
Total	204	96.7

There were up to 9 missing observations

rapid growth. The increased production of peanuts can be attributed partially to an expansion in area planted. At present, Bulgaria is the largest producer of peanuts in Europe. In 1989, Bulgaria produced 60% of peanuts grown in Europe [1]. Although peanut shows promise as a major export commodity and a foreign currency earner, little is known about the factors that constrain or facilitate industrial growth of peanuts. In this study, we examine the growth and development of the peanut industry in Bulgaria.

Bulgarian peanut sector during the period of transition

Bencheva and Georgiev examined the economic aspects of the peanut sector's development in Bulgaria during the transition period [1]. Favorable natural and climatic conditions such as fertile soils, irrigation system, and varieties adaptable to local conditions make Bulgaria an

ideal place for growing high-quality peanuts in Europe [8]. Bulgaria is situated on the northern boundary of the region, with temperature and a growing season permissible for the growth and development of peanuts. These factors have established Bulgaria as a main peanut producer in Europe. Prior to 1989, the country cultivated 65% of the peanut area produced in Europe. During the transition period Bulgaria's peanut area planted escalated to 80%, and the country was responsible for 54% of all peanuts produced in Europe [2]. The introduction and adoption of these peanut varieties in Europe enhanced the profit potentials of peanuts relative to other competing crops, and made peanut production more attractive as an alternative farm enterprise [1].

In terms of returns to investment for oil producing and industrial crops, peanut is in second place after sunflower. The growing domestic and international

demand for peanuts, derived from their wide use as a food ingredient and a nutritious food source, has increased the economic importance of peanut as a farm enterprise [3]. While Bulgaria is experiencing a surge in production, other European peanut-producing countries, such as Greece, Spain and Portugal are concurrently undergoing a sharp decline in output. Hence, this has allowed Bulgarian peanuts the opportunity to increase its share in the European market [3]. Because of Bulgarian peanut sensory characteristics and the absence of aflatoxin, Bulgaria is able to meet the strict European standard set for aflatoxin presence in peanuts of less than 4 parts per billion and dominate the edible peanut market [7, 10].

During the years of transition, peanut production was practically concentrated on private farms. In the period 1992-1995, private farmers were in charge of 83.8% of the land used for peanut production and produced 81.6% of total production. There has been a marked positive trend toward private farm concentration in the peanut market in Bulgaria. During that period, private farm involvement in area planted increased by 3.2 fold. In spite of the observed increasing trend in area planted, yields for the whole country declined [9]. The study was designed to examine the production system of peanuts and to evaluate the factors that influence development of the peanut industry as a major industry and income-earner.

METHODS

The study was conducted during the period 2000-2002. Data for the study were collected using an on-farm tested survey instrument, and personal interviews conducted in Bulgaria's main peanut-producing area. The questions included in the survey instrument were arranged under 25 subheadings, and covered various aspects of socio-demographic characteristics of farm households, the production system, resource use, marketing and distribution, credit and banking services, environmental conditions affecting crop production, producers' attitude, knowledge of growing peanuts, and constraints and opportunities related to peanut production.

The survey was conducted in the Plovdiv region (Figure 1), where 72% of Bulgaria's peanuts are planted. The producers in this region are experienced, skilled, and have a tradition in peanut production [5]. On average, 10 producers of peanuts were randomly surveyed in each locale. In locales with large numbers of farmers and established tradition of growing peanuts up to 15 producers were interviewed. A total of 220 farmers were interviewed during the period 2000-2002.

RESULTS

Production system

About 34.8% of the farms surveyed are operated on lands owned by the farmers themselves. The use of rented land for peanut production is fairly frequent with about 65.1% of the farmers renting land for the production of peanuts (Figure 2). The share of peanut acreage of the total area under crops for the years 2000, 2001 and 2002 was 11.7%, 6.4% and 17.2%, respectively.

