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by William M. Liefert ■ In Short

The Farm Input "Crisis" in the Former Soviet Union: What To Do?

Since economic reforms began in the countries of the former Soviet Union (FSU), the amount of agricultural inputs produced and available for use has plummeted. This fall alarms agricultural interests in the FSU nations. Many argue that agricultural performance cannot improve until input use first "stabilizes," and then moves back toward late 1980 levels. They are skeptical, if not suspicious, of Western advice to reform the agriculture and food economy systemically, rather than first dealing with the immediate crisis of declining input use and production. Is the alarm justified? Should domestic policy and foreign aid subsidize farm inputs to boost agricultural production, at least in the short run?

Table 1. Change in agricultural input use in former USSR: 1980s as percentage of 1970s and 1991–94 as percentage of 1980s

Input	1980s/70s	1990s/80s			
	USSR	Russia	Ukraine	Kazakhstan	Belarus
		(percent change)			
Fertilizer	49.4	–56.7	–62.0	–63.6	–28.4
Tractors[a]	15.5	–12.6	2.8	–8.9	–0.6

Source: Economic Research Service, USDA, *Agricultural Statistics of the Former USSR Republics and the Baltic States*, Stat. Bull. No. 863, Sept. 1993; and ERS/USDA, *Former USSR International Agriculture and Trade Report*, WRS-95-1, May 1995.
[a]1990s cover 1991–93, not 1991–94.

Table 2. Change in crop yields in former USSR:1991–94 as a percentage of 1981–90

Crop	Russia	Ukraine	Kazakhstan	Belarus
		(percent change)		
Grain[a]	7.3	4.6	0.8	14.7
Sugarbeets	–14.5	–22.8	–46.9	–12.4
Oilseeds	–3.7	–14.4	–22.2	pn
Potatoes	1.9	–7.0	–4.9	–15.6
Vegetables	2.7	–19.9	–26.7	–13.9

Source: USDA (1993, 1995) and CIS Statistical Committee.
Note: pn means production negligible.
[a]Cleanweight; includes rice and pulses.

Effects of changing input use

Evidence shows that the recent drop in input use, though large, has not hurt FSU agriculture as much as one might expect. During the 1990s, the amount of fertilizer used in Russia, Ukraine, and Kazakhstan fell by about 60 percent from the levels of the 1980s (table 1). Yet, crop yields generally dropped by much smaller percentages (table 2). In fact, compared to the 1980s, grain yields over 1991–94 rose in all four main FSU countries.

In the 1990s, the use of tractors in FSU nations fell less than fertilizer. (In fact, deliveries of new tractors decreased substantially, but the stock of available tractors, of course, dropped much more slowly.) For example, use in Russia declined 12.6 percent (1991–93, compared to the 1980s), while use in Ukraine rose slightly. Yet, yields again do not appear to be very responsive to changes in tractor use. Among the four countries, tractor use fell the most in Russia, but its recent yield performance is better than that of the other three nations. Tractor use over 1991–93 actually increased in Ukraine, yet its yields performed much worse than Russia's.

Favorable weather could, of course, account for good yields in the face of falling inputs. Yet, since reform began, weather in the FSU region has generally been poor; in 1992 and 1993 it has been about average, and in 1991 and 1994 it has been worse than average (and worst of all in 1995, though yields for this year are not included in table 2). Two other reasons more likely explain why yields have been relatively good despite a sharp decline in input use. First, in the agricultural system inherited from the Soviet period, systemic shortcomings resulted in very low marginal productivity (for fertilizer, perhaps close to zero). For example, distant "planners," rather than on-site managers, often determined a farm's fertilizer mix. Also, farms lacked incentives to use inputs efficiently. Second, reform has succeeded to some degree in motivating farms to use limited resources more productively.

Evidence supports the argument about low marginal productivity in the unreformed Soviet economy. During the 1980s, Soviet use of fertilizers and tractors increased by about 50 and 15 percent, respectively (compared to the 1970s; table 1). However, during the 1980s, Soviet yields did not increase substantially—for many crops only 5 to 8 percent (table 3). Also, area fell during the decade, often by percentages close to the rise in yields. Since the withdrawal of marginal land from production probably pushed yields up,

Table 3. Change in crop yields and area in former USSR: 1981–90 as percentage of 1971–80

Crop	Yield	Area
	percent change	
Grain[a]	8.3	–6.7
Sugarbeets	5.3	–5.6
Sunflowerseed	5.6	–5.8
Potatoes	0.9	–14.0
Vegetables	10.0	5.1
Fruits & berries	25.3	–8.8
Cottonseed	–9.0	13.3
Fiber flax	5.6	–19.4

Source: USDA (1993, 1995).

[a]Cleanweight, includes rice and pulses.

the isolated effect of increased input use on yields appears rather small.

In 1994 and 1995, yields in FSU countries fell. For example, compared to the annual average for 1991–93, grain yields in FSU nations in 1994 collectively were about 10 percent lower, and in 1995 were about 13 percent lower. One might therefore argue that the annual declines in input use are finally having a cumulative effect. In particular, reduced use of phosphate and potash fertilizer, which have long-term effects on soil fertility, could be causing harm.

On the other hand, weather in 1994 and 1995 has been particularly bad, with Russia's and Kazakhstan's 1995 drought being the worst in decades. Also, unlike phosphate and potash fertilizer, nitrogen-based fertilizer has shorter-term effects on soil fertility. The severe decline in its use in 1991–93 was not matched by deteriorating crop yields. These points mitigate any argument connecting declining input use and falling yields.

Implications

The results imply that agricultural policy in the FSU countries should focus on incentives to use agricultural inputs more productively, rather than using nonmarket measures to expand the amount of inputs used. If reform is motivating farms to employ resources more productively, subsidized inputs could dull incentives to improve performance. Also, given that the main FSU countries (such as Russia and Ukraine) are committed to macroeconomic austerity programs, input subsidies would strain government budgets and be inflationary. Policy makers and advisers should be especially wary of the view that the levels of input use and output must be "stabilized" (at what would be arbitrary levels) before major agricultural reform can begin. Such a view conflicts with the very nature of market reform, which to be successful, must change both the absolute and relative levels of input use and output. ■

The opinions expressed are those of the author and do not in any way represent official USDA views or policies.

William Liefert is a senior economist with the Commercial Agriculture Division of the Economic Research Service, U.S. Department of Agriculture. He specializes in agriculture in the former USSR, with particular interests in foreign trade, input use, and the effect of macroeconomic developments on the agriculture and food economy. He also has been a consultant to the Agriculture Directorate of the Organization for Economic Cooperation and Development.