Why the Soviet Union under Khrushchev and Brezhnev failed with the complex mechanization of agriculture: International aspects (1953–1986)

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The article provides archival evidence to the argument that complex mechanization after 1953 was a failure (Merl, 2020). International contacts were quickly restored after Stalin's death. They made evident to what extent the Soviet Union had fallen behind the West in agricultural technology and reliability of machinery. The article describes how successfully the Ministry of Agriculture collected information on Western technology. Already in 1955, models of the Western agricultural machinery, seeds, highly productive breeds, chemicals, and feed were imported to be tested in the Soviet conditions. The expectation was that the Soviet industry would use this knowledge to improve the quality of its agricultural machinery, which would determine a significant decrease of labor input and costs, and an increase in productivity. However, only few advanced machines were delivered — with long delays — to the state and collective farms. There was no 'green revolution' that increased yields and agricultural productivity with scientific data. No bottle necks in provision of feed and transport, and in reduction of harvest losses were overcome between 1955 and the founding of *Gosagroprom*. The *Gosplan* and the State Committee of Science and Technology systematically ignored the decrees of the Central Committee and the Council of Ministers, following the Ministry of Agriculture's recommendations to produce improved technology. They refused to give priority to the agricultural development for modernization of the outdated Soviet agricultural machinery industry would have required huge investment. Since the mid-1960s, the Ministry of Agriculture tried to make the block partners produce at least part of the machinery needed by the Soviet agriculture. These efforts also included the exchange of delegations with Western countries, the USSR's participation in international agricultural organizations, the ordered by Khrushchev cooperation with 'less developed' countries and within the Comecon.

Key words: agricultural modernization, complex mechanization, Western technology, socialist industrialized agriculture, agricultural labor productivity, agricultural machinery, research cooperation, international agricultural associations, Khrushchev, Brezhnev

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After the World War II, complex mechanization of agriculture became overwhelmingly important. Only the substitution of labor input by machinery could decrease the costs of production. Under the international competition, the huge increase in demand made the producers develop agricultural machinery. Complex mechanization de-

termined that labor productivity in agriculture grew faster than in other branches of economy.

The extra-ordinary increase in productivity in Western agriculture was primarily determined by the 'green revolution', i.e., the proper use of agricultural research in the selection of highly productive seeds for regional conditions, and of highly productive breeds for milk, meat or wool production. Industry provided the necessary high-quality concentrated feed, chemical industry — more effective pesticides, herbicides, artificial fertilizers and medicines for animal. By introducing border quarantine for plants and animals, an effective protection against diseases was ensured.

This article focuses on the question, why, after the death of Stalin, the Soviet Union did not manage to develop its backward agricultural machinery to the world standards, although, since 1955, the international contacts were restored and models of the superior Western agricultural technology were imported. Only few of the new models of agricultural machinery and of the superior plant and cattle breeding technologies — with long delays — were provided to the state and collective farms. The bottle necks in feed provision, transport, and harvest losses were not overcome between 1955 and the founding of *Gosagroprom*. In this period, the USSR even lagged further behind the leading Western (capitalist) countries in the agricultural labor productivity and in the costs of production. The USSR did not contribute to the 'green revolution'. The Soviet agricultural machinery output lagged strongly behind the West in quality, reliability, provision of spare parts, fuel and metal needs (Merl, 2020).

Why did not the USSR use the Western expertise? Despite the decrees of the USSR Central Committee (CC) and Council of Ministries (CM), following the Ministry of Agriculture's recommendations to produce improved technologies, the *Gosplan* and the State Committee of Science and Technology refused to give priority to agricultural development for modernization of the outdated agricultural machinery industry would have required huge investment. Therefore, since the mid-1960s, the Ministry of Agriculture tried to make the block partners produce at least a part of the machinery needed by the Soviet agriculture.

Works on the Soviet agriculture paid little attention to the reasons for failure of the radical improvement of the Soviet agricultural technology, and for preventing the access of the qualified Soviet agricultural scientists to the necessary research equipment. Although, since the late 1950s, most state farm directors and collective farm chairmen were qualified, they were never able to decide on the economic success of their farm without state interference. As investments under Brezhnev were wasted for the low-quality inputs, melioration and construction, until the 2000s, Russia could not return its dominant export position in the world agricultural market (Wegren, Nikulin, Trotsuk, 2018). With the agricultural inputs in accordance

with international standard, this would have been possible already in the 1960s. Most Soviet agricultural enterprises used unqualified manual labor without machinery (Merl, 2020).

While focusing on contacts with the Western agriculture, the article follows the perspective of the Ministry of Agriculture. This allows to consider proposals to improve inputs so that to ensure agriculture of the world standards, the Ministry's assessment of the Soviet agriculture in the international perspective, and resistance to the implementation of the Ministry's proposals, i.e., slowing down and boycotting the transfer of the expertise into the farms' production.

The article considers the following issues: (1) restoring of international contacts — delegations and specialists' trips to study the Western agricultural technology and to import models for improving the national production; (2) the resistance of governing bodies to this strategy; (3) the change in the Ministry's modernizing strategy in the mid-1960s to force the European Council for Mutual Economic Assistance (Comecon) to provide the USSR with superior machinery and research equipment; (4) the Ministry's desperate fight for importing equipment for research and veterinary laboratories; (5) the Ministry's proposals for using the Western expertise in the selected fields to improve the Soviet agriculture to the world standards; (6) problems with the transfer of the Western agricultural technology, equipment for mechanizing animal production and imports of cattle and poultry; (7) the state of the Soviet agriculture in the mid-1960s in the international perspective; (8) channels of information on the international agricultural progress — professionalization of international contacts on cultural exchange and joint agricultural research; consultants on agriculture in the Soviet embassies in capitalist countries; participation in international agricultural organizations; (9) the Ministry's work in developing countries.

The period under consideration (primarily from 1953 to 1971, in some cases to 1986)[1] is marked by ruptures. Since the mid-1950s, the Ministry of Agriculture could play its role in promoting agricultural modernization only for a short period of time. Khrushchev's 'decentralization' together with the liquidation of central ministries made the central regulation of agricultural machinery plants more difficult. Instead of overcoming the Soviet agriculture's backwardness, Khrushchev forced the Ministry to participate in his attempt to win the support of non-block nations by providing help to less developed countries and by presenting socialist agriculture as a 'success model'. In 1961, Khrushchev undermined the Ministry's role in promoting agricultural modernization and kicked the Minister of Agriculture Matskevich out of office. Only after Khrushchev's removal, in 1965,

1. The archive of the Ministry of Agriculture [RGAE. Fond 7486] is accessible only up to 1971. For the period from 1985 to 1989, the RGAE. Fond 650 (*Gosagronom*) was used.

the Ministry returned its function to give recommendations for agricultural modernization, and Matskevich returned to office. The Ministry made competent decree proposals to the CC and the CM, which shed light on the miserable state of the Soviet agricultural mechanization as compared to the leading Western countries. The Ministry demanded urgent actions aimed at the complex mechanization of farms to raise the efficiency of production and to decrease the labor input. However, hardly any of the required measures were implemented. The *Gosplan* never ordered the mass production of the required high-quality machinery and wasted resources to increase the 'cheap' production of poor-quality and outdated machinery. Thus, the supply of agricultural machines and equipment to animal husbandry grew in numbers but not in quality. The official statistics kept silence on the poor quality and unreliability of the machinery, on its idle state due to the lack of spare parts and repair. The lack of urgently needed harvest machinery contributed greatly to the losses of harvest in the fields. Transport was in short supply, although the increase in animal husbandry tripled the need for in-farm transportation (Merl, 2020).

Restoring international contacts: Delegations and specialists' trips

Contacts with the West were restored very soon after Stalin's death. Already in 1955, Soviet delegations visited Western countries to consider the state of agriculture and found technologies of better quality and higher efficiency than in the USSR — models of these machinery were imported to test them in the Soviet conditions.

1955 trip to the US and Canada: Western corn production

The most spectacular of delegations was headed by the deputy Minister of Agriculture, Vladimir Matskevich[2] — in the summer of 1955, to the US and Canada, by the invitation of John Storm, a plant grower from Woodstock, Illinois, who visited the USSR in 1946[3]. The trip was supported by famous Americans who wanted to improve the US-USSR relations, among them Ceyrus Eaton and Rosewell Garst[4] — both were in close contact with Khrushchev. Garst invited Matskevich to visit his farm and showed his corn and millet hybrid seeds resistant

2. Vladimir Matskevich (1909–1998): Ukraine Minister of Agriculture (1949-1950), in 1953 — the USSR deputy, from the fall of 1955 — Minister of Agriculture.
3. RGAE. F. 7486. L. 20-21.
4. Garst (1898–1977) — the president of the hybrid corn seeds company Garst & Thomas. He visited the USSR six times. In 1959, he hosted Khrushchev at his farm as an ambassador of good will.

to droughts (Taubman, 2003: 372). Matskevich shared his impression with Khrushchev and emphasized that hybrid seed could be developped in the USSR in only 2 or 3 years, while the Americans spent 25 years[5] (Taubman, 2003: 372). In the fall of 1955, Khrushchev appointed Matskevich the USSR Minister of Agriculture. He stayed in the position until 1973, interrupted by his work in Kazakhstan (1961 — early 1965), likely because he dared to oppose Khrushchev.

The return visit of the Americans was in the fall of 1955, and Garst came to the USSR too. After Khrushchev started his corn campaign in 1954, he wanted to meet Garst. He invited him (together with Mikoyan and Matskevich) to his *datcha* near Yalta. Garst explained in which southern parts of the USSR corn production would be the most effective. He stressed the precondition for success: the use of hybrid seeds, fertilization, irrigation, mechanization, insecticides and herbicides. Nothing of this was available in the Soviet Union at that moment, which did not stop Khrushchev (Taubman, 2003: 372-373). He did not even ensure that the farms were supplied with the necessary machinery. The Ministry of Agriculture asked Khrushchev already on May 6, 1955 to order urgently the production of corn machinery for the campaign's success depended on mechanization[6]. The Ministry's board meeting on April 12, 1956 noted that the quality of the corn seeds was poor and asked to import 5,000 tons of hybrid seeds together with three Garst & Thomas plants to produce hybrid seeds. The board demanded the state inspection of quarantine to check the imported seeds carefully so that to avoid the spread of pests and diseases[7].

On Garst's invitation, the delegation of Soviet corn specialists visited the US and Canada in June 1958. They were impressed by the fact that only one worker (instead of about a dozen in the USSR) was needed to cultivate 100 hectares of corn, and that hybrid seeds gave about 25-30% more yield and was easier to harvest. On June 16, 1958, Matskevich with the Minister of Foreign Trade Kabanov asked the CM to produce corn machinery, hybrid seeds and plants to process feed from corn. In addition, they proposed to import the mechanized small-scale equipment used in the US winery and horticulture, and breeding cattle[8]. On July 10, 1958, Matskevich informed the CM and Khrushchev that Garst proposed to purchase six tractors and the necessary corn agricultural machinery, which would allow the USSR to reduce the labor input in corn production. Garst also suggested to buy three plants for the production of concentrated feed and to look after Soviet specialists staying in the US. To get the support of the CM, Matskevich reduced the amount of machinery to import: only

5. RGAE. F. 7486. D. 8578. L. 168-171.
6. RGAE. F. 7486. D. 7708. L. 264-267.
7. RGAE. F. 7486. D. 7970. L. 45-48; 54-57; 67-70; 74-76.
8. RGAE. F. 7486. D. 8359. L. 91-93.

two instead of four tractors with equipment, only two feed plants and two mobile feed-mixers, hybrids and a selection of other mechanized equipment and herbicides[9].