Peanuts are produced on farms that are relatively small and average about 0.81 hectare (ha) in size. The farms of less than 0.5ha of peanuts are most numerous and make up 15.2% of the farmers (Table 1). About 22% of farmers had holdings between 0.6 and 1.1 ha. These farms are self-sufficient and produce mainly for home consumption with any excess being traded on local markets. The farms cultivating 1.10 ha or more have definitely expressed a need to become commercial peanut growers. Their efforts are aimed at the adoption of cost-reducing technologies. The farms of 2 ha or more are not numerous (Figure 3). In Figure 3, we see that the number of farms and the average size of farms move in opposite directions. The farms belonging to this group are cooperatives or larger family farms that employ outside labor.

The age distribution of farmers is skewed towards the age beyond retirement. A large percent of farmers (26%) are beyond 60 years old. Only about 27.0% of farmers are less than 45 years old and 43.1% are between 45 and 60 years old (Table 1).

The education level is low with 41.2% of head-of-farm households attaining a primary education level. A large portion of farmers depend on their experience in farming because most farmers have owned and managed their farms for over 20 years. The survey data show that about 95% of household members participate in peanut growing activities. Of those who participate about 50% work part-time on the farm for up to 4 hours per day.

The choice of appropriate soil type on which to grow peanuts, crop-rotation and the cropping system determine to a great extent the average yields of peanuts. Almost 60% of the soils under peanuts are sandy or sandy-loam which are ideal for peanut production. The organization of the cropping pattern and the crop rotation also influence crop yields. About 15% of peanuts grown are rotated and follow a particular rotation sequence. Peanuts are grown in rotation with wheat and barley. Some vegetables such as maize and melons also follow the peanut crop.

Irrigation and fertilization are intensive factors that exercise decisive influence on the average yields of peanuts. According to the survey data, more than 90% of the peanut producers apply nitrogen fertilizers, 17% apply

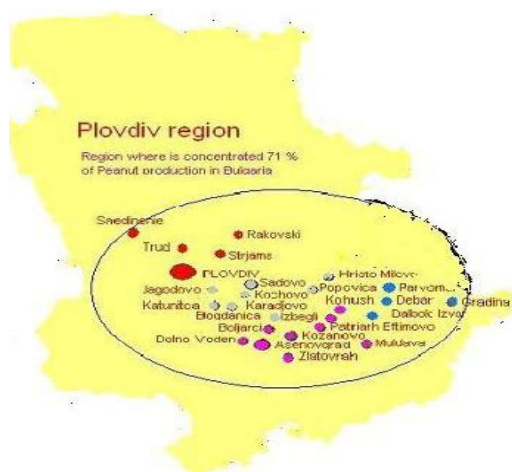


Fig. 1 Peanut Production Region in Bulgaria

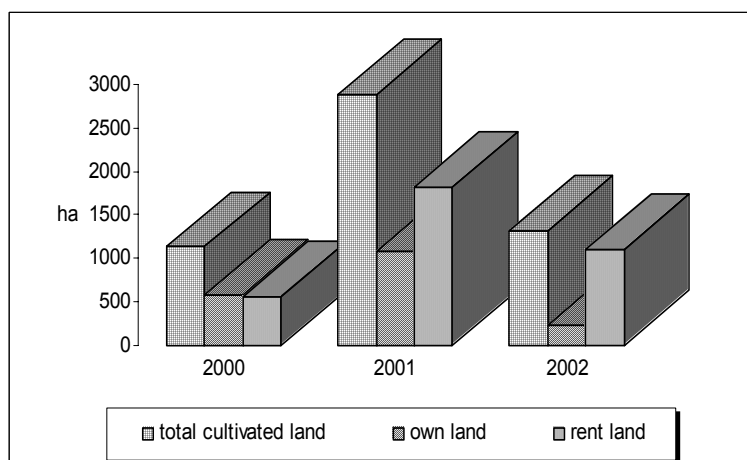


Fig.2 Agricultural Land Ownership

phosphates, and only 5% apply potassium fertilizers. There seems to be no relationship between the amount of nitrogen fertilizer applied and the yield. A large number of farmers are applying less than the recommended rate (400kg/ha).

