

LAND GRABBING IN EASTERN EUROPE: GLOBAL FOOD SECURITY AND LAND GOVERNANCE IN POST- SOVIET EURASIA

Oane Visser †‡ and Max Spoor †

† Assistant professor Dept. of Anthropology and Development Studies,
Radboud University Nijmegen, P.O. Box 9103, 6500 HE Nijmegen, The Netherlands.

† Professor Institute of Social Studies of Erasmus University, The Hague, The Netherlands.
P.O. Box 29776, 2502 LT The Hague, The Netherlands.

‡ Corresponding author: E-mail: o.visser@maw.ru.nl, Tel. +31 (0) 24 – 3611534,.



*Paper prepared for presentation at the 118th seminar of the EAAE
(European Association of Agricultural Economists),
'Rural development: governance, policy design and delivery'
Ljubljana, Slovenia, August 25-27, 2010*

*Copyright 2010 by Visser and Spoor. All rights reserved.
Please do not do quote without permission of the authors.*

Abstract:

While 'land grabbing' in Africa by China, and other populous, high-income Asian countries such as South Korea got quite some attention, land grabbing in post-Soviet Eurasia has gone largely unnoticed. However, as this paper shows, recently also in the latter region foreign state and private companies are accumulating vast expanses of farm land. The paper discusses the factors which make post-Soviet Eurasia such an attractive area for international investment, with arguably much more potential than most areas in Africa or Asia. Second, the process of land accumulation and acquisition of farms is described. Both domestic as well as international accumulation of land is dealt with, placing this in the domestic context of agricultural development and institutions. Furthermore, the main actors (investors) involved in land grabbing are distinguished (according to their country of origin and legal or institutional form). Third, the paper outlines the main obstacles (and points of contention) concerning the emergence (and effectiveness/performance) of domestic and especially international, agro-holdings in the region, and will present some preliminary findings around the question whether this development is a necessary step towards agricultural modernization, or that there are substantial disadvantages to land grabbing.

Keywords: Land grabbing, post-Soviet countries, agroholdings, economic inequality

Introduction¹

Food security and agricultural development are currently high on the agenda of international development agencies and national governments.² With a growing world population, sharply increasing demand for high value food in emerging Asian economies, speculation in international food markets, and competition for land with bio-fuel production, the agrarian question of land use and ownership has rapidly regained importance. The urgency of these developments became particularly in 2007-08 when soaring food prices led to food riots and increased poverty in various countries in the global South. In the last decades agricultural land was largely ignored as an essential resource. However, due to increasing demand for food and bio-fuel crops (and potential loss of agricultural land because of climate change and urbanization), agricultural land is increasingly becoming a scarce and contested resource in the global political and economic arena (BRAUN and MEINZEN-DICK 2009).

The most well-known trend that reflects this changed view on agricultural land as a strategic resource is that China, and other populous, high-income Asian countries such as South-Korea, have embarked on a strategy of so-called 'land grabbing' in African countries like Madagascar, Mozambique and Tanzania. On the one hand more attention to this phenomenon is given by analyzing it from the point of view of investment in the agricultural sector (see UNCTAD 2009).³ On the other hand there is growing critique on the increased powers of agri-business in global 'food regimes', in particular dominated by US-based multinational companies (MCMICHAEL 2009). Nevertheless, until now the new and emerging field of studies on (the new geo-politics of) international land grabbing is almost exclusively focused on Africa (see e.g. COTULA et al. 2009).

Although Africa still has substantial agricultural land that is not yet intensively utilized, it is remarkable that the under-used (and often unused) land masses of post-Soviet Eurasia are practically ignored, at least as it seems at first sight. The more so, as this former bread basket of the 19th and early 20th century, contains much more fertile and well-endowed agricultural land than the African continent. According to a recent FAO report, only four countries in the world have significant untapped capacity to make a major impact on meeting the growing global food needs, of which three are former Soviet countries, namely Ukraine, Kazakhstan and Russia, while the fourth is Argentina (DAVIS 2008).

This paper will focus on these vast agricultural land areas in Ukraine, Russia and Kazakhstan, which are politically, and geographically almost literally, in between the global economic powers of the West (with the EU bordering Ukraine), China (South-East of Kazakhstan), Russia (bordering Kazakhstan and the Ukraine), and one possibly could add the Middle-East/Gulf States (at the South of Eurasia). Until now research, as well as political interest, in Russia and its (former) backyard has predominantly focused on energy issues, with the Caspian Sea oil resources and pipeline transits through Ukraine as focal points of international contestation.

However, there are ample signs that not only oil and gas, but also land is increasingly becoming a major asset and political priority in this region. Interestingly, domestic oil and gas companies were the first investors from outside agri-business to invest in land (starting from 1999/2000 onwards). Although some of these investors showed signs of backtracking from

¹ An expanded and revised version of this paper will be forthcoming as an article in *The Journal of Peasant Studies*, see Spoor and Visser (2011). For non-literal references to this paper, please refer to the article version.

² A prominent example is the World Bank's World Development Report 2008 was dedicated to agriculture, bringing it for the first time decades back on the policy agenda (WORLD BANK 2007).

³ UNCTAD 2009 contains the comprehensive World Investment Report on "Transnational Corporations, Agricultural Production and Development".

agriculture, overall they still have a great impact on the sector. From the perspective of the Russian state, also interest for agriculture and food is quickly rising. In February of 2010, Russia announced a new 'Food Security Doctrine', labeling the agro-food sector as a strategically important sector, and setting ambitious goals for self-sufficiency in food production. Various Russian specialists and investors recently have gone as far as stating that arable land is rapidly becoming just as important as oil.

Moreover, Russian government representatives used the 2009 International Grain summit in Moscow to introduce the idea of a 'grain OPEC', giving further substance to the idea that food and land compose the 'black gold' of post-Soviet Eurasia in the new millennium. Early 2010 Kazakhstan announced similar goals of increased food self-sufficiency. Ukraine, which until the recent presidential elections was paralyzed by political rifts, and with a food policy that was arguably less well formulated, is also imposing export bans on cereals to ensure low-priced grain for domestic markets. It is expected to follow in the footsteps of Russia and Kazakhstan.