Although Khrushchev and Mikoyan, two leading figures of the regime, supported the purchase, such governing bodies as the *Gosplan* refused to buy Garst's models in the required amount. Despite the CM decree, they blocked the purchase by financial reasons. On April 28, 1959, Matskevich stressed that the purchase price was significantly less than Garst's proposal. When in Moscow in March 1959, Garst proposed to buy also model agricultural machinery and equipment for poultry farms, breeding and hybrid cattle and poultry, and model products for the chemical industry. The CM ordered an additional purchase for 4 more million rubles. Matskevich asked the Ministry of Foreign Trade to make the purchase in 1959[10]. However, there was a new problem: the International Harvester Company refused to deliver two complexes of corn agricultural machinery and insisted on at least four. Therefore, on August 14, 1959, Matskevich asked Mikoyan to change the decree of March 10, 1959, and add two complexes of machinery[11].

From Matskevich's report on the results of the use of foreign experience in the Soviet economy from July 4, 1960, we know that these imports were delayed. The technology to produce hybrid seeds was brought from the US only in 1958. While testing the imported seeds, the Soviet producers started to develop their own varieties. In 1959, hybrid seeds were used on about 3,000 hectares. Matskevich argued that in the future, when hybrids were sown on 200,000 hectares, the USSR would save 600 to 800 thousand human-working days. In 1959, Soviet scientists worked on about 100 new, self-pollinating corn varieties which the delegation brought from the US and Canada in 1958. In addition, the American experience was used to produce hybrid millet seeds. Tests of some hybrids, bought from the Garst & Tomas in 1958 and 1959, showed impressive results: Soviet yields could have increased by 150%[12]. Achievements in corn production in the following decades made Matskevich sound utopian: in reality it took the USSR several years to increase the sown area for hybrids. On August 27, 1962, the Ministry's board made a list of research institutions which still had not reported on the results of hybrid seeds nor started to prepare recommendations for supplying regional farms with the imported hybrid seeds[13].

Already the example of corn explains why the efforts of the Ministry of Agriculture to promote the complex mechanization of agricul-

9. RGAE. F. 7486. D. 8359. L. 294-301.
10. RGAE. F. 7486. D. 8474. L. 46-59.
11. RGAE. F. 7486. D. 8476. L. 92.
12. RGAE. F. 7486. D. 8578. L. 170-171.
13. RGAE. F. 7486. D. 8691. L. 235-241.

ture by importing models of advanced technologies were doomed to fail. Although the delegation trips of 1955 and 1958 provided a lot of information on the technical preconditions of successful corn production, Khrushchev paid little attention to the needed machinery. The central governing bodies, responsible for executing the CC and CM's decrees, gave no priority to the imported hybrid seeds, corn agricultural machinery and concentrated feed. Still in 1986, *Gosagroprom* claimed that the production of corn silage was insufficient and urgently needed improvement. Enormous losses of feed harvest happened each year[14] not due to the lack of knowledge: Garst and Matskevich told Khrushchev in 1955 what investments were a precondition for the campaign's success. However, Khrushchev focused on workers' mobilization and paid little attention to the need for high-quality machinery.

Import of Western agricultural technology

After each delegation trip, the Ministry of Agriculture asked to import models of the Western technology considered by the experts to be of higher quality and efficiency than the national machinery, seeds or breeding cattle — to test them in the Soviet conditions and to reproduce so that the Soviet industry would improve its production[15]. For instance, the Ministry's board demanded, after the delegation's report on the 1955 trip to Sweden, to import models of grain and sugar beet combine harvesters, potato planters and fertilizer spreaders. The delegation also studied the Swedish livestock production. Based on this information, the main inspection of animal husbandry proposed the Ministry of Foreign Trade to import models of fully mechanized livestock stables and feed plants[16]. In November 1955, England showed interest in renewing contacts with the USSR and invited Matskevich with his wife and 12 experts to Coventry: the English side covered all costs[17]. Obviously, the Soviet willingness to import models of agricultural machinery waked up the business interests of the Western machinery producers.

By the order of the CC and the CM, Matskevich and Khlamov (Minister of Tractor and Agricultural Machinery Construction) proposed on January 2, 1956 a draft decree to import about 70 combine harvesters, other harvesting machines and tractors — 9-10 machines from Canada, the US, and the FRG, and additional machines from England, France, Sweden and Belgium. The list provided detailed information on the producer — as Massey Harris, International

14. RGAE. F. 650. D. 16. L. 5-30.
15. RGAE. F. 7486. D. 7970. L. 62-66.
16. RGAE. F. 7486. D. 7970. L. 2-9.
17. RGAE. F. 7486. D. 7834. L. 11-12.

Harvesters, John Deere, Claas, Lanz[18]. But even the CC and CM's order did not guarantee that the Ministry of Foreign Trade would ensure the import: it refused to import tractors from England and combine harvesters from Sweden due to 'the lack of foreign currency'. Matskevich renewed his request and asked the CM to give a special order to the Ministry of Foreign Trade to import the machinery[19]. However, even special requests in most cases had no success.

Most of the delegations got the Ministry's clear orders to explore the situation. Thus, on January 4, 1957, the main inspection for potatoes, vegetables and melons asked to send a delegation to France to explore the production and marketing of vegetables in the suburbs of big cities. The delegation was to consist of experts in storage, processing and sales of vegetables, and to explore the use of herbicides. The Ministry's board was especially interested in the calibration of vegetable seeds and required to import models of the necessary machinery[20]. In 1963, the Minister of Agriculture Volovchenko made a list of problems to be solved by consulting foreign experts in 1964-1965: improving soil fertility, use of chemicals, mechanization of agriculture, organization of seed breeding, producing new crop varieties and hybrids, livestock breeding, feed production and animal husbandry, new methods to fight plant pests, and agricultural specialization[21].

Rising resistance: delays and funding cuts

The Ministry of Agriculture protested — often in vain — against delays and ignorance of the CC and CM decrees to import models of the Western machinery by the governing bodies. Thus, on January 27, 1961, Petrov with Orlov (*Gosplan*) protested against the reduction of the number of agricultural machinery to be imported[22]. On January 3, 1968, Matskevich and Ezhevsky (Soyuzselkhoztechnika) complained to Kosygin that the purchase of foreign agricultural technology was often delayed for years. They presented a long list of non-executed import orders. For instance, they waited for three years to get the permission of the Ministry of Foreign Trade, the Gosplan, and the Committee of Science and Technology to import models of pig and cattle fattening and dairy farms. Although the storage of hay in the neutral gas could reduce the storage losses to 25%, the import order was not executed. The required import of greenhouses from the Netherlands was not executed, nor the import of John Deere wheel tractors, self-propelled rice harvesting machines of Massey Ferguson,

18. RGAE. F. 7486. D. 8049. L. 6-12.
19. RGAE. F. 7486. D. 8049. L. 138-145.
20. RGAE. F. 7486. D. 8169. L. 2-11.
21. RGAE. F. 7486. D. 8800. L. 90-93.
22. RGAE. F. 7486. D. 8659. L. 30-32.

potato harvest machines from England, and eight-row corn sowing machines of John Deere spreading fertilizers, herbicides and insecticides. They reminded that in January 1967, they had asked the CC and CM to speed up the imports of the urgently needed efficient tractors, harvest machinery, and equipment for animal farms[23]. The *Gosplan* and the State Committee did not execute the CC and CM's order to check the import proposals. Matskevich and Ezhevsky suggested to speed up the use of the most urgently needed agricultural machinery at the state and collective farms by purchasing licenses from the Western companies to produce their machinery (just as with Fiat)[24].

On June 25, 1968, Matskevich complained to the CC that the *Gosplan* refused to purchase feed and diary plants from England for two years, and repeated his import request. In the FRG, such a dairy farm for 2,000 cows was opened[25]. The Soviet Republic Estonia complained about the delay of milking systems imports for years, which did not allow to produce the high-quality milk for export — the national milking systems contaminated milk with bacteria[26].

Since the late 1950s, the State Committee for Science and Technology showed little interest in the imports of the superior agricultural technology. The Committee often intentionally delayed the execution of import orders, probably, due to the fear of competition, because all comparative tests revealed the poor quality of the Soviet agricultural machinery. According to the bureaucratic procedures, the Committee had to check all import requests of the Ministry of Agriculture and had the right to deny them. For instance, in 1958, Sitnikov (Ministry of Agriculture) asked Maksarev, the head of the state committee, to approve the imports of 15 models of agricultural machinery from England, the US and France[27]. When in 1967 Soviet constructors designed a 220 PS tractor, Matskevich and Ezhevsky informed the head of the State Committee, Kirillin, that the US already used much more powerful tractors. They asked to import a 600-PS tractor with the necessary machines[28].

Among the CM's import decrees not executed or executed with delays was the decree of August 26, 1966, to buy a poultry farm from capitalist countries. A similar delay happened with the CM's order of June 18, 1969, to purchase construction parts for diary farms with 2,000 cows. However, even in the beginning of 1971, the machinery was not imported. Instead of buying the construction elements, the *Gosplan* bought only the design project[29]. Concerning the order to im-

23. RGAE. F. 7486. D. 9164. L. 10.
24. RGAE. F. 7486. D. 9164. L. 9.
25. RGAE. F. 7486. D. 9131. L. 16-17.
26. RGAE. F. 7486. D. 9183. L. 350-352.
27. RGAE. F. 7486. D. 8221. L. 195-197.
28. RGAE. F. 7486. D. 9104. L. 212-219.
29. RGAE. F. 7486. D. 9333. L. 25-33; 126-134.

port a complex fattening farm for 1,000 heads of cattle, the *Gosplan* informed the CM on April 11, 1968, that it would be available only in 10 to 12 months. As the import plan for 1968 did not have enough funding, it suggested to postpone the purchase to 1969[30]. Considering the CM's decree of December 28, 1970, to import a new system of keeping cows from Sweden, the *Gosplan* decided to purchase it too early, when the system was still tested[31].

In his report to the CM of June 26, 1968, Matskevich underlined the importance of complex mechanization and automatization of agricultural production. He requested to import models of diary and cattle fattening farms, models of machinery for the production and storage of hay bales and for feed distribution. The GDR bought a fattening farm for 13,000 heads of cattle and a diary farm for 2,000 cows from England. Matskevich asked to make the *Gosplan* provide the necessary funding to purchase such farms in England in the third quarter of 1968, which would allow to start their construction at the beginning of 1969. The *Gosplan* refused to execute this order for no finances for the imports were allocated in the 1968 plan. The Ministry of Foreign Trade refused the execution too and demanded that the Ministry of Agriculture would first provide the permission of the State Committee of Science and Technology for such imports. The purchase of the model would only make sense if the Soviet industry intended to start the production of such farms[32]. This was a clear hint to the reason of the attitude to the Ministry of Agriculture's requests: if there was no intention to produce superior machinery in the USSR, the strategy of the Ministry was doomed to failure. It was based on the expectation that the governing bodies were interested in improving the quality of the Soviet agricultural machinery and the animal farms' equipment, which would require a fundamental reconstruction of the USSR's agricultural machinery plants constructed in the 1930s. Such investments were never provided, although they could have been paid off by reducing labor inputs and costs in animal husbandry.

