

האוניברסיטה העברית בירושלים
The Hebrew University of Jerusalem



המרכז למחקר בכלכלה חקלאית
The Center for Agricultural
Economic Research

המחלקה לכלכלה חקלאית ומנהל
The Department of Agricultural
Economics and Management

Discussion Paper No. 11.03

New Contract Arrangements in Turkman
Agriculture:
Impacts on Productivity and Rural Incomes

by

Zvi Lerman
and
Ivan Stanchin

October, 2003

Papers by members of the Department
can be found in their home sites:

מאמרים של חברי המחלקה נמצאים
גם באתרי הבית שלהם:

<http://departments.agri.huji.ac.il/economics/indexe.html>

P.O. Box 12, Rehovot 76100

ת.ד. 12, רחובות 76100

New Contract Arrangements in Turkmen Agriculture: Impacts on Productivity and Rural Incomes

Zvi Lerman

The Hebrew University, Rehovot, Israel

Ivan Stanchin

National Institute of Statistics, Ashgabat, Turkmenistan

Paper prepared for a panel on *Changing Land and Water Use Patterns in Central Asia*,
Central Eurasian Studies Societies Annual Conference, Harvard University, October 2-5,
2003

NEW CONTRACT ARRANGEMENTS IN TURKMEN AGRICULTURE: IMPACTS ON PRODUCTIVITY AND RURAL INCOMES*

Zvi Lerman and Ivan Stanchin

The Hebrew University, Rehovot, Israel and National Institute of Statistics, Ashgabat, Turkmenistan

Turkmenistan is a huge country of 50 million hectares – the fourth largest by area in the former Soviet Union (FSU) after Russia, Kazakhstan, and Ukraine. Yet it has a small population of about 5 million people, which puts it in one group with the FSU midsets – Armenia, Georgia, Azerbaijan, the Baltic republics. More than half the population (55%) lives in rural areas, compared to one-third in FSU, but only 4% of the country's agricultural land (1.6 million hectares) is cultivable, compared to 40% in FSU. The remaining 96% of agricultural land in Turkmenistan is desert pastures – 38 million hectares fit only for flocks of karakul sheep and camels, not for human beings. Thus, despite the huge expanses and the small number of people, the effective population density in Turkmenistan is very high: there is only 0.6 hectares of arable land per rural resident compared to 2.3 hectares in FSU.

Prior to 1991, agriculture in Turkmenistan was organized according to the standard Soviet model: some 600 large collective and state farms controlled the bulk of agricultural land while the rural population cultivated in its spare time tens of thousands of small household plots on 55,000 hectares, or about 3% of irrigated land. The structure of the farm sector has changed dramatically since then as independent Turkmenistan began to implement various agrarian reforms consistent with its interpretation of a market-oriented economy.

Changing Farm Structure

The main change in our context can be characterized as a shift from collective farming to a more individualized agriculture. The first step (1990-92) involved distribution of irrigated land to rural families, which more than doubled the total size of the household-plot sector to 133,000 hectares. The second step (1993-96) involved a national program for allocation of land to independent private farmers who were allowed to engage in commercial agriculture outside collectivist frameworks. Today there are more than 5,000 such private farms in Turkmenistan (the numbers are very fuzzy) operating on 81,000 hectares. The third, and perhaps the most daring and radical step (1996-97) involved the transformation of former collective and state farms into associations of leaseholders. So-called “peasant associations” (*daikhan berleshik*) were summarily organized by presidential decree in place of the traditional collective and state farms, and each association was instructed to parcel out its large fields to individual leaseholders (typically heads of families).

We view the creation of leaseholder-based associations as the most radical step of the land reform program because of its scope. The reforms aimed at household plots and private farms, however important, were marginal by the amount of land that they encompassed. The transition to leasehold contracts, on the other hand, involved more than 350,000 rural family units and 1.5 million hectares of arable land, i.e., practically the entire rural population and

* This paper is part of a research project supported under Grant No. TA-MOU-98-CA17-011 by the U.S.-Israel Cooperative Development Research Program, Economic Growth, U.S. Agency for International Development. The data in the paper derive from official statistical sources, a 2001 survey of private farmers, and a 2002 survey of leaseholders in peasant associations.