After the demise of the Soviet Union, in which agriculture was heavily subsidized and relatively inefficient, the successor states experienced dramatic economic decline with investments in agriculture plummeting. Economic recovery started from the mid-1990s onwards, but halted temporarily by the Russian crisis. Agriculture grew faster after the crisis, as with the dramatic devaluation of the Russian ruble, import prices for agricultural products had risen rapidly, and domestic supply was stimulated. Most recently, investment in the agro-food sector is accelerating, and the accumulation of land in the former Soviet Union takes (on) an international dimension. In Ukraine a land deal with the government of Libya attracted most attention, but more importantly, Western investors (from e.g. the UK, Sweden, and Denmark) as well as petrodollars from the Gulf States are starting to change the countryside. In Kazakhstan, the involvement of China came to the floor, after the Kazakh president recently announced that the Chinese government asked permission to lease up to 1 million hectares of Kazakh land. In Russia, investors from all those countries are trying to obtain land. However, we do not know exactly how much. The accumulation of land is a highly sensitive issue both for the leasing and the hosting countries, and therefore the process of land grabbing in post-Soviet Eurasia has possibly advanced further than official statements and media reports suggest (BILLETTE 2009).

The aim of this paper is to give an overview and analyze the largely unnoticed and partly hidden process of land accumulation by foreign states and private investors in the FSU. The paper will describe the magnitude and speed of, in particular international, land grabbing in this area. Further, it will sketch the types of foreign actors involved in this search of fertile soils.

The (international) land accumulation drive brings much needed investment to the forgotten countryside of post-Soviet Eurasia, but in this paper we will also look at the benefits this will accrue. The following questions will be investigated. Will they only accrue to the leasing nations and their companies, and perhaps to the host nations' governing urban and rural elite, while the local rural dwellers lose out, and to what extent does the transnational land accumulation will lead to socio-economic stratification or even impoverishment?

This paper deals with Russia, Ukraine, and Kazakhstan as these countries have the largest agricultural land reserves within the former Soviet Union. It draws on media reports and web-sources, complemented with insights from fieldwork by one of the authors in Russia (for a description of the field research see e.g. Spoor and Visser 2004; Visser 2008). In this way the paper aims to capture both domestic as well as transnational aspects of land accumulation and some of the related socio-economic processes. Naturally, with such a recent phenomenon, and the constraints on sources available (also due to the sensitivity and subsequent non-transparent nature of the process) the conclusions are still somewhat preliminary and sketchy.

The structure of the paper is as follows. First, the paper will discuss the factors which make post-Soviet Eurasia such an attractive area for international investment, with arguably much more potential than most areas in Africa or Asia. Second, the process of land accumulation and acquisition of farms is described. Both domestic as well as international accumulation of land is

dealt with, placing this in the domestic context of agricultural development and institutions. Furthermore, the main actors (investors) involved in land grabbing are distinguished (according to their country of origin and legal or institutional form). Third, the paper outlines the main obstacles (and points of contention) concerning the emergence (and effectiveness/performance) of domestic and especially international, agro-holdings in the region, and will present some preliminary findings around the question whether this development is a necessary step towards agricultural modernization, or that there are substantial disadvantages to land grabbing.

Prospects for agriculture in post-Soviet Eurasia

Why did the post-Soviet region attract so much investment the past few years, and is this likely to continue? Regarding the factors making the region attractive for (foreign) investors, we could distinguish short term and long term factors. Firstly, in the short run there are clear advantages. Most of the world's unused agricultural land is actually located here, possibly between 20-40 million hectares.⁴ Prices of land are very low. The cost of fertile, black earth soil is 10 to 15 times lower than in Argentina and 60 times lower than in Sweden (POPOVA 2008). Low prices are partly due to the combination of political instability, lack of clarity about property rights or restrictions to sales and the large supply of unused land. Therefore, the prices for fertile (Black Earth) land are particularly low in Ukraine, partly caused by its political instability and moratorium on land ownership and sales (MICKEY 2009: 3). Due to the sharply increasing interest in land by investors, the value of land in the Russian Black earth area roughly doubled from 2006 to early 2008. However, the financial crisis has temporarily halted this rise in prices. Various sources have reported that in Ukraine the lease prices for land dropped as a result of the financial crisis. In Russia prices were reported to be down 30-50 percent in the autumn of 2008, to under 500 dollar a hectare (GAIA CAPITAL ADVISORS 2008).

There is some evidence that suggests that the potential for growth can indeed be realized within a short period. A clear example is the increase of grain harvests and exports in e.g. Russia. Russia began to sell grain abroad in 2002 for the first time in decades and quickly became one of the world's top-10 grain exporters. Currently it is placed after the US and Canada (POPOVA 2008).⁵ In Russia, millions of hectares are laying fallow, and according to former Minister of Agriculture Gordeev speaking at the 'Green Week' in Berlin early 2009, Russia could potentially provide food for 450 million people, or thrice its current population.

Infrastructure, such as roads and handling networks, is reasonably developed (ATKIN 2009: 112), certainly in comparison with the African countries in which the large food outsourcing countries such as China, South Korea and the Gulf countries are investing. The whole grain handling network in the South of Russia for instance has a large capacity, and works adequately due to recent investment in its upgrading (FAO/EBRD 2008: 38). Elevators for grain in this region are sufficient and even showing overcapacity (due to the price policies of the companies owning them, which gave farm enterprises an incentive to invest in their own elevators). However, there still are some bottlenecks in the infrastructure. In a recent survey among experts in the agro-industry sector 13 percent mentioned transport as the most critical bottleneck (FAO/EBRD 2009: 65). 'A big problem exists with getting the grain out of the country', stated Mark Lewis, a British national who served as director for regional offices of Agro-Invest, a subsidiary of Sweden's Black Earth Farming (POPOVA 2008). Indeed, the total port capacity in Russia for instance is not sufficient to handle the increased amounts of grain for

⁴ BBC, 1st August 2008, Daniel Fischer reporting on only Russia, stated that 100 million acres of fertile agricultural land was lying fallow (=40 million hectares). Other lower estimates speak about roughly 20 million hectares. A FAO/EBRD (2008) report estimated that 23 million ha arable land had been taken out of production by 2003-05 (compared with 1990-92) in Kazakhstan, Russia and Ukraine.

⁵ In 2007 Russia exported 13.6 million tons of grain (POPOVA 2008).

export in the last three years. In some cases the capacity has been exceeded by more than two-fold (FAO/EBRD 2008: 38). The largest Southern Russian port at Novorossiisk was 18 months behind the schedule (POPOVA 2008), and it was only due to export restrictions on cereals by Ukraine, that Russian exporters were nevertheless able to export, through Ukrainian ports that were being made available (FAO/EBRD 2009: 65).