Sometimes the industry blocked the imports when expected advantages from producing the equipment itself: for instance, by the order of the 23rd Party Congress to produce by 1970 990 cooling devices to provide the state and collective farms with equipment to store fruits and with poultry farms. Matskevich and Ezhevsky proposed to the head of the *Gosplan* Baibakov to purchase high-quality cooling devices from Hungary. But the Minister of Chemical and Petroleum Industry intervened to take over the production by changing the plan for 1968 accordingly[33].

30. RGAE. F. 7486. D. 9183. L. 235-237.
31. RGAE. F. 7486. D.9333. L. 220-227.
32. RGAE. F. 7486. D. 9184. L. 24-25; 221-225.
33. RGAE. F. 7486. D. 9103. L.90-105.

The USSR's search for successful models of agricultural technology to modernize the production of agricultural machinery focused on the Comecon countries, especially the GDR, Poland, Czechoslovakia and Hungary. The quality of the agricultural machinery production in the GDR was significantly superior to that of the Soviet industry. Many of machines, especially for harvesting, were not produced in the USSR; therefore, it was certainly the USSR who had to learn. When the Ministry of Agriculture realized that the governing bodies blocked the imports of superior technologies from 'capitalist' countries due to the 'lack of foreign currency', the Ministry tried to substitute these imports by the imports from the European-block partners. This meant a decisive strategy's turn: while the Western models were imported to improve the national production of machinery, the machines imported from the block partners were to be used at the Soviet farms.

Thus, on May 25, 1965, Matskevich asked Ezhevsky (*Soyuzselkhoztechnika*) to purchase seed cleaning and drying machinery from the GDR company Petkus for the collective and state farms. The Ministry had already bought the necessary machinery from this company for testing stations and universities[34]. On May 8, 1968, Matskevich reported to the CC that from 1964 to 1967 850 complexes of the Petkus's seed cleaning and drying machinery were imported. They were of a much better quality than Soviet machines, and met the requirements. Matskevich asked the CC to purchase 300 more of these machinery complexes and to order the *Gosplan* to speed up the imports still blocked by it and the Ministry of Foreign Trade[35].

On July 31, 1967, Matskevich, Ezhevsky and Sinitsyn (Minister of Tractor and Agricultural Machinery Production) asked Baibakov, the head of the *Gosplan*, to increase the imports of the urgently needed agricultural machinery from the Comecon countries: the Soviet industry could not satisfy even the minimum demand of the state and collective farms. Concerning ventilating fans and silage harvesting machines, and mower-loaders, the demand exceeded the national production by 20 to 30 times. About the double national production was needed for potato harvesters, diary equipment, milking systems for 200 cows, and milking installations for milking pails. From the CSSR, more harvest machinery for turnips and carrots were to be imported. 15% to 20% of total costs were to be spent for spare parts for the machinery[36].

To develop the agricultural machinery production in cooperation with the GDR, a special commission was established[37]. In February

34. RGAE. F. 7486. D.8933. L. 220-221.
35. RGAE. F. 7486. D. 9183. L. 327-345.
36. RGAE. F. 7486. D.9104. L. 93-94.
37. RGAE. F. 7486. D. 9130. L. 1-3.

1968, the talks with the GDR started — on production of other potato and hay-harvesting machinery, systems for tillage and sowing in the next 10 to 20 years. Special attention was to be paid to the standardization of harvesting machinery (including for forage crops, cereals, sugar beets and potatoes). The standardized basic elements were to be developed for tractors, for storing and processing agricultural products[38]. Standardization was of the greatest importance for spare parts and trailed implements were produced for only specific types of tractors, and standardization would have sped up complex mechanization. However, until the end of the 1980s, there was hardly any progress for it would also have required modernization of the Soviet plants producing agricultural machinery[39].

The import plan for agricultural machinery from the Comecon countries in 1969-1975, compiled on the CM order by the Ministry of Agriculture (Volovchenko) and *Soyuzselkhoztechnika* (Ezhevsky) on July 23, 1968, suggested to import all agricultural machinery not produced in the USSR from such 'brother countries' as the GDR, CSSR, Hungary, Bulgaria and Poland — machinery for silage and potato harvest, for processing cereal seeds, milking installations, machinery for processing feed and mechanization of animal husbandry. As these countries developed new agricultural machinery every year, the bilateral contracts required the supplies of the newest machines[40]. The bilateral contracts were to coordinate the production from 1971 to 1975. Machinery, for which testing in the USSR was finished, but mass production did not start due to the *Gosplan*'s 'unavailable capacities', was to be produced by the partner countries. According to the agreement with the GDR, almost all machines were to be produced in the GDR for the *Gosplan* did not provide production capacities in the USSR. The machines based on the Soviet technical documentation were to be produced only at the GDR plants[41].

On February 4, 1969, Matskevich, Lebedev, the Minister for Tractor and Agricultural Machinery, and Ezhevsky asked the CM to import complexes for diary production and cattle fattening from the GDR. They claimed that this was to be done urgently for the labor productivity in the Soviet animal husbandry lagged dramatically behind 'capitalist' countries: for instance, the production of one decitonne of milk required 8 times more of labor input. The GDR's equipment for diary production could reduce the labor hours from 10-16 to 0.7[42]. The CM agreed on the purchase on February 12, 1969. However, it became obvious that the state farms selected were not suita-

38. RGAE. F. 7486. D. 9130. L. 33-47; D. 9165. L. 5-8, 17-54.
39. RGAE. F. 650. D. 16. L. 5-30.
40. RGAE. F. 7486. D. 9166. L. 319-335.
41. RGAE. F. 7486. D. 9166. L. 336-358.
42. RGAE. F. 7486. D.9252. L. 108-115.

ble[43]. The purchase of milking equipment from the GDR had no alternative for the national installations were produced mainly at small and not specialized plants[44] (Schinke, 1967). On February 10, 1969, Matskevich and Ezhevsky asked the CM to import the equipment for mechanization of animal husbandry from the GDR from 1970 to 1975. Soviet plants did not produce enough of the urgently needed machinery such as silage harvesters and hay balers. Milking in the USSR was mechanized only up to 36%, harvesting with hay balers — up to 13%[45].

On March 30, 1970, Matskevich reported to the CC-Secretary of Agriculture, Kulakov, that, following his order, Matskevich had agreed with the Soviet ambassador in the GDR Abrasimov to intensify the 'cooperation' with the GDR. Agricultural machines, which were in short supply in the USSR due to the *Gosplan's* refusal to increase production from 1971 to 1975, were to be imported from the GDR. Matskevich reported of the following deficit: 48,700 silage harvesters, 119,000 pick-up hay balers, 18,000 baler-chopper-loaders, 28,900 pneumatic transport systems, and 152,500 tractor-rakers. As Matskevich was not sure that the *Gosplan*, the State Committee for Material and Technical Supply, and the Ministry of Foreign Trade would ensure such imports, he asked Kulakov to oblige these institutions to increase the imports of harvesting machinery from the GDR[46]. Due to the increased significance of the GDR in providing agricultural machinery, on August 6, 1970, Volovchenko asked the CC to introduce at the embassy in the GDR the position of a consultant for agriculture to coordinate the cooperation[47].

The contacts with the European block partners were ambivalent. On the one hand, the USSR expected thankfulness for liberation from fascism, such as covering all costs of scientific exchanges. On the other hand, the agricultural machinery produced in these countries was better than the one produced in the USSR; therefore, the USSR demanded to receive large imports of these agricultural machines. Thus, the technological backwardness of the Soviet agricultural machinery was increasing until the late 1980s.

Cooperation within the Comecon countries suffered from the fact that the Soviet partner often did not fulfill its obligations to provide the promised information. For instance, according to the agreement of March 1957 in Prague, the USSR promised to improve the communication on testing tractors, agricultural machinery and on repair, but did not provide the information before the agreed deadline[48]. On

43. RGAE. F. 7486. D.9253. L. 169-183.
44. RGAE. F. 7486. D.9252. L.131-144.
45. RGAE. F. 7486. D.9241. L. 21-25.
46. RGAE. F. 7486. D.9277. L. 3-5.
47. RGAE. F. 7486. D.9277. L. 7-9.
48. RGAE. F. 7486. D.8357. L.5-7.

July 19, 1965, Volovchenko informed the CC that the USSR did not fulfill its obligation to provide its Five-Year-Plan (1966-1970) in time to the Comecon partners. He requested to order the *Gosplan* to provide the plan urgently to the permanent commission. Without the Soviet data, the Council could not complete its tasks[49].

The block partners were always disappointed by the poor quality of the Soviet tractors. In the Comecon countries (without Mongolia), on November 1, 1962, more than 25,000 tractors DT-54 were in operation and, as in the USSR, they needed repair and spare parts that were in extremely scarce supply, which made the block partners produce spare parts of low quality and with high costs. Pyshin, the head of the Soviet part in the permanent Comecon commission, asked the CM on March 7, 1963, to satisfy urgently the block partners' need in spare parts[50]. Already on May 13, 1957, the Ministry of Agriculture's board admitted that often seeds, agricultural machinery and equipment of bad quality were exported[51].

Fight for the imports of equipment for research and laboratories

In the 1920s, the USSR held a leading position in the international agrarian research. Considering its human capital, the USSR could have returned it in the 1950s. However, the USSR failed to provide the necessary research equipment as a precondition for solving this task. The Soviet industry produced hardly any of the equipment necessary for research laboratories or veterinary services, nor medicines for fighting animal diseases. In all these fields, Soviet researchers and veterinarians were prevented from doing their job. And the governing bodies did their best, under the pretext of the lack of foreign currency, to block such imports. Therefore, neither the test stations, nor the veterinary services could fulfill their tasks.

All requests of the Ministry of Agriculture and research laboratories faced insuperable obstacles and bureaucratism. At the end of 1958, Sitnikov asked Yushin (*Gosplan*) to import equipment and machinery needed for research institutions and higher education[52]. After the International Exposition of Agricultural Research Equipment, on May 14, 1959, the Ministry's board ordered to provide recommendations on the necessary equipment for agronomists, animal technicians, veterinarians, chairmen of collective farms and directors of state farms — so that to order the missing equipment[53]. However, no effort was undertaken to produce this equipment in the Soviet Union.

49. RGAE. F. 7486. D.8883. L. 52-54.
50. RGAE. F. 7486. D.8801. L. 1-6.
51. RGAE. F. 7486. D.8169. L. 130-133.
52. RGAE. F. 7486. D.8371. L. 173-178.
53. RGAE. F. 7486. D.8415. L. 20-22, 74-102.

In 1962, the usual reduction of the imports requests for the urgently needed laboratory equipment caused protest: without the equipment for checking measurements, the laboratories could not work[54]. On May 4, 1962, Mozgov (Ministry of Agriculture) asked the *Gosplan* to provide the necessary imported medicines and laboratory equipment for veterinary services. He calculated the need in imports for 1963[55]. For many years, only from 10% to 50% of the requested medicines and equipment were imported, which determined serious problems: the republics could not fight animal diseases. Levykin (deputy Minister of Agriculture) asked to allocate the necessary finances and to start a radical change in thinking[56].