90% of arable land in Turkmenistan. The current structure of the farm sector in Turkmenistan is presented schematically in Table 1.

Table 1. Structure of the Farm Sector in Turkmenistan: 2002

	Number	Land, ha	Average size, ha
Associations	592	33,000,000 (incl. pastures)	
Leaseholders	357,000	1,500,000 (arable)	5.6
Peasant farms	5,200	81,000	20
Household plots	616,000	133,000	0.2

The Role of Peasant Associations and Institutional Arrangements for Leaseholders

Initially, when peasant associations were created by fiat in 1995, they had the potential for becoming yet another example of what is generally known in FSU as a “change of the sign on the door”: a formal organizational transformation without any substantive internal change. Yet the situation in Turkmenistan seems to have developed toward a genuine structural change since 1996-97. Although there are still 600 associations and they still legally control most of the agricultural land resources, they have become mere organizational shells, or umbrellas, for the farming operations of individual leaseholders, without significant commercial activity of their own. As of 1997, associations have virtually no “collective” sales: all sales reported through associations derive from their leaseholders. The associations have lost much of their fixed asset base (machinery, equipment, livestock), while inventories, receivables, and payables—standard signs of commercial activity—have shrunk almost to zero (Table 2).

Table 2. Characterization of Associations as a Shell for Leaseholders

	2000
Percentage of sales generated by the association, % of total reported sales	4.6
Fixed assets, change since 1997 in percent	-40
Inventories, change since 1997 in percent	-86
Accounts receivable, change since 1997 in percent	-72
Accounts payable and loans, change since 1997 in percent	-90

Source: Aggregate financial statements of farm associations 1997-2000, MinAg.

What is the role of the associations today? First, they are the “guardians” or “administrators” of state-owned agricultural land that is distributed to leaseholders for cultivation. All leaseholders interviewed in a large farm-level survey in 2002 report that they have a land-lease contract with the association. Second, they are the municipal authority responsible for maintaining rural infrastructure in the villages—and they receive a certain payment from the leaseholders (in percent of production revenue) for these services. Third, and most problematic of all, they are the conduit for transmitting state orders to the leaseholders and enforcing compliance.

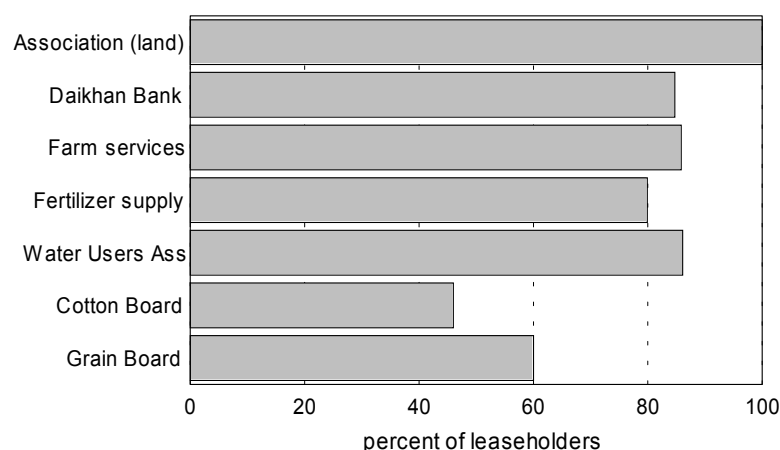
The continuing existence of state orders in Turkmenistan is a legacy of the Soviet centrally planned system. Turkmenistan has liberalized much of its agricultural production and food trade, but the main strategic commodities—cotton and wheat (as well as the much less important rice)—remain subject to state orders. As in the past, production targets for wheat and cotton are assigned to large farming units—peasant associations in this case; and the association manager divides the overall quantities among the leaseholders so that the full target is met (or exceeded). The associations do not sell this wheat and cotton for their leaseholders, as a marketing cooperative would normally do in the West: the sale contract is

directly between the leaseholder and the state marketing organization, which sends trucks to collect the harvested crop and sometimes even tractors and combines to help with harvesting. The associations do not act as supply cooperatives either: leaseholders get all the inputs they need from state suppliers on the basis of individual contracts signed according to production targets.