The small-sized farm dominates peanut production and low mechanization on these farms encourages the usage of larger amounts of labor input. The data show that 72% of the family members participate in the growing of peanuts (Figure 4). Nearly 65% of them are partially engaged in the production (up to 4 hours each day), and 26% work full time. Just about 9% of the family members work less than 4 hours each day. During the critical labor-consuming periods, such as the crop harvesting, 26% of the farmers hire additional number of workers.

Economic difficulties during the transition period impeded the purchase, maintenance, and renewal of peanut machinery and equipment, resulting in low mechanization. The survey data show that only 60% of the peanut producers own their tractors, 12% of them have sowing machines (seeders), 67% have ploughs, 4% own harvesters, and 7% have trucks. To carry out the different farming practices, 32% of the farmers decide to jointly use the required machinery and equipment, 21% of them turn to cooperative farms for some mechanized services, or the local cooperative performs all the mechanized activities (14%). Figure 5 shows the basic problems standing in the way of the machine use in peanut production.

The problems of limited mechanization in peanut production arise mainly from the high prices of agricultural machinery (Figure 5). For that reason, almost 88% of the producers can not afford the necessary equipment. Nearly 7% of the producers think that the lack of appropriate small-scale machinery for growing of peanuts on small areas leads to increasing production costs and lowers farm efficiency. For 51% of the farms studied, the lack of access to credit for buying machines is highly restrictive. For 65% of the farmers, the high operation and maintenance costs retard progress in peanut farming and marketing. The difficulty in accessing spare parts for the repair and maintenance of machinery is a problem for some farmers (8%). The small-sized farms hardly use mechanization and those that use it do not benefit from economies of size.

Yield and production

For the period 2000/2002, the average peanut yield was 1956 kg/ha. The average yields increased during the period 2000 to 2002 (Figure 9). The highest yields are noted in the villages of Izbegli (2784 kg/ha), Kozanovo (2636 kg/ha), Zlatovrah (2599 kg/ha), and P. Evtimovo

(2491 kg/ha). Peanut production is traditional in these villages and the farmers there have solid experience and technological knowledge in growing peanuts. The lowest yields were obtained in the villages of D.Voden, D. Izvor and Mominsko. The highest peanut yields obtained were received in farms with an average size of 1.5 to 2 ha (Figure 6). Some farmers experienced low yields, and this is due in part to their failure to follow recommended production practices. The average yield level in peanut production depends on a series of factors including the use of the recommended technological packages. These include the proper use of pesticides and fertilizers. The average yields are directly connected with input quality, quantity, and its timeliness in supply. Climatic factors also influence peanut yields.

Fertilizer, land preparation and harvesting costs positively influenced cost per ha of growing peanuts whereas chemicals, irrigation and mechanical labor reduced the cost per ha of peanuts.

Constraints to the peanut industry development

The implications of the transition period on the peanut sector, peanut farms, and rural households can be classified into two areas: the peanut farms' (micro level) practices, and the farmers' responses to policy changes, and the constraints at a national (macro) level, particularly those related to government policy on farm structure. In most cases the micro and macro level constraints are inter-related.

One would expect that farmers would quickly adjust to commercial production of peanuts after the post-adjustment period. The majority of the noncommercial peanut-producing farmers have not been quick to exploit the opportunities offered by a free market system. Bulgaria's peanut farmers in general are not yet willing to take risks in farm expansion and development. Only a few of them (4.1%) have decided to invest in business expansion. They prefer to apply a risk-minimization or risk-aversion strategy of low investment in production and technology adoption to enhance returns to current investment.

The legal framework of land reform has resulted in the division of farms into small, noneconomic units that prevent farmers from benefiting from economies of scale.