The lack of the laboratory equipment caused damage for the national economy: for instance, in 1964-1967, there was a surge of cattle diseases, and sheep and pigs got infected from chicken[57]. However, on June 14, 1968, the *Gosplan* decided that only one position of the equipment needed for the veterinary research would be imported immediately, while other positions only in 1969[58]. The foot-and-mouth disease spread since 1965. As the veterinary service did not have any advanced equipment, it could not fight the disease. Matskevich presented a draft decree to the CC and CM on July 4, 1969, to fight the foot-and-mouth disease during the Five-Year-Plan (1971-1975): research institutes were to be established and the Soviet industry was to produce the necessary medicines. He listed the imports needs from the Comecon and capitalist countries[59]. To save the foreign currency, the laboratory equipment was to be imported from the Comecon countries[60].

Due to the lack of the urgently needed laboratory equipment, the famous academics appealed to the CM directly. On October 30, 1964, the academic Lukyanenko (VASKhNIL) wrote to the CM that his research institute for plant selection in Krasnodar was in the urgent need of equipment. He asked to import it from the FRG and the US. On November 10, 1964, Polyansky (first deputy of the CM) promised a 'favorable consideration'. However, on January 29, 1965, the *Gosplan* decided that there was not enough foreign currency. If the Ministry of Agriculture had had currency, the equipment would have been imported in 1966! Volovchenko protested against this decision on February 17, 1965, with the CM[61]. In 1970, Lukyanenko, supported by

54. RGAE. F. 7486. D.8732. L. 36-37.
55. RGAE. F. 7486. D.8732. L. 144.
56. RGAE. F. 7486. D.8732. L. 230-243.
57. RGAE. F. 7486. D.9183. L.265-269.
58. RGAE. F. 7486. D.9184. L. 35-47.
59. RGAE. F. 7486. D.9208. L. 29-46.
60. RGAE. F. 7486. D.8732. L. 207-210.
61. RGAE. F. 7486. D.8933. L.14-176 27.

Matskevich, wrote a new personal request to Polyansky asking for micro-filters from Canada[62].

There was a drastic need in the plant protection products. Those few produced by the Soviet industry were often not only of little effect but also harmful to people. Therefore, on June 19, 1968, Matskevich and Ezhevsky demanded imports[63], and on February 12, 1969, wrote to Baibakov about the import needs in the laboratory equipment from the CSSR, Hungary, GDR, Poland and (about 20%) 'capitalist' countries during the Five-Year-plan (1971-1975)[64]. The foreign currency funding provided for the purchase of such equipment in 1970 was reduced compared to the previous year despite the increased demand. According to Volovchenko and Ezhevsky, the allocated finances covered less than one third of the urgent imports demand. On July 29, 1969, they complained in vain to the State Committee for Material Technical Supply and the Ministry of Foreign Trade. On October 21, 1969, Matskevich asked the CM to avoid the reduction and to order the *Gosplan* and *Gossnab* to check the financial allocations. For the imports of the laboratory equipment from capitalist countries, the Committee for Science and Technology provided only 10% of the needed funding in 1969 and nothing in 1970. The Soviet industry did not produce any of the equipment needed by the agrochemical laboratories; therefore, the *Gosplan* accepted that they would not conduct any agricultural research[65].

Ministry's proposals to bring the Western production expertise to the USSR

To prove the Ministry of Agriculture's understanding of the Western production processes and of the shortcoming of the Soviet industry, I will present some of the Ministry's proposals to import the Western production knowledge, although most of these proposals were not taken into account or supported by the governing bodies.

Development of new seed varieties and the fight against pests and diseases

In 1957, a delegation was sent to Canada to bring new crops varieties and herbicides to the USSR together with the new knowledge. The Ministry' border ordered that each region selected a farm as a test station. These farms were to develop local varieties with the low-

62. RGAE. F. 7486. D.9332. L.33-44.
63. RGAE. F. 7486. D.9184. L. 11-16.
64. RGAE. F. 7486. D.9252. L.145-161.
65. RGAE. F. 7486. D.9253. L. 224-228, 261-262, 376-377.

est labor input per hectare. The selected farms were to be provided with the necessary agricultural machinery. In the same way, each region was to choose a farm as a test station for animal husbandry. To use the foreign expertise, the knowledge of foreign languages was to be improved at the higher agricultural institutions. Every graduate and doctoral student was to be fluent in at least one foreign language. The test stations were to be provided with the experimental equipment imported from Canada: machinery for soil tillage without plows, small machinery, pesticides and equipment for breeding[66]. As the Ministry's board lacked any power to control the execution of its orders and their funding, nobody cared about establishing regional test stations. There were no imports of the necessary equipment from Canada.

Due to the problems with putting into practice, many imported crop varieties showed little efficiency. The 1960 Ministry's report mentioned 196 crop varieties imported in 1959, and 538 varieties from 25 countries were under testing. From 1950 to 1959, 163 tested imported varieties were sown on 6 million hectares. The state inspection reported about suitable regions for 13 additional foreign varieties in 1959, which in 1960 showed high yields. In 1959, additional 700 varieties were ordered (400 from the US, 48 from China) for being tested in 1960-1961[67].

Cotton growing

In the fall of 1958, a delegation visited the US to study cotton growing. On January 23, 1959, based on the delegation's report, the Ministry's board sent a draft decree to the CC and CM "On the complex mechanization of cotton growing" so that to transfer the American practice to the USSR. The board demanded to purchase some best American cotton varieties to test them on the Soviet soil, and to import some models of the American cotton-growing machinery and chemicals. The Lenin Academy of Agricultural Sciences (VASKhNIL) was ordered to test together with the Middle-Asian Science Academies the American methods of growing and harvesting cotton: planting cotton, herbicides, defoliants and desiccants used on cotton fields, hybrid cotton seeds, methods of chemical pollen sterilization, methods of irrigation with the flexible tubes along elongated furrows. The American cotton machinery and herbicides were to be tested in Middle Asia and Azerbaijan together with the American irrigation method based on the use of ground waters. One Tadzhik state farm was to organize its production by the American model[68]. The USSR

66. RGAE. F. 7486. D.8169. L. 186-192.
67. RGAE. F. 7486. D.8578. L. 167-168.
68. RGAE. F. 7486. D.8415. L. 8-11.

had problems with the cotton cleaning technology; therefore, on September 4, 1970, Matskevich asked to import a model cotton plant from the US to test the processing of cotton[69]. In 1960, the Ministry reported that in 1959, a complete complex of the cotton technology and machinery used in the West of the US (similar to the USSR climate) was imported. The use of American herbicides proved to be highly efficient. If such herbicides were produced in the USSR, cotton yields would grow by 4-5 decitonnes[70].

The Ministry's excitement about the American model was not accompanied by the reflection whether the American technology efficient under the market economy could be transferred to the Soviet command economy. Unlike the USSR, the US decisive element were farmers: to get profit, they needed high efficiency and selected the machinery best for their soils and interests. Under the market competition, producers of agricultural machinery strove for their clients' satisfaction and provided efficient repair services during the peaks of fieldwork.

Veterinary inspection

In the veterinary services, the Ministry also wanted to copy the American model. On April 3, 1959, the board discussed the report of the delegation on the American production and application of new biologics, antibiotics and other veterinary medicines. The delegation brought many veterinary books to the USSR and ordered to develop the national production of these medicines. The American veterinary control at all border stations impressed the delegation. The board demanded to intensify the Soviet veterinary control in the ports and at the railway border stations by introducing the American veterinary and sanitary measures for meat and poultry. The American Yearbook on animal diseases was to be translated and published in the USSR. Movies were to inform the Soviet people of the new sanitary standards[71]. In 1963, another delegation visited Canada to explore the plant protection. After its return, the Ministry's board ordered the state inspection for quarantine and plant protection to prepare recommendations based on the delegation's report[72].

An impressive example of the shortcomings in the execution of orders is the failure to implement the obligatory quarantine for the imported plants and animals, which was ordered by the board in April 1956[73] and repeated. This seemingly simple request for the state in-

69. RGAE. F. 7486. D.9333. L. 174-179.
70. RGAE. F. 7486. D.8578. L. 171-172, 174-175.
71. RGAE. F. 7486. D.8415. L. 62-70.
72. RGAE. F. 7486. D.8765. L. 172-198.
73. RGAE. F. 7486. D.7970. L. 45-48.

spection for quarantine was not satisfied until 1971. Although the plant and animal imports increased significantly, an obligatory quarantine was not introduced, which led to the spread of diseases and pests in the USSR. The board repeated its request; however, in the late 1960s, fresh fruits were still imported without quarantine. On June 23, 1969, Volovchenko informed the CC of the fruits and vegetables imported with pests and diseases. Again, he demanded to introduce an obligatory quarantine at the Soviet borders[74].

Concentrated feed and cattle fattening

On January 23, 1959, the board ordered the Lenin Academy of Agricultural Sciences to prepare instructions for drying grasses by electrical ventilators based on the foreign experience. Ventilators were to be tested already in 1959[75]. Also, the Ministry ordered to produce highly effective concentrated feed based on the foreign experience. In the late 1960s, the quality of feed in the USSR was still very poor. On July 4, 1969, Matskevich calculated the import needs for raising the quality of the Soviet concentrated feed during the Five-Year Plan (1971-1975) for the CC and CM: spare parts for the machinery and equipment already imported, ten complex systems for the automatic production of 300 tons of concentrated feed per day with weighting cells. The USSR hardly produced any protein supplements. The annual demand would grow from 0.64 million tons in 1971 to 7 million tons in 1975. The farms' production of concentrated feed was to be increased from 4.27 to 47 million tons in 1975. Vitamins A and E, necessary for this growth, were to be imported[76]. In the additional report to the CC and CM, the Ministry stressed the need to improve the technology of harvesting and storing the feed without losses. Abroad, the harvesting included an assembly line work in the best time period and ventilation of hay on the fields during drying[77].

In November 1968, a delegation headed by Morozov, deputy Minister of Agriculture, visited the US to study the industrial cattle fattening and meat production. After the return, the board required to reorganize cattle fattening in the USSR according to the American model. The delegation visited cattle breeding farms, slaughterhouses, and test stations. It reported about the US shift from dairy farming to cattle fattening. The number of cows was reduced in half, while the number of cattle for fattening doubled. Cattle fattening was cost-effective in the areas of grain cultivation for young animals did not need stables: in the southern states of the US, the young cattle

74. RGAE. F. 7486. D.9207. L. 97-98.
75. RGAE. F. 7486. D.8415. L.5-6.
76. RGAE. F. 7486. D.9208. L. 47-77.
77. RGAE. F. 7486. D.9208. L. 93-108.

grazed from November to March on the winter feed, which ensured about 100 kilos of weight increase, and the grain profited from the nitrogen fertilizer at the start of the growing season. Subsequently, fattening was based on the sugar beet concentrated feed.

The board expected that the drying of the beet pulp would be of economic significance for the USSR in the future, which would need a lot of transport. The board suggested to build at every sugar plant a section to dry the beet pulp and add to the feed. In the US, other forage crops were used too, such as corn, oats, barley and soy. The delegation stressed that the American success was linked to the supply industry under the market conditions: agronomy or animal husbandry in the US were not much more developed than in the USSR. The decisive difference was that the American industry supplied agriculture sufficiently and with high-quality fertilizers, and fully satisfied the American farmers' demand in the special harvesting machinery. The US companies had offices in all agricultural regions to ensure all repairs in a few hours. The board also suggested to use the American system of slaughterhouses in the USSR: they were located in the areas of animal fattening, often specializing on cattle or pigs. The board demanded to create a special branch 'cattle fattening' and to reorganize feeding according to the American model. The efficiency of animal breeding was to be improved by the imported breeds; specialized cattle fattening state farms were to be established; industrial fattening was to be based on concentrated feed. This would allow an additional annual production of 2.5-3 million tons of beef and reduce its costs. The main challenge was to provide the annual 6-7 million tons of feed[78].