Finally, since the associations are neither marketers nor input suppliers, they cannot act as credit cooperatives for their leaseholders. All financial transactions in this system are handled by a state-owned agricultural bank – Daikhan Bank – which has a branch in every association, serving all the local leaseholders. The system is organized on the basis of “passbooks”, so that very little cash changes hands. Each leaseholder’s production quota is recorded in the “passbook”. The “passbook” shows the total credit for revenue that the leaseholder will eventually receive for deliveries of wheat and cotton and the total debit for inputs that he is entitled to get from the state. The revenue is calculated on the basis of fixed state prices, which are adjusted every year but are always far below the world market prices. The cost of inputs is also based on fixed state prices net of a hefty 50% subsidy for all inputs used in the production of state orders. The input debits, plus statutory management charges that go to the association, are offset against the revenue and the leaseholder keeps only the “profit”.

This highly bureaucratized system applies only to state orders, i.e., wheat, cotton, and rice, but it is designed in such a way that the leaseholder must deliver the entire output to state marketers: otherwise there will be no credit entry in the bank account to offset the debits for inputs. Commodities not subject to state orders, such as vegetables, milk, or eggs, are generally produced under different institutional arrangements on the family’s household plot and are sold in the nearby market or through occasional private traders: there are no state marketers to deal with these commodities and the association is not geared to provide cooperative marketing services.

Fig. 1. Contracts with State Marketers/Suppliers



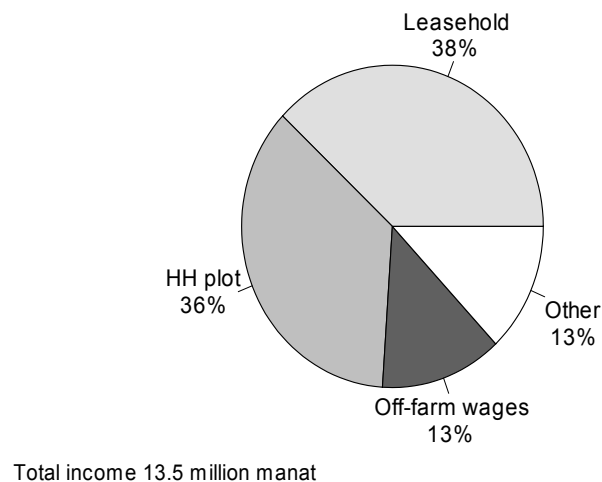
The complex system of relationships between leaseholders and various state organizations is reflected in Figure 1, which shows the percent of respondents in the 2002 survey who signed contracts with input suppliers, product marketers, and the bank. Over 80% of respondents are bound to the state by credit and input supply arrangements. The percentages for marketing

contracts are deceptively low: leaseholders generally specialize either in grain or in cotton. The combined frequency of contracts with the Cotton Board and the Grain Board is accordingly around 100% (actually slightly more than 100% reflecting the existence of some mixed grain/cotton farming): all leaseholders are bound by marketing agreements to the state, with no independent commercial activity in the two strategic commodities.

The Role of the Household Plot

Leaseholders operate in a two-tier farming system. In one tier, they have 5-6 hectares of irrigated land leased from the peasant associations, where they grow mainly wheat or cotton for delivery to the state. In the second tier, they have a small household plot of about 0.25 hectares on which they grow vegetables and keep some private livestock. The output from the household is in part consumed by the family and in part sold in the open market, without any intervention from the state. The income of most rural families thus includes cash income from the leasehold operation plus cash and in-kind income from the household plot. In the 2002 survey, these two components were evenly balanced and jointly accounted for 75% of family income (Figure 2). The remaining 30% represent cash income from off-farm salaries of family members working outside the household, pensions, social transfers, etc. The household plot is thus a very important source of income for rural families, accounting for more than one-third of total income in value of own farm products consumed by the family and in cash from product sales.