Russia aims at a significant increase in grain export to East Asia in the marketing year 2010-2011, but this is severely constrained by the transportation infrastructure. The situation with ports on Russia's Pacific shore is even more constrained. In fact, until now there is no port on the whole Far Eastern shore that can handle grain. Currently, there is work under way to build a specialized port terminal, and test shipments are starting. Negotiations with Japanese companies are taking place for investment in new port facilities (in conjunction with Japanese investment in Siberian farmland) (PAXTON and SUKHOTSKI 2009).

Overall the global financial crisis had a severe impact on the post-Soviet economies, as well as a negative impact on domestic investment in agriculture. Initially it looked as if they would be shielded from the effects of the financial crisis, but when it hit the region by the end of 2008, the impact was much more severe than expected. In Russia for instance, many indicators, including Gross Domestic Product (GDP), decreased dramatically during the crisis, making Russia a high risk place for foreign investors. As a result a 'dramatic capital outflow' took place in Russia in the first quarter of 2009 (KONOVALOVA 2010), as well as in other post-Soviet countries. As the agrifood sector is worldwide seen as venue for safe investment in crisis times, the impact of the financial crisis on investments in the agricultural sector in this region was less severe than in other sectors. Indeed, the financial crisis leads to difficulties to get credit for farm enterprises. However, at the same time this offers an opportunity for investors with significant capital to buy up weak farm enterprises and further accumulate land resources.

Secondly, in the long run, the prospects for agriculture are bright for this region. Most forecasts point to a northward shift of the agricultural production zone in the Northern Hemisphere due to climate change. This is clearly beneficial for agriculture in Countries such as Russia, Ukraine, but not so for Kazakhstan (MINZINA et al. 1999). Vast tracks of land are opened up to viable agriculture in Ukraine and Russia due to lengthening seasons (ATKIN 2009: 112).

The large FSU countries are relatively well-endowed in terms of water resources. Many areas in the world such as Africa, northern and western China or the southern part of the US, will likely face a (further) decrease of available water, in part due to climate change. Saudi-Arabia which was a grain exporter until recently, has curtailed its production to spare its water resources, and is now one of countries most actively involved in land accumulation abroad. The water resources in most of the post-Soviet countries considered here have abundant supplies of water, which are 'future proofed' (Ibid.). Of course this is different in the Central Asian countries such as Uzbekistan and to the south of Kazakhstan (ARSEL and SPOOR 2010).

Domestic and international land accumulation in the Former Soviet Union

Domestic land accumulation

Due to a drastic decline of domestic food production after the collapse of the Soviet Union, the pre-Soviet bread basket of the world became heavily dependent on Western food import. The first decade of transition was marked by a struggle for the assets in the industry and energy sectors. State policy in the successor states had a strong urban bias. In the mean time, rural areas became depopulated and large tracts of land were withdrawn from production.

In the course of the 2000s, economic recovery and growing demand for food coincided with soaring worldwide food prices. As a result, the post-Soviet oligarchs who already obtained the jewels of the industry and energy sectors in the 1990s, have recently turned their gaze to the agricultural sector. Domestic investors are buying up the large former collectives which still

dominate the rural landscape. While formally these collectives or state farms were privatized, with land-shares distributed among the workers on paper, in practice they remained large-scale as before (SPOOR and VISSER 2001, 2004).

The accumulation of land and investments by agro-holdings in Russia arguably forms a watershed in the agrarian development, and occurs at a high speed. According to the Russian Ministry of Agriculture in 2003 more than 90 agro-holdings were active in 25 regions. While large agro-holdings were estimated to control 1.4 to 4 percent of Russia's farmland in 2003 (BUSH 2008; UZUN 2004). Currently they have some 10 percent of land in lease or ownership, according to the institute for Agricultural Market Studies in Moscow (BUSH 2008). Moreover, in the Black earth they occupy more than a quarter of the farm land (and over a third in e.g. Belgorod) (see e.g. DIDENKO 2009).⁶ Of course the reliability of such figures can be questioned, but more detailed evidence from several regions shows that the share of land held by agro-holdings has soared. In Moscow region for instance, in 2002 membership of a holding was an almost unknown phenomenon. Two years later about one third of the farm enterprises were already incorporated in these organizations (HOCKMANN et al. 2005: 2). This growth was even going on in 2008/2009. For instance, in 2008 the agro-holding 'Inteko-agro' doubled its acreage to 250,000 ha, and 'Agroculture' did new acquisitions in three black earth regions (DIDENKO 2009).

Belgorod in Russia's black earth area, is the region where the governor already early on in the 2000s strongly stimulated the formation of agro-holdings. This region has the largest share of agriculture controlled by agrohholdings. Currently four large agro-holdings operate in this region (one of the four *Orel Niva*, in 2006 already operated on 277 000 hectares of arable land and employed around 16 000 people). There were also 37 agro-firms in the region, counting in total 581 000 hectares of arable land (15,700 ha on average per agro-holding), 173 agricultural, 37 processing and 36 service enterprises (GATAULINA et al. 2006).⁷

Within the Black earth region the last two years the focal point of acquisitions of farm land by agro-holdings shifted from regions like Belgorod (and Lipetsk) to Voronezh and Tambov where more 'free' land (not yet controlled by an agrohholding) is available (DIDENKO 2009).

Foreign investment and land accumulation in agriculture

It is a group of medium and high income countries in Asia and the Gulf region which have embarked on a worldwide land accumulation strategy. China, South-Korea and the Gulf States (such as Saudi Arabia) are worldwide in the top of countries acquiring farm land abroad. In 2008, China announced a 5 billion dollar plan to develop agricultural assets in Africa. This seems only the beginning. South-Korea currently is the second most important player (whether on state or provincial level), as was shown with their attempts to move into Madagascar with a large land-lease. In these countries, as a rule it has been the state which takes the lead in land accumulation (although the private sector is also moving in). Japan is an exception, with private actors which accumulate land, although stimulated by the government. Further, in the Gulf States land accumulation is shifting towards the private sector. Partly because investments funds have discovered the profitability of doing so, and partly because the Gulf States have become more aware of the danger of a backlash in the host countries towards foreign states grabbing land.