Transfer of expertise to produce broilers: A success story?

The transfer of the knowledge on broiler production turned out a success. Broiler production is one of the few branches in which the Western knowledge was not only imported but partly implemented: chicken production grew and its costs per unit decreased. However, the *Gosplan* did not use the reduction in the production costs to lower the retail prices; therefore, the branch contributed to the budget incomes.

The archival material reveals that even in this case the knowledge transfer had many set-backs. In the report on the results of foreign contacts in 1959, the Ministry claimed that the broiler production experience had already been transferred. To use it at as many farms as possible, the Ministry ordered to import in 1960 two complete models of the large-scale broiler plants, the same as used at the collective farm Voskhod[79]. In 1959, the imported poultry fell ill in the Mos-

78. RGAE. F. 7486. D.9195. L.81-94.
79. RGAE. F. 7486. D.8578. L. 177.

cow Region for the local poultry plant had veterinary defects[80]. On March 9, 1960, Matskevich accused the state commission for scientific cooperation with foreign countries and the main inspection for animal husbandry of being irresponsible for refusing to purchase the model poultry and diary farms[81]. In general, in the 1960s, the import orders were delayed by the governing bodies.

In the mid-1960s, a strange controversy occurred between institutions responsible for poultry farms and for concentrated feed plants — about from which country to import the model of poultry farms. Although the archival materials do not provide clear evidence, probably, the controversy was determined by the competition of Western producers from England and the US at the moment when Matskevich returned to his office as the Minister of Agriculture. Some institutions asked to import the farms from the US, others — from England. The winner, as always, was the *Gosplan* which decided to postpone the imports.

After the principal decision was made to purchase the plants from the US[82], the consultant for agriculture of the embassy in Great Britain Kozlovky wrote in December 1964 to the member of the CC presidium and deputy head of the CM Polyansky that the Saiks company guaranteed that after the purchase of their poultry farm each hen would lay 240-245 eggs a year[83]. On March 31, 1965, Pak, the head of the poultry industry (*Ptitseprom*), asked Polyansky to purchase a farm from England[84]. However, on April 28, 1965, Emelyanov wrote to Matskevich that the purchase from England was not acceptable. The American company was the international market leader, and the USSR had worked with it for nine years already. There were no political or economic reasons for the purchase in England, but suddenly Pak changed his opinion[85]. In the further communication with Matskevich, Pak and Morozov insisted on the purchase in England at a lower price[86]. On May 22, Matskevich suggested to Kosygin to purchase poultry and pig fattening farms and a concentrated feed plant together with the necessary licenses[87]. On July 8, 1965. Lomako, the head of the *Gosplan*, answered that the purchase in 1965-1966 was impossible due to the lack of funding, and postponed it to the Five-Year Plan of 1966-1970[88].

After the broiler project, the USSR focused on the block partners: the Soviet ambassador in Hungary reported that a giant automat-

80. RGAE. F. 7486. D.8512. L. 316-318.
81. RGAE. F. 7486. D.8512. L. 151-155.
82. RGAE. F. 7486. D.8933. L. 212.
83. RGAE. F. 7486. D.8924. L. 2-7.
84. RGAE. F. 7486. D.8933. L. 205-210.
85. RGAE. F. 7486. D.8933. L. 213-216.
86. RGAE. F. 7486. D.8933. L. 217-219.
87. RGAE. F. 7486. D.8933. L. 200-204.
88. RGAE. F. 7486. D.8933. L. 212.

ic poultry farm of the Big Dutchman company was put in operation in Cloppenburg (FRG). Only three employees worked at this farm to look after 130,000 laying hens at the start and later after 250,000. Such farms already worked in the US. During the Kiev Poultry Exposition in 1966, a model poultry farm was bought from the Netherlands and opened in Kuchino near Moscow. However, the plant in Cloppenburg was completely different. Matskevich asked for permission to send experts to the FRG to study its work, while the USSR had already bought 24 smaller broiler plants from the Hungarian company Kompleks for testing[89].

Problems with the transfer of the Western agricultural technology

Despite the delays with executing imports orders, many efficient models (machinery, seeds, chemicals and so on) were brought to the USSR, and quite often they were ready to start mass production. However, the *Gosplan* blocked them or accepted only simple and low-cost models with much less efficiency than the original Western models, especially in the equipment for animal husbandry for it required additional construction efforts to be put in operation.

Already in 1955, combine harvesters imported from Sweden and the FRG (Claas) were tested. Potapov, the deputy head of the state committee for new technology, requested a report on the results by October 15, 1955. The report was delayed for the Soviet combine harvesters were to be tested in comparison, and they, as usual, did not arrive in time[90]. Only on April 10, 1956, Matskevich and Khlamov (Minister for Tractor and Agricultural Machinery Construction) provided a detailed and balanced report on the imported machinery tests in the Soviet conditions, and on which elements proved to be superior to the Soviet machinery. For instance, among the self-propelled combine harvesters the Claas one got excellent marks, while the pull-typed harvester was assessed as not suitable for the Soviet demand[91]. The expectation that the Soviet agricultural-machinery industry would use this knowledge immediately to improve their models did not come true. Already in 1957, the Ministry complained that the majority of new tractors and agricultural machinery went into mass production with a great delay if at all[92].

On March 17, 1956, the chairman of the state committee for new technology Malyshev gave detailed orders on how to proceed with testing the imported tractors and agricultural machinery: the Soviet machines were to be tested in the comparative perspective. Members

89. RGAE. F. 7486. D.9131. L. 1-3.
90. RGAE. F. 7486. D.8049. L. 35-36.
91. RGAE. F. 7486. D.8049. L. 278-290.
92. RGAE. F. 7486. D.8169. L. 133-134.

of the assessment teams were to be approved by the state committee; the leading constructors and specialists of the agricultural-machinery plants were to attend the testing; to use the imported models in the future, they were to be kept in the special museum; positive tests meant that the imported machinery was to be reproduced; if machines were not suitable for the Soviet conditions but showed some interesting construction details, they were to be copied for the Soviet industry[93]. The archival material prove that these recommendations were followed until the late 1950s. Khrushchev's misguided 'decentralization' was responsible for putting an end to the just established practice of testing and comparing the Soviet machinery with the efficient foreign agricultural technology as it subordinated the plants to the regional and national economic councils (*Sovnarkom*) (Merl, 2002). In 1968, Matskevich and Ezhevsky asked to return to this good practice in vain. In their report to Kosygin of January 3, 1968, they complained that the state testing took only outdated and often poor national model for comparison. To overcome backwardness and meet the world standards in the agricultural technology, it was necessary to import each year the newest models of the best tractors and agricultural machinery and to compare them to the technical level of the Soviet new construction[94]. This request was blocked by such governing bodies as the *Gosplan* and the state committee for science and technology: they had little interest in proving the poor quality of the Soviet machinery.

Based on the test results of the imported and Soviet tractors, in 1956 the Ministry of Agriculture issued a draft decree for the CC and CM "On the improvement of the technology for the mechanization of labor-intensive work in agriculture". It claimed that the imported new methods of production would allow to significantly decrease labor input and costs. However, it complained that the proposals to introduce new effective machinery were implemented with delays. The board did not ask about the systemic causes of such delays — it blamed persons or institutions for the shortcomings: the Ministry's main inspection was considered responsible: a crazy idea for the inspection had no influence on the governing bodies or the Soviet industry. The board suggested that persons with fluent foreign languages could raise the efficiency of expert delegations: each their member was to be responsible for a specific topic and to write a report on return. To spread the information on the superior technology, the board proposed to organize an annual exchange of experiences[95].

The Ministry of Agriculture reported to the State Committee of Science and Technology that in 1959, 73 different types of agricultural machinery were imported for testing. 36 were to be tested in 1959,

93. RGAE. F. 7486. D.8049. L. 275-309.
94. RGAE. F. 7486. D.9164. L. 1-13.
95. RGAE. F. 7486. D.8169. L. 133-134.

other 37 — in 1960; only three agricultural machines were accepted for the trial production (one from Italy, one from France, and one from the CSSR); of other eight machines models were to be constructed to be tested, such as the sugar beet harvester from the US, and the potato harvester from Lanz (FRG). The Soviet industry was given a recommendation to make use of the construction elements of other 13 machines, including the potato sorting machine from Lanz and England, and the sugar beet harvester.

After the successful testing of the newly constructed machines, the Ministry requested (in most cases in vain) to start mass production. In 1960, Matskevich had not yet lost his optimism and expected that mass production would start soon — of harrows and plows, John Deere grain harvester, sugar beet and potato harvesters. He expected that the improved machinery would save inputs of the Soviet farms[96]. The testing of tractors showed that their construction was possible with significantly less metal. Many progressive construction elements of the imported tractors were to be adopted: air cooling of the engine, its electric starting, independent power take-off shaft, separate-aggregate hydraulic system, multi-speed transmission system, etc. For instance, these elements were adopted for the new Soviet tractors DT-54M, MTZ-5MS, MTZ-7. The mass production of the tractor MTZ-50 (a 50-PS wheel tractor) (with power steering and wheel loader) would allow to increase the coupling weight and to reduce skidding of the tractors[97].

Mass production started in 1961: in 1962, 43,600 and in 1964, 59,600 MTZ-50 tractors were produced (Schinke, 1967: 6-7). In addition, the testing of low-pressure tires for tractors started: "The modernization of tractors will ensure enormous savings — with metal needed for construction (about 0.5 tons per tractor!) and with a higher power despite the less need in fuel"[98]. Also, the chassis of new tractors could be improved based on the foreign expertise. Complex mechanization would allow to reduce some types of works significantly. To support complex mechanization, Matskevich demanded to import from the US four models of the machinery systems for cultivation and harvesting of corn, sugar beets and cotton[99]. However, Matskevich's expectations did not come true. The mass production of most machines, especially harvesting, never started. Due to the Khrushchev's changes in the institutions' functions, only in the second half of the 1960s, the Ministry of Agriculture could at least name the Soviet deficiencies again. Despite all 'agricultural programs' under Brezhnev, even in 1986, there was no precondition for their success — no supplies of

96. RGAE. F. 7486. D.8578. L. 185-186.
97. RGAE. F. 7486. D.8578. L. 186-187.
98. RGAE. F. 7486. D.8578. L. 187.
99. RGAE. F. 7486. D.8578. L. 184-188.

the efficient agricultural machinery complying with the international standards[100].

The use of the imported models for the complex mechanization of animal husbandry turned out to be much more difficult than working with the highly efficient foreign machinery — due to the fact that animal husbandry urgently needed construction works (for stables, silage storage, and farms), which was a notorious bottle neck of the Soviet command economy. All construction materials were in short supply; in constructing facilities and plants, agriculture depended on local construction trusts, which determined not only long delays but also miserable quality of new buildings.