Fig. 2. Structure of Leaseholder Family Income

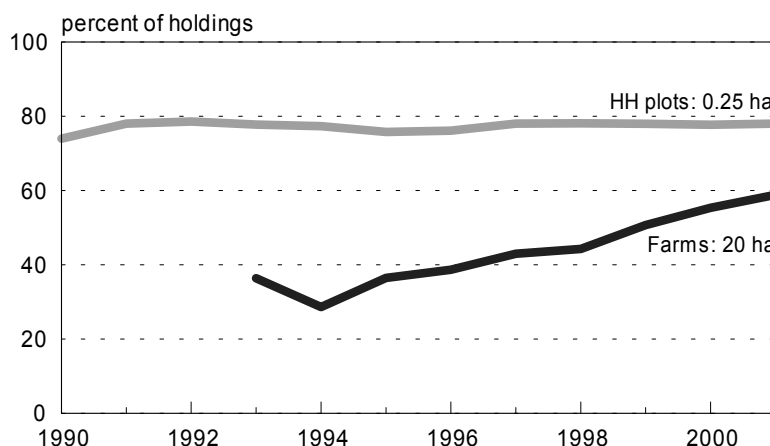


Private Farmers and Their Land

In addition to leaseholders and their household plots, Turkmen agriculture has another relatively new component that began to emerge only in 1993. These are independent private or peasant farms that operate outside associations on land grants received directly from the state – not in the form of a lease from the association. The land in these private farms increased from zero in 1992 to about 100,000 hectares in 2001 and is close to catching up with the total land in household plots (130,000 hectares). There are about 5,000 private farmers in Turkmenistan, so that an average private farm is 20 hectares – much larger than the average leasehold in associations (5.6 hectares).

Yet there is a serious problem with the quality of land in private farms. The declared government policy is to give private farms unirrigated, uncultivable land and thus force them to reclaim desert land at their own expense. In effect, the government has relinquished the responsibility for what was traditionally regarded as a public good in the Soviet era and today relies on private individuals to invest in land reclamation. The poor land quality in private farms is clearly illustrated by Figure 3, which shows that in 1993-95 cultivable land was only 30%-40% of the holdings – compared to 80% in household plots. Yet it seems that the private farmers are doing exactly what the government intended them to do: they are actively reclaiming desert land on their farms and the share of cultivable land has steadily increased from the initial 30%-40% to 60% today. The picture that emerges from the 2001 survey of private farms is consistent with these national figures: among the respondent farms, 31% of the land was irrigation-ready from the start, another 37% was reclaimed by the farmers during their new tenure, and 32% is still unused and remains to be “opened” for cultivation in the future.

Fig. 3. Share of Cultivable Land in Individual Sector



A Digression on Private Land Ownership in Turkmenistan

Leaseholders receive land in use rights from the state through the intermediation of the local peasant association. The lease term is usually 5-10 years (this follows from the 2002 survey), but the production targets are set each year. The lease is nontransferable: if a family cannot farm, the leasehold reverts to the association for reassignment. Private farmers receive land directly from the state. Initially, the land is granted in use rights, but once the farmer has proved his willingness and ability to farm successfully (within two-three years), the land is transferred into “private ownership” and the happy farmer receives a special “land ownership certificate” from the authorities (sometimes directly from the hands of the President).

We advisedly put “private ownership” in quotation marks, because the notion of private ownership in Turkmenistan is very different from the accepted notion in market economies. On paper, the 1992 constitution of independent Turkmenistan recognizes private land ownership. Yet the Land Code, which is the permanent law that interprets the constitution on land matters, elaborates, “Citizens of Turkmenistan have the right to receive *in private*

ownership with lifetime inheritable possession land for peasant farms and subsidiary household farms ... Those wishing to establish a peasant farm will lease land or receive land *in private ownership with the right of lifetime inheritable possession...*”. Thus, private ownership is forcefully equated with lifetime inheritable possession – a traditional Soviet form of land tenure. “Privately owned” land in Turkmenistan is non-transferable: it may not be sold, given as a gift, or exchanged; only short-term leasing is allowed under very special conditions. In practical terms, there is no difference between private farmers who get land in use rights and those who receive a “land ownership certificate” from the state. They have an asset that they can use but not dispose of in any way.