Most of the Western countries have a high productive agriculture and, compared to Asian countries and a relatively low population density. Therefore they have no strong need for (further)

⁶ Further, the share in output of some of the largest individual agro-holdings is significant even on countrywide level. The 'Agro-holding' for instance already by 2003 had a market share of 3.5 percent in Russia's total agricultural output, and controls more than 10 percent of the poultry industry (ZIMMERMANN undated)

⁷ Cited in OECD paper, <http://www.oecd.org/dataoecd/42/7/37617388.pdf>, accessed March 2010.

outsourcing of agriculture. It should be noted that this has already been done for feed for the intensive livestock sector, not by direct production (through lease or ownership), but simply through purchase of animal fodder in developing countries. In this way millions of hectares of land have been ‘outsourced’ indirectly.

However, within the West most major financial institutions (investment banks, private equity funds and hedge funds) have embarked on a direct strategy of international (and within the US and Canada also domestic) accumulation of land, simply because of the potential for profits (DAVIS 2008).

Of the former Soviet area, Ukraine, Russia and Kazakhstan are the countries with the largest tracts of farm land, and thus attract most attention from foreign investors. In other countries also limited investment in the food sector takes place, including land accumulation. FDI in the agricultural sector in Kazakhstan clearly lags behind the other two countries, and the authors could not (yet) find much evidence of major investments in agriculture in Kazakhstan by Western investors and Gulf States.⁸

The recent plan for the lease of one million hectares of farm land for cultivation of rapeseed and soya by China, is by far the largest, most known and also most contested investment in agricultural land in this country. Some observers even suspected the president Nazarbayev of intentionally creating a media-hype around this acquisition to raise international interest amongst non-Chinese international investors for Kazakhstan as target for FDI in the agro-sector (see for FDI in Agriculture, UNCTAD 2009). In any case, the President of the UAE has also stated that his country is considering large scale investments in Kazakhstan (GAIA CAPITAL ADVISORS 2008: 10).

Kazakhstan has several disadvantages compared with Russia and the Ukraine. The former country has land reserves but its land resources are less well-endowed for agricultural production. Precipitation is much less than in Russia and Ukraine, and large parts of the country consist of marginal grounds/soils (degraded due to unsustainable land expansion in the Khruchev era, known as the ‘virgin lands’ campaign). With regard to production for export, which is mostly the aim of foreign investors, a complicating factor is that the country is less ‘close’ to the international market. Ships from the Kazakh ports on the Caspian Sea have no direct access to open sea as they all have to pass through Russia’s Don-canal.⁹ Further, Kazakhstan has also fewer enterprises within the agricultural sector which are publicly listed, which makes it more difficult for foreign investors to do acquisitions.

Although it is difficult to find exact numbers on FDI in the agriculture in these countries (due to secrecy and complicated juridical structures), our media and web-based research of both English and Russian language sources, showed that there are at least 30 foreign investors which control land or are in the process of closing deals on obtaining land in Russia and Ukraine.¹⁰ In addition, we found numerous cases of states, funds and companies which are very interested to acquire farm land in these countries, which suggests that the list of foreigner investors with landholdings will soon expand further.

⁸ The Kazakh embassy websites mention investments in agriculture by Swiss Glencore and US-based Cargill, but websites of these companies do not mention investment in Kazakhstan, and no other sources were found confirming the investment by these companies.

⁹ Further, the country, with less than 16 million inhabitants, lacks a significant internal food consumption market.

¹⁰ This figure excludes some agro-holdings in Russia and Ukraine with their juridical base in Cyprus, as it was not clear if it was just an offshore construction of a Russian or Ukrainian owned company or whether it involves foreign investment. This number does also not present relatively small investments with landholdings under a few thousand hectares.

There is a clear geographical division of investors. In the European Black Earth area of Russia and Ukraine, foreign investment is dominated by Western investors (with very recently Middle East oil-producing countries also entering the stage). Within Siberia, not surprisingly, Asian countries are conducting most investment.

In the Black Earth area, among the Western investors, it is especially UK (at least four) and Scandinavian (especially Swedish and Danish, also at least four) investors that set the tune. Other countries which participate in investment in the Black Earth area are Israel (twice), Finland, Swiss, France and the US. One of the early investors in the Eurasian countryside is the British Heartland farms ltd. With operations on over 300,000 hectares in Russia, the company is amongst the largest foreign investors in Russian agriculture. Most Western foreign investors only entered the scene in 2006/2007, while others started acquisitions only recently (since 2008/2009), having no traditional focus on agriculture, but turning to this sector as a reaction to insecurity in other sectors such as the financial sector, as a form of risk spreading. These investors include investment banks such as JP Morgan (US) which now controls 40,000 hectares of farmland in the Ukraine. These investors seem to invest in agriculture with a short time horizon.

As mentioned above, the interest of Middle East countries is of very recent date. It was triggered by the 2007-08 price hikes in food, and the drive of their governments for food security and outsourcing of agriculture. Most attention got the deal between Libya and Ukraine in which over 100,000 ha of farm land (leased) in Ukraine was bartered for oil.¹¹ A representative of the Ukraine Agrarian Federation stated in October 2009 that investors from numerous countries such as China and Saudi Arabia are 'lining up to buy Ukraine farmland' (OBELISK 2009). Although this may be somewhat exaggerated to trigger further interest by other companies and investment funds, it is evident that investors from at least Saudi-Arabia and the United Arab Emirates (UAE) are now actively searching farm land in the Ukraine. RAII from Saudi Arabia established a subsidiary for initiating agricultural production and trading in the Ukraine. In Kazakhstan (as well as in Uzbekistan), the UK/UAE Pharos Miro Agricultural fund, launched in 2009, is in the process of locating land for wheat production.

However, the financial crisis which hit the Eastern Europe and the FSU countries belatedly but harshly in the autumn of 2008, has led to a sharp decrease in FDI in these countries. Within the agricultural sector the effect was more mitigated. On the one hand local interest on loans for the agricultural sector rose (such as in Ukraine, see *Kommersant' Ukraina* 2009). On the other hand, the value of land lease rents decreased fivefold in the Ukraine as a consequence of the financial crisis, making it attractive to acquire new land.