The small-size farms restrict the possibilities of efficient use of the modern factors of production, especially machinery and equipment.

In most cases, the peanut-growing farms produce for home consumption and sell the excess quantities mainly on the local markets that are not yet well developed. The demand for high quality, standardized peanut and peanut products is still limited. The difficulties in marketing

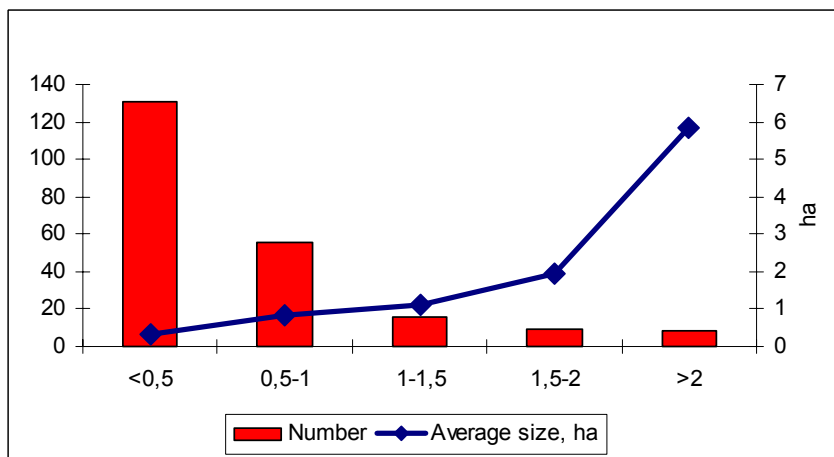


Fig.3 Distribution of Farms by Number and Peanut Area

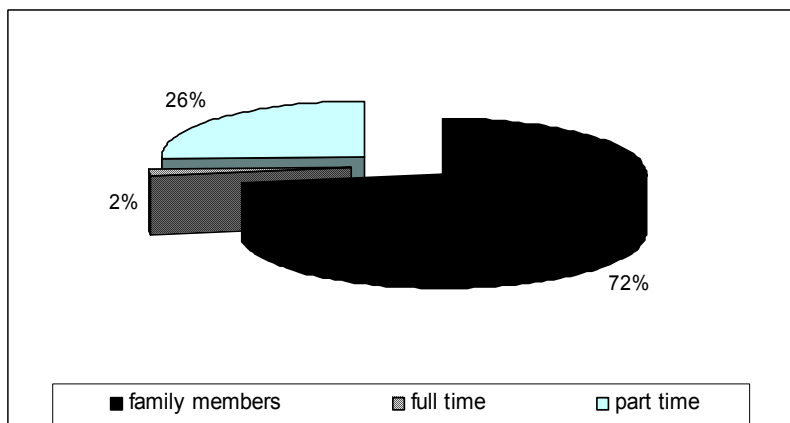


Fig. 4 Use of Labor

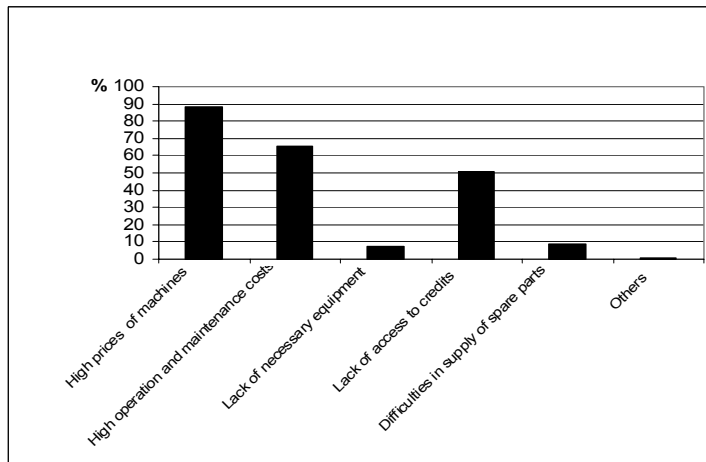


Fig.5 Main obstacles in the use of machines

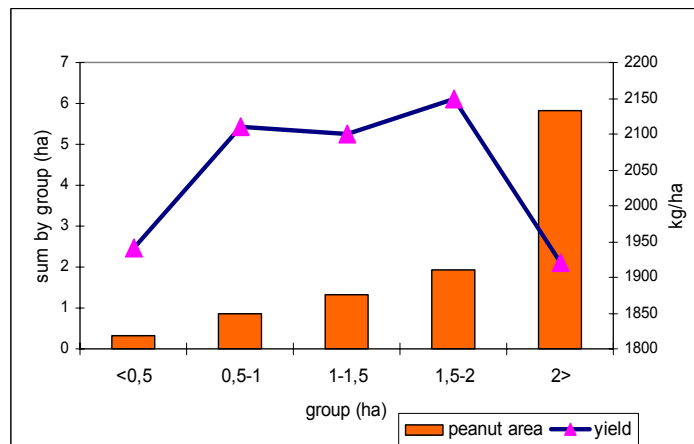


Fig. 6 Distribution of peanut farms by area and yield

the produce is also aggravated by increased consumer demands for quality products that are competitive with imported nuts. The lack of organized marketing channels, coupled with reliable sources of agro-market information, as well as the insufficient knowledge of the marketing process, impede the development of the peanut industry. Processors and millers have yet to develop a system for reducing purchasing risks and to assure the continuous stream of large quantities of peanuts from producers to manufacturers. An inexistence of forward contracting and other purchasing mechanisms do not facilitate the marketing process.

Rising input prices couple with stagnant or slow growth of product prices restrict marketing margins. A number of farmers have been unable to cover production costs, and these farmers remain in production only because they do not account for the costs of all factors of production. The failure to generate returns above costs does not encourage the purchase of new capital and restricts technology innovation.

The limited access to capital is a serious restriction for the development of peanut production during the transition period. The difficulties to obtain credit and the associated financial risks limit capital investment in peanut production and marketing.

The absence of peanut producers' association that may assist in the organization of farmers and represent them in their efforts to access credit from banks and government institutions is an impeding factor in the modernization of the peanut industry.