The bad use of the imported equipment for the mechanization of animal husbandry was presented in the Soviet media. On December 4, 1961, the *Rural Life* reported such a scandal: in 1960, the equipment for a diary farm with 1,000 cows was imported from the US to be tested at the All-Union Institute of Animal Husbandry in Klenovo-Chegodaevo. The equipment laid idle for five months, then it was brought to the test station of the All-Union Institute of Oil-Producing Crops and Ethereal Oils in Krasnodar. In December 1961, its construction had not yet started, although the head of the Institute was sent to the US to learn the use of such a farm. He was accused of irresponsibility, and the first test station did not check the delivery for completeness. On December 22, 1961, the board confirmed the newspaper's report, and ordered the Krasnodar station to use the equipment before January 20, 1962, and to order the missing parts from the US[101].

This case was not an exception — rather a normal situation with the imported equipment for animal husbandry. This was due not to the irresponsible directors, but rather to the inherent conflicting responsibilities within the Soviet command industry: thus, the Ministry of Agriculture lacked effective control over research institutions and construction trusts. The USSR Commission for State Control uncovered a series of such delays in the use of the imported equipment for mechanized broiler production, concentrated feed and diary plants in 1962 in Ukraine and the Northern Caucasus.

The Ministry of Agriculture's board ordered the All-Union Research Institute for Poultry to build a plant for 4,000 broilers per shift until the end of 1961, which would start production in the first half of 1963. At the end of 1962, the inspection commission found only the foundations; it took a year to find a suitable construction location; the question of the construction's funding was still open; there was no reinforced concrete for the roof. On November 10, 1962, the Commission of State Control and the main controller Kapitonov sent their report

100. RGAE. F. 650. D.16. L. 5-30.
101. RGAE. F. 7486. D.8616. L. 238-242.

to the Ukrainian CK[102]. After checking the construction of the broiler plant in the Crimea, the Commission stated that the construction was both delayed and full of mistakes. Only after the construction was completed, it was found out that the facilities for receiving chickens and for storing the produce were missing. No attention was paid to the Ministry's orders concerning the mechanization of cleaning, washing and disinfecting. No cooling facilities for the ready produce were constructed, i.e., even a short-time storage was impossible. Special transportation for broilers was missing: the Ukrainian *Gosplan* did not provide the necessary equipment[103]. The Commission also found defects in the construction of both concentrated feed plants. In the Crimea, the construction was delayed, because the Ukrainian *Gosplan* had not provided the deficit construction material. Only the feed plant in the Donetsk Region was ready in May 1962, but the start of its production was postponed to September 1963. The Ukrainian *Gosplan* did not provide the plant with poultry to be processed, forgot to build a storage for raw materials and ready produce[104].

The model diary farm for 1,000 cows and 500 calves within the *SovNarKhoz* Krasnodar system was to start production in December 1962. The Commission found out that the start of the construction was delayed for there was no technical documentation and workers. At the construction site, the Commission found neither the construction machines nor the responsible engineer. Some of the delivered reinforced concrete was no longer suitable due to the long delay. The construction order was given to another construction trust. In all cases, the Commission only blamed irresponsible local officials[105] — the systemic reasons were tabooed. On March 27, 1964, the Commission gave new orders to improve the purchase and use of the imported cattle, and provided a list of twenty organizations responsible for the use of the foreign expertise[106]; i.e., to be blamed for all deficiencies linked with the use of the imported animal husbandry equipment.

In 1971, Dubrovin reported to the CC that the number of the not yet used imported equipment grew, especially due to the delays with the necessary construction works. Often the imported equipment was sent to other regions for the selected farms proved unsuitable; some parts of the equipment could not be used for it was not delivered fully. On June 29, 1971, Matskevich repeated to the CC-secretary Kulakov that the imported equipment was not used primarily due to the delays and unfinished construction works[107].

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102. RGAE. F. 7486. D.8704. L. 293-303.
103. RGAE. F. 7486. D.8704. L. 294-295.
104. RGAE. F. 7486. D.8704. L. 293-300.
105. RGAE. F. 7486. D.8704. L. 304-312.
106. RGAE. F. 7486. D.8819. L. 60-76; D. 8852. L. 217.
107. RGAE. F. 7486. D.9357. L. 121-124, 178-180; D. 9023. L. 59-70, 197-198; D. 9253. L. 189-193.

A lot of cattle was imported to improve breeds and their efficiency. In 1963, the Ministry of Agriculture reported that 1879 milk cows, 1941 meat-wool sheep, 111 pigs, 35 horses, 70,912 poultry and 10,000 eggs were imported, and that 35 reproduction-poultry farms were established. However, many directors of research institutions did not fulfill their obligation to report about the use of the cattle and poultry. Obviously, the Ministry lacked effective control, listed as 'deficiencies' that *Prodimport* did not make purchase contracts in time, and organized the ship transport insufficiently. Many livestock arrived weakened. As there still was no border quarantine, the livestock was transported further without any border check[108]. The board required to purchase the livestock in May-June and to open quarantine stations at the borders[109].

Between 1955 and 1962, on the order of the Ministry, 7257 breeding cattle, 6496 sheep, 1871 pigs, 89 horses and 231,000 poultry were imported. The Ministry claimed that this was the basis to develop new and highly productive races in the USSR. This might be correct for some but not all cases. There are many materials on the bad use of breeding animals. For instance, despite insemination of 346 cows, only 30 calves were born. In the state farm Zarechie, due to the bad feed supply, 23 of the 76 calves imported from Holland did not survive the winter[110].

Still in 1966, many test stations hardly cared about the imported cattle. Even if specialists were sent abroad to select the cattle, this made little difference. Sending people abroad did not eliminate the deficiencies in the supply of feed and in the stables not suitable for mechanized animal husbandry. However, the board blamed the All-Union Research Institute for Animal Husbandry for the insufficient use of the imported livestock for new breeds, and for not developing a new technology for keeping and feeding livestock[111].

In the fall of 1960, the Ministry decided to import breeding eggs from the US and Canada to get highly productive hens and broilers. The All-Union and the Ukrainian Poultry Research Institutes were declared responsible[112], and only then it became evident that both research institutes lacked the conditions for working with the imported eggs. Such failures with the selection of institutes or test stations happened quite often. The Ministry lacked reliable information on the local conditions, and many institutes and stations were poorly equipped. On October 22, 1960, the board asked the CM to post-

108. RGAE. F. 7486. D.8819. L. 57-76.
109. RGAE. F. 7486. D.9195. L. 95-127.
110. RGAE. F. 7486. D.8765. L. 32-45.
111. RGAE. F. 7486. D.8947. L. 1-19.
112. RGAE. F. 7486. D.8512. L. 318-321.

pone the imports of eggs and to use the allocated finances to import 100 breeding cattle from England[113].

The main problem with the use of the imported livestock was the lack of basic conditions for success — adequate conditions for keeping and feeding. The lack or poor quality of forage, especially in winter, was due to the lack or poor quality of harvesting machinery and storing. The Soviet concentrated feed often did not meet the Western standard. Another bottle neck was the poor equipment and insufficient mechanization of the stables. The highly efficient imported cattle could not show its quality in these conditions; therefore, its productivity did not meet the expectations. Often the imports were not coordinated with breeding stations: when the imported animals arrived in the late fall or winter, there was already little feed, which determined stillbirth and death of calves.

Soviet agriculture in the international perspective

On January 3, 1968, Matskevich and Ezhevsky reported to Kosygin on the results of providing agriculture with new technology and highly efficient fertilizers, chemicals and pest-killers. The report revealed the catastrophic situation in the Soviet agriculture in the international perspective, and stressed the importance of complex mechanization in agriculture for reducing labor input and production costs: labor input in the USSR was about 10 times higher than in the US. The Soviet average agricultural labor productivity hardly reached 20% of the American one, in animal husbandry — only 10-15%. Even concerning the average power of tractors (though at larger fields), the USSR lagged behind the US. Most Soviet tractors and agricultural machinery lagged drastically behind the US in productivity, reliability, and repair.

Usually, the low quality of new machinery was blamed: only 17% of the tested new machinery were recommended for mass production; 20% were declared junk. The Ministry insisted on testing Soviet machinery in comparison with the best foreign one[114]. The Commission of the Peoples' Control presented a similar negative picture of the quality of the Soviet agricultural machinery. On March 22, 1968, it provided the CM with a list of tractors' deficiencies: time-consuming technical maintenance, high metal consumption for production, high need in fuel for operation, discomfort for the driver, and bad appearance[115]. Matskevich and Ezhevsky argued that the Soviet chemical industry also lagged behind in the quality of mineral fertilizers, chemicals and pest killers, often dangerous for people. There-

113. RGAE. F. 7486. D.8512. L. 375f; D. 8578. L. 31.
114. RGAE. F. 7486. D.9164. L. 1-13.
115. RGAE. F. 7486. D.9166. L. 260-265.

fore, they asked the CC and CM to oblige the *Gosplan* to execute import orders from the early 1967 without delay, the Ministry of Tractor and Agricultural Machinery Construction — to improve the quality and efficiency of machinery, the Ministry of Foreign Trade — to purchase from England fattening plants for 10,000 cattle and 1,000 pigs, the State Committee of Science and Technology — to allocate annually 1 million rubles to buy the newest models of foreign technology, and to get licenses to produce the machinery urgently needed by the USSR farms[116].

The channels used to gather information on foreign agricultural progress

'Professionalization' of contacts with foreign countries

While the Ministry of Agriculture started contacts with foreign countries in 1955 with the permission of the CM and CC, the right to decide on foreign contacts under Khrushchev from 1958 onward was given to the state committees created in 1956: the State Committee for Cultural Exchange with Foreign Countries and the State Committee for Scientific-Technical Cooperation. The State Committee for Economic Relations with Foreign Countries coordinated the work in 'less developed' countries. The intermediary role of state committees meant that sending specialists and delegations abroad became more complicated due to annual plans and coordination with others institutions. After a while, this caused protests as delays in the coordination meant that no representatives would go abroad[117]. The state committees started to sign bilateral exchange contracts (in culture, technology and education) which stabilized the contacts and allowed to exchange even PhD students and undergraduates. Under Brezhnev, also bilateral contracts for cooperation in research were signed.

From 1965 onwards, the CC-department of agriculture became responsible for the Ministry's foreign contacts. The CC-secretary Fedor Kulakov was the head of this department from 1964 to 1976. Permanent responsible officials (Matskevich and Kulakov) made the coordination of foreign contacts easier. The Ministry addressed its proposals and requests (and complaints) formally to the CC and sometimes directly to the CC-secretary[118]. However, funding issues remained in the competence of the CM.

The central planning of business trips abroad and of hosting foreign scientists started in 1958. There were five categories: business

116. RGAE. F. 7486. D.9164. L. 1-13.
117. RGAE. F. 7486. D.8475. L. 184-187.
118. RGAE. F. 7486. D.8883; 8884.

trips to explore agricultural achievements; participation in international congresses and consultations; visits to international fairs and expositions; business trips to less developed countries; and equestrian sport[119]. For 1958, the Ministry of Agriculture planned 42 business trips, half of them to 'capitalist' countries; 34 participation in international congresses and consultations (including 7 trips to attend meetings of the European Economic Commission of the United Nations in Switzerland); 8 participation in international fairs and expositions; 34 experts' visits to less developed countries, often for a year or even longer (8 trips to China and Mongolia, others to Vietnam, Korea, Burma, Syria, Afghanistan, Ceylon and, within the FAO framework, to Yugoslavia). In the equestrian sport category, 4 visits were planned[120]. In 1959, more than 100 specialists were sent abroad to explore agricultural achievements, 150 — to participate in international congresses and consultations, and about 700 — to help the less developed countries[121]. In 1963-1964, 1,340 specialists were sent abroad and 1,006 foreign agricultural specialists invited to the USSR[122].