Some investors in agriculture faced stormy conditions. The British company Landkom for instance, which operated over 115,000 ha in Ukraine, had problems with financing the new agricultural cycle in the spring of 2009.¹² As a result it was forced to curtail its acreage to 74,000 ha (of which they cultivated 29,000 ha in 2009). The fact that its management staff was replaced in 2009 suggests that not only the financial crisis (amongst others also expressed in lower agricultural prices), but also internal management failure, contributed to its decline. It should be noted that the company intends to increase its cultivated area again in the 2010 season to 39,000 ha. The US investment bank Morgan Stanley was disappointed by the results of its farming operations in Ukraine and sold off its whole land bank of 40,000 ha in 2009 (SKORYK 2009). The Russian investment company Renaissance Capital, due to financial problems of its main company, curtailed its agricultural operations in Ukraine from over 300,000 ha of cultivated land to approximately 60,000 to 70,000 hectares (ibid). However, other foreign investors in

¹¹ Most sources mention 100,000 ha. However, Libya earlier even announced an interest in acquiring 300,000 ha in Ukraine to grow 1.5 million tons of wheat. In July 20-21, 2009 delegations of both countries met again to further work on this deal. www.dawn.com gives a figure of 247,000 ha (December 2009).

¹² See www.landkom.net, accessed March 2010.

Ukraine maintained their previous operations or even expanded them (ibid). Until now it seems that quite a number of foreign investors in the agricultural of Ukraine and Russia survived the 2008/2009 financial crisis relatively well. When the overall expansion of foreign agro-holdings will resume, is of course difficult to predict. Some experts expected that the growth will resume in 2010, while others consider a 2 or 3 year period of stagnation and/or minimal growth more realistic (ibid). The recent listings and/or share emissions on European stock exchanges of agro-holdings operating in post-Soviet countries are indications of the continued interest of foreign investors in agriculture in this area. For instance, in March 2010 the French agro-holding Agrogenation, operating 20,000 ha in Ukraine, was listed on the NYSE Euronext stock exchange (SINITSYNA and MIRONOVA 2010). Further, the Cyprus-based Ukrainian agro-holding Sintal Agriculture, sold over 17 percent of its shares on the Frankfurt Stock Exchange in October 2009 (SINTAL AGRICULTURE 2010). As a result, its share of internationally owned equity now exceeds 35 percent (ibid).

In Siberia, the origin of the foreign investors in agriculture is completely different than in European Russia and Ukraine. China according to some sources operates 80,400 hectares, which it obtained at a cost of 21.4 million dollars (see Footnote 14). Within the Altai region, which borders China, at least three Chinese investors operate farm enterprises, according to the official information of the Russian oblast authorities. In the Far East of Russia, Korea, Japan (and also New Zealand) are investing in the agricultural sector. In the spring of 2009, South-Korea shipbuilder Hyundai Heavy Industries took a majority stake in, the originally Russian, farm enterprise Khorol Zerno from a New-Zealand consortium. Hyundai plans to increase the current acreage of 10,000 ha near Vladivostok to 50,000 in 2012 (FINANCE 2009).

In Siberia and the Far East the transport of crops for export is a much more serious bottleneck than in the Black Earth region. Recently, PAVA, the largest Russian grain processor, which also grows grain on over 160,000 ha in West-Siberia (Altai, Krasnoyarsk and Omsk), conducted talks with a Japanese delegation interested in trading and investing. However, the Japanese investors considered the excessive transportation cost of grain in Russia, a major obstacle hindering the development of trade relations.¹³ Therefore Asian investors have also embarked on investments in transportation infrastructure, notably the port facilities in Russia's Far East.

A feature that distinguishes the investments by the Asian companies as compared with these conducted by Western companies, is that the Asian investments are often done by states (or as in the case of South-Korea by provincial level authorities) or by states guaranteeing private investments. Furthermore, whereas Western investors mostly only ship in Western technology, and sometimes Western managers, in the case of the Asian investors, there is a tendency to also bring in own workforce (see e.g. COTULA et al. 2009). In the Far East the South-Korean investors in agriculture try to work with the ethnic minority in Russia which is strongly related to the Koreans. Chinese and Korean workforce is employed in agriculture in respectively Southern European Black Earth (e.g. Rostov) and Siberia, but this phenomenon is rather contentious, as the Russian population has fears for Chinese trying to colonize sparsely populated areas of Siberia. On a smaller scale similar sentiments can be found in the Russian area bordering the Baltics, where rumors had it that Estonian investors were secretly securing land in the border areas to reclaim former Estonian territory in Russia that was lost after WWII.

There is also foreign investment that originates amongst the FSU countries themselves. The Ivolga-holding based in Kazakhstan controls the vast area of 1 million hectares of land in both Kazakhstan and Russia. The Moscow-based investment firm Renaissance Capital invests in farm land in the Ukraine.

¹³ www.1888pressrelease.com 'Pava conducted talks with Japanese Partners', 27 October 2009, accessed March 2010.

International land accumulation: tensions and constraints

In Russia and Kazakhstan in the early 2000s a land code was introduced that allows the ownership, transfer and sale of farm land, which is not (yet) the case in the Ukraine. However, in the first two countries foreign companies and individuals, although they are able to buy farm enterprises, are not allowed to own land. In Ukraine a moratorium on land sales and ownership still exists, although leasing of land is possible. The acquisition of land shares from individual owners (which as a rule are a few hundred people for the average farm enterprise) is a very tiresome process. This of course is true for domestic as well as foreign investors, but due to anti-foreigner sentiments among the authorities and the local population, and lack of political connections with the local authorities, we can safely assume that this process is even more difficult for foreign investors. In some cases foreign investors have gone the way of accumulating land shares for lease themselves locally, as in the case of the British 'Landkom', which was leasing over 100,000 hectares in Ukraine in 2008/2009.¹⁴ Most investors from abroad have chosen to acquire equity within already established Russian or Ukrainian agro-holdings, obtaining several farm enterprises with their (mostly leased) land in one go. An investor which has taken this route is for instance the Swedish Black Earth Farming, which obtained equity within the Russian based Agroinvest, and as of August 2009 holds 323,000 hectares of farm land (ibid.).

The sparse evidence that is available, suggests that performance of LFEs (Large Farm Enterprises) taken over by agro-holdings is not better than these of farm enterprises which are not incorporated into them. Hockmann, Wandel and Nedoborovsky (2005), conducted a rare study on the effectiveness of farm enterprises within and outside agro-holdings in Belgorod region in 2001 and 2003. Belgorod is an interesting case as it is the Black Earth region with the strongest grip of agro-holdings on the sector, occupying over a third of the land in the *oblast* (Ibid.). The study found that the performance of the farm enterprises within agro-holdings was lagging behind these outside such structures. Similar results were found in a publication on both Belgorod and Orel region (Ibid.).