SUMMARY AND DISCUSSION

Peanut is not a major crop in the Bulgarian agricultural sector, but it is a crop with major export potential because of its good taste and lack of aflatoxin. The detectable aflatoxin levels in Bulgarian peanut is zero and, hence, this crop can be easily exported to the European market where most major peanut-producing countries encounter difficulties exporting the product because of aflatoxin levels higher than the 4ppb acceptable in European markets [7]. Bulgaria is also the largest producer of peanuts in Europe and transportation costs for trade with other countries could present Bulgaria a competitive edge in this market.

However, the small-sized farms may be one of the factors restricting agricultural development in the transition period. Farmers have not organized themselves to purchase large quantities of inputs at reduced costs. It has been argued that subsistence agriculture is an impediment to agricultural growth in Central Eastern European (CEE) countries, including Bulgaria, because of their lower

technical and economic efficiencies [6,11].

Some researchers believe that the small sized-farms are a hindrance to agricultural development in Bulgaria, and clearly state that the major problem of agricultural commercialization in Bulgaria is fragmented land holdings [12]. Other researchers, such as Todorova and Lulcheva believe that agricultural development and sustainability can be achieved through land consolidation and territorial planning [16]. Policy discussions have looked at limiting the growth of these small farms in order for Bulgaria to become competitive on the global market. Even with farms of 1.0 to 2.0 ha Bulgarian farmers can generate positive net returns from peanut production and to remain competitive in a global market. There are some who believe that the small-sized farms do not pose problems to agricultural development, but rather technical efficiency and crop choice are the impediments [13]. Peanut farms, in spite of their small sizes, generate significant income to rural Bulgarian farmers.

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