On January 27, 1958, a contract on cultural exchange was signed with the US, and the State Committee for Cultural Exchange with Foreign Countries was responsible for coordination and control of the cooperation[123]. In 1959, a contract with England followed, including the exchange of students and the youth from collective and state farms[124]. The contract on cultural exchange with the FRG was signed on May 30, 1959, including the exchange of agricultural delegations, visits to German peasant farms, insemination stations, and meat processing plants[125]. For 1961, a business trip of specialists to the tractor plant was requested — to explore tractors with continuously variable transmission, organization of the repair, cars and agricultural machinery, and to visit the companies Lanz, Krupp and Claas[126].

On January 6, 1965, the first contract on the bilateral cooperation in agricultural research was signed in London[127]. A similar contract was signed with Sweden in 1965[128], with France and the Netherlands in 1966[129]. On November 15, 1966, Matskevich reported to the CC that in 1967, he intended to invite the Canadian Minister of Agriculture to Moscow to sign the bilateral contract on the agricultural

119. RGAE. F. 7486. D.8356. L. 8-38.
120. RGAE. F. 7486. D.8356. L. 8-38.
121. RGAE. F. 7486. D.8578. L. 166-167.
122. RGAE. F. 7486. D.8882. L. 97-99.
123. RGAE. F. 7486. D.8358. L. 2.
124. RGAE. F. 7486. D.8361. L. 34-41.
125. RGAE. F. 7486. D.8478. L. 38-42.
126. RGAE. F. 7486. D.8579. L. 160.
127. RGAE. F. 7486. D.8887. L. 24-25.
128. RGAE. F. 7486. D.8882. L. 97-99.
129. RGAE. F. 7486. D.8966. L. 16-17, 27, 41-50.

research cooperation[130]. In 1967, a contract on the joint agricultural research was signed with Italy[131], in 1969 — with India[132]. The GDR played a particularly significant role: in 1967, a contract on cooperation and exchange in agricultural research was signed, and the number of delegations between two countries increased significantly[133].

The costs of scientific exchanges were a crucial factor during the whole period under consideration. Matskevich never forgot to ask the CM for the permission for the other side, especially the block partners, to cover all costs[134]. High costs for the Soviet side were a reason for refusal, for instance, to participate in the horticulture fair in Erfurt in 1966[135].

Financial constraints for exchanges became evident in the 1960s. The draft plan for business trips to foreign countries for 1961 was rejected. The State Committee required a special justification for each trip and each purpose[136]. On September 3, 1963, the Ministry of Agriculture complained to the CM about the budget cuts for business trips abroad[137]. While in 1963 360 and in 1964 415 specialists were sent abroad, their number for 1965 was cut to 330. The number of specialists sent to explore the progressive experience remained quite stable: 90, 112, 93. However, participation in congresses and conversations was drastically cut: from 110 to 23 in 1965. Only mobility in the equestrian sport category was not reduced (this was Matskevich's hobby)[138]. For 1965-1966, the board gave more exploration tasks to the permanent consultants for agriculture in embassies to cut costs, and the number of short-term trips was reduced in favor of the long-term[139]. Business trips were reduced to the purchase of the advanced technology that would definitely be used in the Soviet agriculture[140]. For 1970 and 1971, business trips were allowed only if the work could not be done by consultants[141]. Most of 45 business trips in 1971 were to capitalist countries; 47 other trips were visits to international congresses and participation in equestrian championships[142].

130. RGAE. F. 7486. D.8966. L. 58; D. 9036. L. 319-366.
131. RGAE. F. 7486. D.9051. L. 22.
132. RGAE. F. 7486. D.9214. L. 10-21, 23.
133. RGAE. F. 7486. D.9050. L. 2-27; D. 9130. L. 60-76.
134. RGAE. F. 7486. D. 8359. L. 45-53; D. 8361. L. 13-14, 25-26.
135. RGAE. F. 7486. D.8885. L. 16-18.
136. RGAE. F. 7486. D.8616. L. 4-7, 16-18.
137. RGAE. F. 7486. D.8800. L. 80.
138. RGAE. F. 7486. D.8800. L.90-93.
139. RGAE. F. 7486. D.8819. L. 239-261.
140. RGAE. F. 7486. D.8867. L. 176-186.
141. RGAE. F. 7486. D.9195. L. 429-434.
142. RGAE. F. 7486. D.9266. L. 269-328.

Already in 1955, the position of consultant for agriculture was introduced in embassies of the most important 'capitalist' countries, which was a way to systematize data from these countries. In general, consultants were qualified experts who worked abroad for three years, which allowed them to establish contacts with research institutions, the Ministry, and companies providing agricultural inputs and willing to use consultants for lobbying. As a member of the embassy staff, the consultant was paid by the Foreign Ministry. In 1964, consultants worked in 11 'capitalist' countries, 8 of them had translators-assistants.

The Ministry's board regularly considered consultants' reports[143] and gave them clear orders. Thus, on June 11, 1962, the consultant in Canada was ordered to focus on specialized farms and labor input in production[144]. Emelyanov, the consultant at the embassy in the US, reported to Kosygin that two consultants in the USA had supplied the USSR with diverse varieties, breeding cattle and eggs, agricultural machines, herbicides and pesticides[145]. Taking into account the importance of the American agriculture, he proposed to increase the number of consultants in the US to four with two translators-assistants[146].

In the early 1960s, after the reduction of funding for delegation trips, the significance of consultants for providing information on the agricultural technology in the West increased. However, the cut of costs reduced the consultants' mobility too. In 1964, the Ministry of Agriculture protested against the decision not to provide consultants with cars nor to establish a special fund for business trips, because they needed personal cars to do their job. However, Malentin (Ministry of Finances) and Kosygin refused: the funding of consultants had to come from the Ministry of Foreign Affairs[147]. On March 22, 1965, Matskevich intervened again: as the work of consultants suffered from the lack of financial resources for business trips, he asked Gromyko to provide at least the same funding for these trips in 1965 as in 1964[148]. The situation worsened in 1970, when the consultant for agriculture should be subordinated to the consultant of the State Committee for Science and Technology which was blocking the efforts of the Ministry of Agriculture to bring the foreign agricultural expertise to the USSR. On September 3, 1970, Matskevich protested against this proposal to the CC: in 8 countries, qualified agricultur-

143. RGAE. F. 7486. D.8691. L. 167-172.
144. RGAE. F. 7486. D.8691. L. 183-188.
145. RGAE. F. 7486. D.8691. L. 235-241.
146. RGAE. F. 7486. D.8800. L. 19-22.
147. RGAE. F. 7486. D.8852. L. 1-3.
148. RGAE. F. 7486. D.8924. L. 33.

al experts (with PhD or DSc degrees) worked. Their reports on the development of agricultural technology were essential for the Ministry's work[149].

Participation in the international agricultural organizations

Stalin's death ended the self-isolation of the USSR on the international arena. In 1955, contacts with the Food and Agriculture Organization of the United Nations (FAO) were established[150]. Although the USSR did not become its member, the FAO started 'friendly relations'[151] with the USSR as a 'developed country' and invited the Soviet Union to join development aid, counseling and training, especially for Yugoslavia[152]. In 1958, the FAO asked the USSR to help with delivering insecticides against the grasshopper plague in the Near East[153]. From 1956 onwards, the USSR regularly attended meetings of the working group of the European Economic Commission of the UN for the mechanization of agriculture in Switzerland, which was an additional source of information and expertise for the Soviet agriculture, especially in mechanizing, electrification[154] and such issues as choosing the correct type of tractor and harvester according to the regional climate[155].

The Ministry of Agriculture tried hard to return a respectable place for the USSR in international agricultural organizations and associations. As membership fees were a critical criterion, the Minister always proposed the most cost-effective memberships to the CC and CM. The attempts to join international associations restarted under Khrushchev, but at first they failed due to the lack of experience, especially the attempt to invite international associations to have their annual meetings in the Soviet Union (mainly due to logistical challenges — lack of hotels and suitable transport[156]). Under Brezhnev, the Ministry became more professional and ready to take such an advantage in the participation as prestige for the USSR. Due to its potential as an agricultural power, the USSR was considered an attractive partner. Several associations decided to hold their annual meetings in the USSR. As the country was closed for foreigners under Stalin, the delegates were interested to visit the USSR. The Ministry wanted to have Soviet academics and specialists as members

149. RGAE. F. 7486. D.9278. L. 22-23.
150. RGAE. F. 7486. D.7786, 7787, 7788, 7789.
151. RGAE. F. 7486. D.8360. L. 69-73.
152. RGAE. F. 7486. D.8357. L. 150-158.
153. RGAE. F. 7486. D.8360. L. 270-278.
154. RGAE. F. 7486. D.7970. L. 111-114; D. 8415. L. 197-201.
155. RGAE. F. 7486. D.8169. L. 164-167.
156. RGAE. F. 7486. D.7970. L. 228-229; D. 8579. L. 13.

of associations' boards. The Congress of Agricultural Economists in 1970 was used to propagate the alleged advantages of the Soviet agricultural system.

The first attempt to invite an agricultural association to hold its congress in the USSR was made by Matskevich in 1958. On July 4, 1958, he asked the CM for permission to invite the 9th International Congress of Winemakers in 1959 to Tbilisi, as the participants had to cover the costs themselves[157]. However, the winemakers chose another place, and only for the 10th congress in 1961 Tbilisi was accepted[158]. On September 4, 1958, Matskevich made his next attempt, this time to invite the International Association of Poultry to hold its annual meeting in 1962 in the USSR[159]. Again, only the second invitation was accepted. For the 13th World Congress of Poultry Producers in 1966, Kiev was accepted as a place of venue. Matskevich requested the CM to provide funding for building exhibition pavilions and asphalting the exhibition area for participants from the US, England, Japan, FRG, Italy, Sweden, Holland and Canada[160]. On March 14, 1966, Matskevich asked the CC to approve Professor Penionzkevich as the president of the World Association[161]. Either Kosygin or someone he approved was to become an honorary president of the Congress[162]. With 2727 delegates, 1900 of them from foreign countries (GDR — 327, USA — 305), a record number of delegates participated (the 12th World Congress in Australia had 1545 participants, 540 from foreign countries). When the State Committee for Science and Technology cut funding for the poultry congress in Spain in September 1970 and provided funding for only 20 of 100 specialists, Matskevich protested to the CC[163].

On March 15, 1967, Matskevich informed the CC that the International Union for the Protection of Nature and Natural Resources planned to hold its third European consultation on the protection of water birds in 1968 in Leningrad, 120 participants were expected[164]. But then the USSR invaded the CSSR. On September 19, 1968, Matskevich informed the CC that the international bureau canceled the meeting. He believed that it had to cover the preparation costs. Every registered participant was asked to contact the organization bureau but no participant from Western Europe showed up. Only representatives of 12 states came to Leningrad in September 15-30 (from the Comecon countries, Jordan, Iran, Senegal, Finland, and Ethio-

157. RGAE. F. 7486. D.8359. L. 260-286.
158. RGAE. F. 7486. D.8653. L. 82-87.
159. RGAE. F. 7486. D.8360. L. 254-267.
160. RGAE. F. 7486. D.8867. L. 36-38; D. 8924. L. 44, 61-85, 147-158, 202-211, 262-265.
161. RGAE. F. 7486. D.8962. L. 7-8.
162. RGAE. F. 7486. D.8962. L. 43.
163. RGAE. F. 7486. D.9276. L. 7-8.
164. RGAE. F. 7486. D.9048. L.1-7.

pia). Russian participants sent a protest letter to the president of the union[165].