Some Comparisons of Leaseholders and Private Farmers

The most striking difference between leaseholders and private farmers is not in farm size (5-6 hectares in leaseholds, 20 hectares in private farms): it is in the fact that leaseholders are subject to state orders while private farmers are allowed to grow whatever they wish. This is clearly reflected in the specialization of farms in the two groups (Table 3, based on 2001-2002 surveys): leaseholders produce either cotton or wheat, with less than 10% of farms producing both cotton and wheat and only 5% diversifying into other commodities. Among private farmers, on the other hand, 15% produce both cotton and wheat while fully 34% produce commodities other than cotton and wheat. These other commodities are largely livestock products, which are very seldom reported by leaseholders. Nationally, the product mix of leaseholders in associations is 85% crops and only 15% livestock. Livestock production is concentrated mainly in the individual sector – private farms and household plots, where the product mix is diametrically opposite: 25% crops and 75% livestock.

Table 3. Specialization at the Farm Level (percent of respondents)

	Leaseholders	Private farms
Cotton only	36%	8%
Wheat only	50%	43%
Cotton+wheat	9%	15%
Other	5%	34% (livestock!)

Table 4. Sale Channels for Farm Products: Leaseholders and Private Farmers (percent of respondents)

Channel	Leaseholders	Commodity	Channel	Private farmers
State	88	Cotton	State	100
Association	9	Wheat	State	71
Market	3		Market	21
		Vegetables	Market	80-100
		Meat, milk	Market	80-90

The difference in institutional arrangements for leaseholders and private farmers is also reflected in different access to marketing channels (Table 4). Leaseholders sell primarily to the state, which is consistent with their obligation to deliver wheat and cotton under state orders. Private farmers use different channels for different products. Vegetables, meat, and milk – the products for which no state procurement exists – are sold in the open market. Cotton is sold to the state: in principle, private farmers have no obligation to sell to the state, but there are apparently no alternative sale channels for cotton – direct exports are prohibited – and they are obliged to sell to the state cotton board. Wheat is again in a different category: the state takes 70% of the harvest, but a respectable 20% is sold through alternative channels. There is a very clear lesson behind these numbers: if producers are given an opportunity to

choose between marketing channels, they will indeed exercise their right of choice, presumably optimizing sales income.

Despite the state orders and the constraints on individual choice, leaseholders appear to be quite happy with the new arrangements (Table 5; unfortunately no such data are available for private farmers). Most of the respondents in the 2002 survey report an increase in their motivation to work (compared with the situation in the former collective) and an improvement in their standard of living. Practically everybody is optimistic about the future prospects under the new system. At least in terms of popular attitude the agricultural reforms are a success.

Table 5. Leaseholders' evaluation of the situation under the new leasehold arrangements compared to the collective past (percent of respondents in 2002 survey)

	Better than before the reforms	No change	Worse than before the reforms
Motivation to work	85%	11%	4%
Standard of living	72%	23%	5%
Future prospects	90%	6%	4%

Outcomes of Agricultural Reform

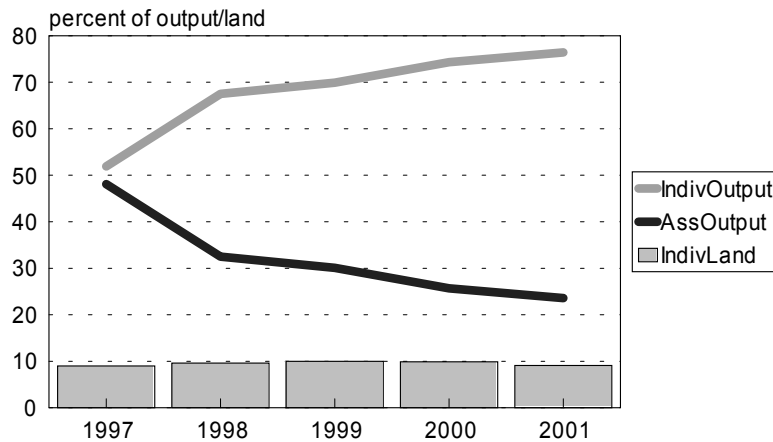
Proper assessment of the impacts of agricultural reforms requires detailed comparisons of the performance of the three institutionally different components of Turkmen agriculture: leasehold farms, household plots, and private farms. Unfortunately, neither national statistics nor our surveys provide the full information necessary for this kind of analysis. National statistical data only enable us to make a crude performance comparison between the “association sector” (i.e., leasehold farms) and the “individual sector” (mainly household plots, but also private farms). The results of this comparison are presented in Figure 4, where two features are worth noting. First the share of the individual sector in agricultural output increases over time, while the share of the associations decreases despite the transition to leasehold arrangements after 1996. In 1997, the first year of the main farm-structure reforms, each sector accounted for one-half of gross agricultural output. Five years later, in 2001, the individual sector produces 75% of agricultural output, while the association sector is down to 25%.