The negative performance of agro-holdings could partly be attributed to a negative selection bias (especially in Orel e.g. it were mainly the weak LFEs which agro-holdings were able to take over), and the fact that the investments take some time to bear fruit. However, even currently it seems that the return to investment of LFEs within agro-holdings is worse than other LFEs (FAO/EBRD 2009). This suggests that there are also more fundamental obstacles intrinsically connected to the agro-holdings' organizational functioning that hinder a steadfast growth of productivity and efficiency.

The problems seem to be true for foreign owned agro-holdings alike. Chief executive of Swedish Black Earth Farming operating in Russia, Gustavsson, admitted that the challenges remain enormous as the yield from the land cultivated by the company remains relatively low and it will take years of investment to harvest the full benefits of the company's investment (DERMY 2009). Due to weak rural infrastructure, the agroholding was spending tens of millions of dollars on new silos to store the grain harvest.

Social consequences and tensions

Many farm workers have no legal contracts with their farm enterprises regarding assets shares and land shares/renting/leasing. As Feifer (2003: 1) stated; 'few landowners understand their legal rights. In many, cases, regional and local officials have been able to keep land in the hands of collective-farm managers and other cronies'. Duma Deputy Viktor Pokhmelkin, co-head of the Liberal Russia party stated, that in most cases where rural inhabitants tried to defend their

¹⁴ Source: www.farmgrab.com, accessed March 2010.

property against farm managers or authorities, courts have not decided in favor of private citizens (FEIFER 2003).

In the Russian regions Pskov (North-West Russia) and Rostov (Southern Russia), we came across cases where the district authorities took away land from private farmers. In Pskov region one village was visited where several villagers went to court to get the land they were entitled to from the LFE. One farmer even went to court for four times and, at the time of research, was still waiting for the final decision of the court. Even when rural inhabitants manage to win a case in court, this does not mean that they have 'won'. For example, in the summer of 2000 we visited a private farmer in Pskov, whose land was illegally taken away by the tax police. With the help of an NGO in the regional capital, that offered juridical support, he was able to get back his land. However, in the mean time he had not been able to work the land for more than two years, and his, exceptionally large, private farm of about 1,000 hectares had gone bankrupt due to this. During a revisit a year later, he had left agriculture highly disappointed, and had started a woodcutting firm.

Major changes are needed to develop an independent legal system, but the prospects are not positive. The land code itself leaves a lot of power over the practical implementation of the regulations to regional and local authorities. In some regions, authorities have created extra rules which hinder the emergence of private farms. In the southern Krasnodar region aspiring private farmers should have no less than 300 hectares of land to be allowed to start a farm.¹⁵ Such rules curtail the rights of the rural population and leave them little choice than to rent or sell their shares to large farm enterprises, while also making them more disadvantaged in transactions with foreign or domestic investors. Moreover, local authorities have the right of first refusal for any land sale. The selling process is very cumbersome and prone to abuse (WEGREN 2002: 659). Thus, it is likely that the farm managers or wealthy investors will (continue to be) the winners of property reform. Indeed, 'it is not difficult to imagine land committee officials, who are not well-paid, being approached (paid) to exercise the right of first refusal to some land deemed desirable, but not other land, on behalf of hidden investors' (WEGREN 2002: 658). Already, in the last years preceding the introduction of the land code, local former communist bureaucrats were assigning themselves plots of land in expectation of legalization by the land code (NIKULIN 2003). A director of farm enterprise in Rostov, that was visited, was buying up shares from farm employees. But this was a long process. He regretted that he had not chosen a smarter way to obtain a majority ownership. He stated that 'many farm workers stick to their shares as a memory of the past'. Such a statement, characterizing the behavior of farm workers as inertia or conservatism, of course hides the real interests of farm employees in share ownership and the power struggles around processes of concentration of shares.

It is especially the rank and file workers who have lost their shares. The chairman of a farm enterprise in Krasnodar stated: 'I could have made all into my own property, but to do it one must have no conscience at all' (NIKULIN 2003). Other farm directors apparently have fewer problems with their conscience and have managed to concentrate farm ownership in their hands (DVORNIK 2000). Butuzova and Kassin (cited in LERMAN and SHAGAIDA 2007: 22) describe various cases in Kaluga region where outside investors have bought up shares from farm employees through betrayal, making use of the employees' limited knowledge of their rights. Pallot and Nefedova (2007: 117) describe the practices of the company MiG taking over large enterprises in Stavropol *krai*, where shareholders in the LFEs taken over by the company 'receive one ton of cereals per annum for their land share but 'in recognition of the investments MiG has made in the land' they now have to pay for it'.

The weak position of farm workers (rural population) regarding land and farm assets ownership is especially bothering taking into account the economic inequality that soared with

¹⁵ Whereas the average size of private family farms in Russia is much lower, at 81 hectares in 2006 (www.gks.ru), accessed April 2008.

the advent of the market economy. In the 1990s the growing inequality was largely an urban phenomenon. However, in the of the 2000s with growing investments and profitability in only specific parts of agriculture and growing unemployment due to mechanization (RYLKO et al. 2005), inequality is also a feature of the countryside in Russia (VISSER 2008, 2009; WEGREN 2002), as well as other FSU countries such as in the Caucasus and Central Asia (SPOOR 2009). Even though poverty has dramatically been reduced in the 2000s, most of the poor in post-Soviet Eurasia can be found in rural areas. Although, economic recovery took place in the 2000s in Russia and most other post-Soviet countries, inequality rose further, and the decline in poverty was less than the economic growth would suggest. At the same time the state has largely withdrawn from social security in rural areas. That farm employees did (and do) not suffer from food shortages and have somehow been able to get by, despite the low wages is due to the food and generated income from their subsidiary household plots, a carry-over of the Soviet period (VISSER 2003, 2009; VISSER and BIDASECA 2010).

Conclusions

It has been argued above that international investment in farm and other agricultural land is becoming more important, as an increasing global food and bio-fuel production are warranted. In a more critical analysis this phenomenon has been identified as land grabbing as it is questionable whether benefits will accrue to the local population or the countries which have these land reserves. Most attention has recently been given to land grabbing in Sub-Saharan Africa, in particular by Asian (Chinese and South Korean) companies, often supported by their governments. In this paper we have started to review emerging evidence that most land grabbing is actually taking place in a different region, namely in post-Soviet Eurasia, as this region is home to three of the four countries with the largest under- or unused agricultural land reserves in the world, namely Kazakhstan, Russia and Ukraine (next to Argentina).