Politically the meeting of agricultural economists was of the greatest significance. In 1966, the president of the association asked to hold the world congress in 1970 in the USSR[166]. Minsk was chosen as a place of venue in August 1970. On February 19, 1968, Matskevich proposed to the CC to use the congress to propagate the Soviet achievements to the international public. He expected about 2,000 participants, about 500 of them from the US. After the meetings, an excursion to the Soviet agricultural regions was planned[167]. The general topic for the congress was 'Economic policy, planning, and administering rural development'. As the Ford and the Rockefeller Foundations decided to support economists from Europe, Asia, Africa and Latin America, Matskevich suggested that the CC would support participants from socialist countries and scientists from Asia, Africa and Latin America. At the beginning of 1970, to prepare the 'socialist' participants for the congress, delegations from Bulgaria, Hungary, GDR, Romania, CSSR and Mongolia were invited to Moscow for five days[168]. Matskevich ordered the Soviet participants to refer to Lenin's writings, to stress the advantages of socialist agriculture, and to declare Middle Asia a model for developing countries[169]. On May 20, 1970, he asked the CC for the permission to officially invite the Canadian Minister of Agriculture to the congress[170]. Finally, about 1000 scientists participated in the congress, about 900 from foreign countries[171].

Ministry of Agriculture's work in 'less developed' countries

Under the guidance of the State Committee for Foreign Economic Relations, the Ministry had to coordinate help to the 'less developed' countries. In 1955, the Ministry of Agriculture was appointed a 'general conductor' of government agreements in agriculture with Ceylon, Indonesia, Afghanistan, Iraq and the United Arab Republics, and with such 'socialist' countries as Mongolia, Vietnam and Albania. This help consisted of providing qualified experts and agricultural machinery (produced in the USSR), and of managing construction projects.

Under Khrushchev's 'decentralization', it became more difficult to fulfill these obligations. The Ministry of Agriculture made sever-

165. RGAE. F. 7486. D.9129. L. 2-13.
166. RGAE. F. 7486. D.8962. L. 9-13.
167. RGAE. F. 7486. D.9128. L. 1-13.
168. RGAE. F. 7486. D.9210. L. 5-8.
169. RGAE. F. 7486. D.9276. L. 2-6.
170. RGAE. F. 7486. D.9276. L. 9-10.
171. RGAE. F. 7486. D.9276. L. 22-24.

al unsuccessful attempts to transfer the function of 'general conductor' to the *Gosplan*. However, on September 2, 1959, the deputy chairman of the State Committee Suloev asked Matskevich to fulfill the obligations further and provide specialists for 'less developed' countries[172]. On July 4, 1961, the Minister of Agriculture Olshansky reported to the CC and CM that the Ministry was responsible for 50 projects in 11 countries. He asked to reduce these duties for the Ministry had lost many competences after the CC's and CM's decree of February 20, 1961 — some competences were transferred to the *Gosplan* and *Soyuzselkhoztechnika*, such as the responsibility for mechanization specialists. Nevertheless, the State Committee for Economic Relations with Foreign Countries gave the Ministry further orders beyond its competences[173]. On May 29, 1961, Pyshin, the deputy Minister, asked to be released from the obligation to deliver tractors and agricultural machinery abroad, because the Ministry lost all competences in this field[174] and could no longer fulfill the function of 'general conductor' of the technical assistance to Mongolia[175]. However, the State Committee insisted on the Ministry's responsibility according to the Soviet-Mongolian Contract of February 10, 1959[176]. According to Petrov, in 1961, the Ministry still managed many projects: since 1957 — in the United Arab Emirates, since 1958 — in Ceylon, since 1959 — in Guinea, Iraq, India, Mongolia and Iran, since 1960 — in Ghana, and since 1961 — in Somalia[177].

The State Committee often lacked the control over the complicated and under Khrushchev variable distribution of competences. Petrov (Ministry of Agriculture) was annoyed by the State Committee's requests beyond his field of competence. For instance, the State Committee asked him to send the Soviet agricultural machinery after testing to Burma. On March 5, 1961, Petrov responded that the production of machinery was not in the Ministry's competence; therefore, he could not arrange any delivery of agricultural machinery[178].

Although the Soviet agriculture lagged behind 'capitalist' countries in agricultural technology and needed all available resources for its development, Khrushchev forced the Ministry of Agriculture to participate in his campaign of offering the economic aid to the non-block countries by providing them with specialists and equipment. The absurdity of the situation became evident, when countries like Iraq, Ceylon and Syria, taking advantages of the American help too, started 'anti-Soviet campaigns': tractor and harvester drivers, who

172. RGAE. F. 7486. D.8436. L. 237-238.
173. RGAE. F. 7486. D.8654. L. 208-210.
174. RGAE. F. 7486. D.8659. L. 147-148.
175. RGAE. F. 7486. D.8654. L. 233-235.
176. RGAE. F. 7486. D.8659. L. 300.
177. RGAE. F. 7486. D.8654. L. 312-319.
178. RGAE. F. 7486. D.8657. L. 134-135.

previously used reliable American agricultural machinery and tractors, now had to work on the poor Soviet agricultural machinery not suitable for the climate of their countries, which was always breaking down, needed repair, and stood idle due to the lack of spare parts. As the USSR delivered the same poor and unreliable agricultural machinery to the 'less developed' countries, this became a reason for mockery. Soviet officials interpreted it as 'anti-Soviet campaigns'. Although the Ministry of Agriculture could only send abroad what the national industry produced, it faced reproaches in providing junk machinery[179].

Conclusion

The Ministry of Agriculture was well aware of the Western expertise due to delegation trips, organizations of the United Nations, consultants for agriculture in the embassies in 'capitalist' countries, bilateral exchange and cooperation contracts and membership in international agricultural associations. The Ministry insisted on importing models of the advanced agricultural technology to test them in the Soviet conditions and improve the quality of the national agricultural machinery. The Ministry made attempts to transfer the Western production expertise to the USSR in order to develop the Soviet agriculture to the world standard and reduce labor inputs and production costs.

However, the Western knowledge was hardly used. Often the CC and CM issued decrees following the Ministry of Agriculture's recommendations to improve the national production. But the *Gosplan* and State Committee of Science and Technology delayed or blocked these decrees' execution, and, in accordance with the Stalin's legacy, refused to give priority to agricultural development for modernization of the outdated Soviet agricultural machinery industry would have needed huge investment. To partly overcome this blockage, since the mid-1960, the Ministry had tried to made the block partners produce at least part of the advanced machinery for the Soviet agriculture.

The Ministry considered the transfer of the Western expertise as primarily a technical matter, although the Soviet industry produced machinery in all respects significantly below the world standards. The question whether the transfer from market economies to the Soviet command industry would work was tabooed. The failure to copy the superior Western technology was partly determined by the divided competence for decision making in the USSR's bureaucratic structures under Brezhnev. While in the West, the market

179. RGAE. F. 7486. D.8477. L. 1-13; D. 8652. L. 204-223, 294-301; D.8654. L. 38-40, 303-309; D. 8659. L. 125-128, 178-179, 330331, 399-405.

competition made the companies producing agricultural machinery constantly improve their quality and develop new technologies, Soviet producers of agricultural machinery were monopolists — their clients had no chance to refuse the purchase of poor or even defective machinery, and lacked free access to other producers under the state command. In the Western market economies, producers also provided efficient repair services. Soviet industrial plants were not responsible for the farms' losses due to the poor technology and lack of repair services.

In the implementation of its recommendations, the Ministry depended on actors beyond its control — chemical and machinery industry, construction trusts, governing bodies allocating resources and finances, research and test institutions. They all had different interests and tasks in 'their' plans not linked to the task of improving the efficiency of the Soviet agricultural production. Ministers like Matskevich often had working experience in the *Gosplan* or the CM; therefore, they understood these institutions' constrains in distributing limited finances and resources between the national economy branches. Neither the CC nor the CM really controlled the execution of their decrees for the *Gosplan* distributed funding and resources, and gave orders. While the *Gosplan* certainly blocked the supply of highly efficient inputs and machinery to agriculture, it is beyond the scope of this article to discuss the Soviet systemic constraints and deficiencies or answer the question if the *Gosplan* had alternatives. In a subsequent article I will discuss why for the stable rule the Party leadership needed the poor quality of the Soviet machinery, and why the low-cost alternative of giving the freedom of decision-making to the qualified heads of the collective and state farms, the 'Khudenko experiment', was rejected by the Brezhnev administration with the fatal consequences in the late 1960s.

I would like to finish the article with the impressions of the American delegation of the Soviet agriculture in the summer of 1963, as reported by the consultant for agriculture in the US: the delegation was impressed by the personal reception at Khrushchev; praised the high qualification of the soviet agricultural specialists in seed production; but at the same time was shocked by shortcomings — high labor inputs, lack of machinery, storage, fertilizers and pesticides, and slow development of grain drying[180].

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Почему Советский Союз при Хрущеве и Брежневе не смог провести комплексную механизацию сельского хозяйства: международные аспекты проблематики (1953–1986)

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Статья основана на архивных материалах, подтверждающих, что комплексная механизация в СССР после 1953 года провалилась (Merl, 2020). После смерти Сталина страна быстро восстанавливала международные связи, благодаря которым осознала, насколько сильно СССР отставал от Запада с точки зрения развития сельскохозяйственных технологий и надежности сельскохозяйственной техники. Автор показывает, сколь успешно министерство сельского хозяйства собирало информацию о западных технологиях. Уже в 1955 году были импортированы модели западной сельскохозяйственной техники, семена, высокопродуктивные породы скота, химикаты и корма — чтобы апробировать их в советских условиях. Ожидалось, что советское машиностроение будет использовать западные знания для повышения качества сельскохозяйственной техники, что повлечет за собой значительное сокращение трудовых и финансовых затрат и одновременно рост производительности. Однако очень мало передовых машин и с большими задержками были доставлены в колхозы и совхозы. В советском сельском хозяйстве не произошла «зеленая революция», которая бы увеличила урожаи и производительность благодаря научным достижениями. Никакие застойные проблемы в обеспечении кормами и транспортом или в сокращении потерь урожая не были решены в период с 1955 года до момента основания Госагропрома. Госплан и Государственный комитет по науке и технике систематически игнорировали постановления Центрального комитета и Совета министров, которые следовали рекомендациям министерства сельского хозяйства по улучшению производственных технологий. Госплан и Госкомитет отказывались отдавать приоритет сельскохозяйственному развитию, поскольку модернизация устаревшего сельскохозяйственного машиностроения требовала огромных инвестиций. С середины 1960-х годов министерство сельского хозяйства пыталось заставить своих партнеров по блоку производить хотя бы часть техники, необходимой советскому сельскому хозяйству. Эти усилия включали себя обмен делегациями с западными странами, участие СССР в международных сельскохозяйственных организациях, а также провозглашенное Хрущевым сотрудничество с «менее развитыми» странами в рамках Совета экономической взаимопомощи.

Ключевые слова: сельскохозяйственная модернизация, комплексная механизация, западные технологии, социалистическое промышленное сельское хозяйство, производительность сельскохозяйственного труда, сельскохозяйственная техника, научно-исследовательское сотрудничество, международные сельскохозяйственные ассоциации, Хрущев, Брежнев