Another noteworthy feature is the ratio of output to land in the two sectors. The individual sector (household plots and private farms combined) control about 10% of cultivable land, on which they produce 75% of total output. Association leaseholds account for 90% of cultivable land, and yet they produce only 25% of total output. The relative productivity of the individual sector is thus 27 times higher than in the association sector.

Neither feature is unique to Turkmenistan. Similar trends are consistently observed in all former Soviet republics, where in line with accepted theoretical considerations we generally attribute the performance differences to different incentives for individual farmers and workers of former collectives. Yet the institutional setting in Turkmenistan is unique in that the former collectives have shifted to individual leasehold arrangements. As a result, leaseholders presumably face incentives that are much closer to the incentives of individual producers than the incentives of workers in former collective farms in the rest of the FSU. We would have expected the leaseholders to achieve productivity levels that are much closer

to the individual sector and thus give a strong boost to Turkmen agriculture. This obviously has not happened so far.

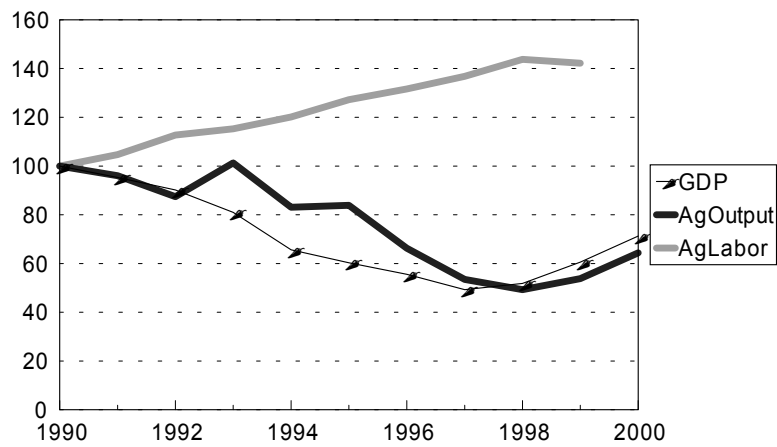
Fig. 4. Associations and Individual Farms: Output and Land



The only possible explanation, in our view, lies in the sharp differences in the institutional production and marketing arrangements between the individual sector and the leasehold sector. Individuals are free to decide what to produce and how to sell, and individual farming is flourishing thanks to private initiative. Leaseholders are strictly bound by state orders on the relatively large areas that they receive from the association, and there is not much room for private initiative. It is particularly important to note that the second tier of leasehold farming – the household plots – is not subject to these restrictions and household plot production seems to be flourishing (as part of the individual sector statistics) while the association sector is struggling. We hope that future work will enable us to disentangle the performance of leaseholds and household plots in the same rural families participating in the 2002 survey.

Switching to a still broader national view, we see in Figure 5 that both agricultural output and GDP declined sharply after 1990. Some signs of recovery appeared in 1997-98 – coincidentally with the introduction of significant reforms in agriculture. We would like to hope that the incipient recovery is indeed linked with the impact of agricultural reforms, but only the future will show if this is so. Figure 5 incidentally reveals another important feature of rural Turkmenistan: the labor employed in agriculture is steadily increasing over time, both because of high natural increase of the rural population and because of lack of alternative employment opportunities outside agriculture. The combined effect of increasing labor and decreasing agricultural output of course has had a devastating effect on overall productivity of Turkmen agriculture.

Fig. 5. GDP, Agricultural Output, and Agricultural Labor 1990-2000



Conclusion

Turkmenistan has implemented significant reforms in agriculture, increasing the size of the household plot sector, enabling the emergence of independent private farms, and most importantly individualizing to a certain extent the production arrangements in former collective farms through the introduction of leasehold contracts. Yet the policies underlying these reforms can only be characterized as half-hearted: state orders are retained for the main cash commodities (cotton and wheat), the producers are generally bound to monopolistic state marketers and input suppliers, and the independent private farmers who are relatively free from these constraints receive land of very poor quality that requires major investment in reclamation. It is not surprising that these constraints have a negative impact on the development of Turkmen agriculture and the performance of the new leasehold sector seems to be falling far short of its potential.