Foreign investment in FSU agriculture, which started in the early 2000s with investments by some Western companies, took off in 2006-2007. Although the financial crisis, which reached the post-Soviet countries by the end of 2008, caused financial problems for some of the investors, at the same time the temporal devaluation of land (in Ukraine) and the weak position of domestic farm enterprises offered also new opportunities for foreign investors in their search to obtain new land. Overall the attention for land in the post-Soviet countries among investors is growing, with also Middle Eastern states and private investors now actively searching land in Ukraine. Within Siberia and the Far East it is especially Chinese and South Korean investors which are acquiring land.

The mid- and long-term prospects for investment in agriculture of the FSU are indeed promising. The amount of farm land reserves is huge. The prices are low and will remain significantly lower than in other emerging (agrarian) economies such Argentina and Brazil for some time to come, due to the large supply of underutilized and abandoned land. In the long term, the climatic conditions and water resources of Ukraine and Russia are relatively good for agricultural production.

Further, one of the main hindrances for FDI in post-Soviet agriculture, often mentioned by foreign investors and their brokers is the weak institutional environment. Indeed, as has been shown based on examples of domestic private farms in Russia, property rights to land are far from secure. For domestic as well as foreign investors this brings both problems as well as apparent opportunities. On one hand, the statement by the American-Russian owner of the agro-holding 'Russian Farms' that; 'each single hectare of my land holdings can be disputed, and is potential insecure', is true also for foreign investors.¹⁶ And, as the director of 'Russian farms'

¹⁶ Statement by the director of the Russian Agro-holding 'Russian Farms' at the 102nd EAAE seminar 'Super-large Farming Companies in Eastern Europe', Moscow, May 16-17 2007.

added to it, good ties with local and regional authorities seem to be indiscernible to ensure the security of your land claims. On the other hand, weak law enforcement also gives the agroholdings opportunities to arrange land deals off the corner, and quickly acquire large tracts of land, through bypassing official regulations, exploiting the knowledge gap vis-à-vis the local population regarding land regulations, and infringing on the rights of the local landholders. Therefore, non-transparent land grabs at a large-scale are expected to happen more and more in Kazakhstan, Russia and Ukraine.

Of course, as discussed earlier, such large-scale accumulation of land might well have far reaching consequences for livelihoods of the rural population. Further, such exploitation of institutional weaknesses by powerful investors can also weaken the societal support and long-term social sustainability of their operations. The protests in Kazakhstan after Nazarbayev's announcement of the land lease deals with China are a warning in this respect.

References

- ARSEL, M. and M. SPOOR (Eds.) (2010) *Water, Environmental Security and Sustainable Development. Conflict and Cooperation in Central Eurasia*. London, New York: Routledge.
- ATKIN, C. (2009). Investment in Farmland and Farming in Central and Eastern Europe and the Former Soviet Union - Current Trends and Issues, in: M. Klugelman and S.L. Levenstein (eds.) *Land Grab? The Race for the World's Farmland*. Washington, D.C: Woodrow Wilson International Center for Scholars, pp. 109-119.
- BILETTE, A. (2009). Après une offensive discrète au Kazakhstan, la Chine lorgne les terres inexploitées, *Le Monde* 20 April 2009.
- BRAUN, J. VON and R. MEINZEN-DICK (2009). 'Land Grabbing' by Foreign Investors in Developing Countries- Risks and Opportunities, *IFPRI Policy Brief no. 13*, April.
- BUSH, J. (2008). Farming Makes a Comeback in Russia, *Business Week*, October 9, 2008.
- COTULA, L., S. VERMEULEN, R. LEONARD and J. KEELEY (2009). *Land Grab or Development Opportunity? Agricultural Investment and International Land Deals in Africa*. Rome, London: IIED, FAO, IFAD.
- DAVIS, J. (2008). Ukraine's role in increasing world food security, *Unian* 2 March 2008, www.unian.net/eng/print/244459.
- DERMY, E. (2009). Black Earth Stirs Investors in Russia, *AFP*, www.google.com/hostednews/afp/article/ALeqM5hJHCIK1NLRzfmgzKhNzI1oCXSj8w.
- DIDENKO, L. (2009). Pyat' gektarov – I korova, *Kommersant' Guide*, no. 16, 30 January.
- DVORNIK, B.Z. (2000). Razvitie zemelnykh otnoshenii na regional'nom urovne: opyt, problemy, in: Agrarian Institute and All-Russian Institute of Agrarian Problems and Informatics (eds.), *Rynoch'naya transformatsiya sel'skovo khoz'yaistva*, Moscow: Agrarian Institute, pp. 63-64.
- FAO/EBRD (2008). 'Fighting Food Inflation through Sustainable Investment', Note, Accessed at www.fao.org/newsroom/common/ecg/1000808/en/FAOEBRD.pdf 13 March 2010, prepared by IKAR, Moscow.
- FAO/EBRD (2009). Russian Federation. Analysis of the Agribusiness Sector in Southern Russia, FAO Investment Centre /EBRD report nr. 13, January 2009. www.eastagri.org/publications/pub_docs/Report_Russia_13__Web.pdf.
- FEIFER, G. (2003). Russia: Farmland Reform May Prove Putin's Lasting Legacy, *Johnson's Russia List*, 9 (7063), www.cdi.org/russia/johnson.
- FINANCE (2009). Koreans Buy Corn Farm in Russia's East, *Finance- Corporate Finance in Emerging Europe*, June, p.59, www.finance-ee.com.
- GATUALINA, E.A., V.Y. UZUN, A.V. PETRIKOV, and R.G. YANBYKH (2006). Vertical Integration in an Agroindustrial Complex: Agrofirms and Agroholdings in Russia, in: Jo Swinnen (ed.), *The Dynamics of Vertical Coordination in Agrifood Chains in Eastern Europe and Central Asia: Case Studies*, Working Paper no. 42, Washington, DC: The World Bank, pp. 45-71.