PREVIOUS DISCUSSION PAPERS

- 1.01 Yoav Kislev - Water Markets (Hebrew).
- 2.01 Or Goldfarb and Yoav Kislev - Incorporating Uncertainty in Water Management (Hebrew).
- 3.01 Zvi Lerman, Yoav Kislev, Alon Kriss and David Biton - Agricultural Output and Productivity in the Former Soviet Republics.
- 4.01 Jonathan Lipow & Yakir Plessner - The Identification of Enemy Intentions through Observation of Long Lead-Time Military Preparations.
- 5.01 Csaba Csaki & Zvi Lerman - Land Reform and Farm Restructuring in Moldova: A Real Breakthrough?
- 6.01 Zvi Lerman - Perspectives on Future Research in Central and Eastern European Transition Agriculture.
- 7.01 Zvi Lerman - A Decade of Land Reform and Farm Restructuring: What Russia Can Learn from the World Experience.
- 8.01 Zvi Lerman - Institutions and Technologies for Subsistence Agriculture: How to Increase Commercialization.
- 9.01 Yoav Kislev & Evgeniya Vaksin - The Water Economy of Israel--An Illustrated Review. (Hebrew).
- 10.01 Csaba Csaki & Zvi Lerman - Land and Farm Structure in Poland.
- 11.01 Yoav Kislev - The Water Economy of Israel.
- 12.01 Or Goldfarb and Yoav Kislev - Water Management in Israel: Rules vs. Discretion.
- 1.02 Or Goldfarb and Yoav Kislev - A Sustainable Salt Regime in the Coastal Aquifer (Hebrew).
- 2.02 Aliza Fleischer and Yacov Tsur - Measuring the Recreational Value of Open Spaces.
- 3.02 Yair Mundlak, Donald F. Larson and Rita Butzer - Determinants of Agricultural Growth in Thailand, Indonesia and The Philippines.
- 4.02 Yacov Tsur and Amos Zemel - Growth, Scarcity and R&D.
- 5.02 Ayal Kimhi - Socio-Economic Determinants of Health and Physical Fitness in Southern Ethiopia.
- 6.02 Yoav Kislev - Urban Water in Israel.
- 7.02 Yoav Kislev - A Lecture: Prices of Water in the Time of Desalination. (Hebrew).

- 8.02 Yacov Tsur and Amos Zemel - On Knowledge-Based Economic Growth.
- 9.02 Yacov Tsur and Amos Zemel - Endangered aquifers: Groundwater management under threats of catastrophic events.
- 10.02 Uri Shani, Yacov Tsur and Amos Zemel - Optimal Dynamic Irrigation Schemes.
- 1.03 Yoav Kislev - The Reform in the Prices of Water for Agriculture (Hebrew).
- 2.03 Yair Mundlak - Economic growth: Lessons from two centuries of American Agriculture.
- 3.03 Yoav Kislev - Sub-Optimal Allocation of Fresh Water. (Hebrew).
- 4.03 Dirk J. Bezemer & Zvi Lerman - Rural Livelihoods in Armenia.
- 5.03 Catherine Benjamin and Ayal Kimhi - Farm Work, Off-Farm Work, and Hired Farm Labor: Estimating a Discrete-Choice Model of French Farm Couples' Labor Decisions.
- 6.03 Eli Feinerman, Israel Finkelshtain and Iddo Kan - On a Political Solution to the Nimby Conflict.
- 7.03 Arthur Fishman and Avi Simhon - Can Income Equality Increase Competitiveness?
- 8.03 Zvika Neeman, Daniele Paserman and Avi Simhon - Corruption and Openness.
- 9.03 Eric D. Gould, Omer Moav and Avi Simhon - The Mystery of Monogamy.
- 10.03 Ayal Kimhi - Plot Size and Maize Productivity in Zambia: The Inverse Relationship Re-examined.
- 11.03 Zvi Lerman and Ivan Stanchin - New Contract Arrangements in Turkman Agriculture: Impacts on Productivity and Rural Incomes.