- GAIA CAPITAL ADVISORS (2008). Financing Agriculture. Impact of the Financial Crisis, presentation at the UNIDO Agriculture Conference 'From Farms to Markets', Cairo November 2008.
- HOCKMANN, H., RAUSHAN B. and I. BEZLEPKHINA (2007)., Agroholding membership: does that make a difference in performance, paper presented at the 102nd EAAE seminar 'Superlarge Farming Companies: Emergence and Possible Impacts', 17-18 May, IET/AFE Moscow.
- HOCKMANN, H., J. WANDEL and A. NEDOBOROVSKYY (2005) Agroholdings in Russia: Breaking the Vicious Circle? Paper presented at the 94th EAAE seminar 'From Households to Firms with Independent legal Status: The Spectre of Institutional Units in the Development of European Agriculture', Ashford (UK), 9-10 April, <www.ideas.repec.org/s/ags/eaee94.html>.
- KOMMERSANT' UKRAINA (2009). Landkom prodaetsya ponemnogy, no. 43, 13 March 2009.
- KONOVALOVA, O. (2009). Russian Farms Find a Way to Milk the Crisis', *Marchmont Capital* 23 April, www.marchmontcapital.com.
- LERMAN, Z. and N. SHAGAIDA, (2007)., Land Policies and Agricultural Markets in Russia, *Land Use Policy*, 24: 14-23.
- MCMICHAEL, P. (2009). A Food Regime Genealogy, *The Journal of Peasant Studies*, 36(1): 139-69.
- MICKEY, A. (2009). Farmland investing: the quiet land grab is just beginning, *The Market Oracle*, 12 June, www.farmlandgrab.org.
- MINZINA, S. V., J.B. SMITH, E. GOSSEN, K.F. SPIECKER and S.L. WITKOWSKI (1999). An Evaluation of Adaptation Options for Climate Change Impacts on Agriculture in Kazakhstan, *Mitigation and Adaptation Strategies for Global Change*, 4:25-41.
- NIKULIN, A. (2003). 'The Kuban Kolkhoz between a Holding and a Hacienda. Contradictions of Post-Soviet Rural Development', *Focaal - Journal of Global and Historical Anthropology*, 41: 137-52.
- OBELISK (2009). 'Ukraine Land Investment's Perfect Balance', October 29 on: *Obelisk International Blog*. <www.obeliskinternational.com>.
- PALLOT, J. and T. NEFEDOVA (2007). *Russia's Unknown Agriculture. Household Production in Post-Socialist Rural Russia*, Oxford: Oxford University Press.
- PAXTON, R. and K. SUKHOTSKI (2009). Russia Eyes Japan Investment in Farms, Ports, *Reuters* 31 August, <www.farmlandgrab.org/7214>.
- POPOVA, N. (2008). Farmers Look at Soaring Food Prices and Sigh, *The Moscow Times*, 19 June 2008, <<http://www.themoscowtimes.com/business/article/farmers-look-at-soaring-food-prices-and-sigh/368371.html>>.
- RYLKO, D.N., R.W. JOLLY and M.A. MOLSOKOVA (2005). Organizational Innovation in Russian Agriculture: the Emergence of "New Agricultural Operators" and Its Consequences. Paper presented at the EAAE Seminar on Institutional Units in Agriculture, April 9-10, Wye, United Kingdom.
- SINTAL AGRICULTURE (2010). Sintal Agriculture' PP presentation on the company's website: <www.sintalagriculture.com/investors-shares-info>.
- SINITSYNA, E. and I. MIRONOVA (2010). 'Ukraina dorosla do NYSE Euronext', *Kommersant' Ukraina*, no. 53, 26 March, <www.kommersant.ua/doc.html?docId=1330760>.
- SKORYK, M. (2009). Prervannyi polet, *Levyi Bereg*, 31 July-6 August.
- SPOOR, M. (Ed.) (2003). *Transition, Institutions, and the Rural Sector*, Lanham and Oxford: Lexington Books, Rowman and Littlefield Publishers.
- SPOOR, M. (Ed.) (2009). *The Political Economy of Rural Livelihoods in Transition Economies*, London and New York: Routledge.
- SPOOR, M. and O. VISSER (2001). The State of Agrarian Reform in the Former Soviet Union, *Europe-Asia Studies*, vol. 53, no. 6, pp. 885-901.

- SPOOR, M. and O. VISSER (2004). Restructuring Postponed? Large Russian Farm Enterprises 'Coping with the Market', *The Journal of Peasant Studies*, 31 (3-4): 515-51.
- UNCTAD (2009). *Transnational Corporations, Agricultural Production and Development*. UNCTAD World Investment Report.
- UZUN, V. YA (2004). Krupnyi sel'skokhozyasitvennyi biznes v Rossii: tendentsii i problemy razvitiya, *Otechestvennye zapiski*, no.1, <www.magazines.russ.ru/oz /2004/1/>.
- VISSER, O, (2003). Farm Restructuring, Property Rights and Household Strategies in Rural Russia, in: Max Spoor (ed.), *Transition, Institutions and the Rural Sector*, Lanham, Oxford: Lexington Books, Rowman and Littlefield Publishers, pp. 83-102.
- VISSER, O, (2006). Property, Labour Relations and Social Obligations in Russia's Privatised Farm Enterprises, in: Keebet von Benda-Beckman, Franz von Benda-Beckman and Melanie Wiber (eds.), *The Changing Properties of Property*, London, New York: Berghahn, pp. 126-46.
- VISSER, O, (2008). *Crucial Connections. The Persistence of Large Farm Enterprises in Russia*. PhD Thesis Radboud University Nijmegen.
- VISSER, O, (2009). Household Plots and the Symbiosis with the Large Farm Enterprises, in: Max Spoor (ed.), *Land, Peasants and Rural Poverty in Transition. The Political Economy of Rural Livelihoods in Transition Economies*, 'Studies in Rural Livelihoods' Series, London, New York: Routledge.
- VISSER, O. and K. BIDASECA (2010). Agrarian Modernization, Land Conflicts and Peasant Mobilization in Russia and Argentina, *Laboratorium*, Vol. 1 (3), forthcoming.
- VISSER O. and SPOOR, M. (2011). Land Grabbing in Post-Soviet Eurasia: The World's Largest Agricultural Land Reserves at Stake', *The Journal of Peasant Studies*, 38 (1), forthcoming.
- WEGREN, S. (2002). Observations on Russia's New Agricultural Land Legislation, *Eurasian Geography and Economics*, 43 (8): 651-60.
- ZIMMERMANN, J. (undated). Current farm situation in Russia and required adjustments of farm management, *Scientific Papers of the Agricultural University of Poznan, Poland*.