Development factors of the state of the livestock sector in Uzbekistan

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Abstract. In each district of Uzbekistan, 3,000 inter-farm fattening enterprises have been established, and the weight of young cattle has reached 450-550 kilograms. Large quantities of beef were produced. It should be noted that the largest industrial complexes (10,000 heads) have been operating effectively. In this research, the state and development of animal husbandry in Uzbekistan for 1985-2017, issues of selection and breeding of cattle, the use of feed resources, the results of the privatization of livestock facilities and animals were studied. Besides, different fodder crops, including alfalfa (hay), oats, feed peas, barley, maize (for silage and grain), seed for intermediate crops, and soybean, were studied and analyzed in term of structure of arable land (%), arable land (ha), productivity (quintals/ha), gross yield (tons). According to the results, the area of land allocated to livestock farms with 500 head of cattle, including 200 cows (380 conditional cattle), was 115 hectares (0.30 hectares for each conditional cattle). According to the results of the experiment, it was proposed to plant alfalfa in 25% of this fodder area and intermediate and secondary fodder crops in 75%.

Keywords: agriculture, livestock, fodder, farms, crops, Uzbekistan

1. Introduction
The development of Uzbekistan in all spheres of the national economy is accelerated based on scientific and advanced experience. The sincere words of the president, Shavkat Mirmonovich Mirziyoyev in the spirit of open criticism on all issues, predictions of the introduction of effective work not only delight a person, but also bear great responsibility to all of us [1, 2]. Therefore, all laborers, specialists and industry leaders, who are called yurtim and elim, are obliged to introduce scientific achievements and advanced experience in the work of their positions and to add their own organs to the development. Proceeding from the strategy of actions of the five priority directions adopted in Uzbekistan, it can be said that livestock has always been one of the main directions in the Republic [3].

The great statesman, leader of the people of the republic, well-known writer Sharof Rashidovich Rashidov, who ruled the Republic of Uzbekistan for a quarter of a century, paid special attention to the development of the national economy, culture, science and animal husbandry [4]. In all collective farms and state farms, the slogan "cultivation of both Cotton and milk and meat" was raised with a barrel, and cattlelikni was the head-brow in the development of industrial technology, indicating the sardine pattern. The old people of labor know and remember this very well. From 1957 to 1960, dairy farms for 300-600 cows were put into operation on all farms, filled with pedigree cattle, and many dairy products were produced. In each district of the republic, 3,000 inter-farm fattening enterprises have been established, and the weight of young cattle has reached 450-550 kilograms [5, 6]. Large quantities of
beef were produced. It should be noted that the largest industrial complexes (10 thousand heads) have been operating effectively. At the same time, the breeding base has been strengthened. According to 1985 data, the number of pedigree cattle in collective and state farms is 1,300,000. Purebreds increased by 501 thousand heads [7].

The average milk yield of cows increased by 2,404 kilograms, including 3,288 kilograms in Tashkent province, Uzbekistan. The average weight of cattle for slaughter was 401 kg in 1984, ranking first in the former Soviet Union [8]. Advanced practices in animal husbandry have been generalized and widely introduced. Many milking operators, labor heroes, such as A.I. Chudnaya, M. Isakova were born. A.I. Chudnaya alone milked 180 cows, raised 550 tons of milk a year, won a state award in the former Soviet Union, established an experimental school, and in 1977 held a competition of union milkers in Uzbekistan. Similarly, an All-Union Exhibition Conference was held in 1985 to examine our best practices in meat production [9, 10]. The average weight of 12-month-old cattle in the meat-packing complex of 10,000 heads in Ahangaron district (Uzbekistan) has reached 410 kilograms, and the weight of cattle in the 15,000-head fattening area in Tashkent district (Uzbekistan) has reached 550-600 kilograms. The inter-farm fattening enterprise in Buvayda district (Uzbekistan) delivered a bull calf for 550 kilograms of meat.

The average milk yield of cows at the Chinoz, Malik, Politotdel, Savay and many other breeding farms was 4,200-4,500 kilograms. The milk yield of the record-breaking cows exceeded 10-12 thousand kilograms. It should be noted that all these positive results have been achieved due to the hard work of livestock specialists, scientists and farm managers. From the point of view of justice, it should be noted that the reforms carried out in 1993-1994 to liquidate collective and state farms in the country abolished livestock facilities, hundreds of breeding farms, breeding farms and breeding plants, as well as hundreds of pedigree, productive cattle herds. The results of 50-60 years of work in animal husbandry in the country have failed, and attention to animal husbandry has declined sharply [11-13]. On the basis of the decisions taken in 1996-1998, measures specific to the development of animal husbandry were taken on farms, dehkan farms and personal subsidiary plots of the population. In 2017, the number of cattle on the established livestock farms reached 193,000. Over the next 15-20 years, more than 100,000 different breeds of cattle have been imported. But they did not improve the herds. According to the latest data, the average milk yield of cows on farms is only 1817 kilograms [14].

Positive changes in the livestock sector are observed only on the personal subsidiary farms of the population. The growing number of families is increasing the number of livestock raised in them and the volume of livestock production. In particular, the number of cattle in them reached 11,464 thousand, including 3984 thousand cows. The amount of milk milked from one cow was 2330 kg [8-10]. An important issue, such as the provision of the population with livestock food products and its independence, is facing the public of the republic [5, 7, 8]. According to 2017 data, milk, meat, eggs and other livestock products are 2-3 times lower than the medical norm. For example, 294 kg of milk, 34 kg of meat, 13 eggs and 0.4 kg of honey were produced per capita. Therefore, it is very important to address the above-mentioned shortcomings and problems in the process of development action strategy for 2017-2022.

2. Methods

It should be noted that the factors for the development of animal husbandry in the country are so great that implementation will pay off [3, 5-7]. They are mainly [5]: first, the modernization of the livestock management system and its promotion to the ranks of advanced countries, increasing the effectiveness of positive results in practice, improving labor discipline; Secondly, the establishment of diversified farming and livestock farms on the basis of cotton and grain farms, which still occupy the main land areas, the organization of vegetable, horticulture and animal husbandry in the efficient use of land resources, without reducing the gross output of cotton and grain, further development of livestock breeding with the production and processing of pure agricultural and livestock products, increasing the interest of family farms serving farms; Thirdly, measures to expand livestock farms, create opportunities for the introduction of advanced technologies, strengthen the use of land resources to strengthen the
fodder base, achieve the widespread introduction of selection methods, increase the milk yield of cows
to 5,000 kilograms and Holstein breeding farms to 10,000 kilograms. Implementation; Fourth, the
construction of large dairy farms (limited to 4-5 thousand heads) and meat farms (limited to 10-12
thousand) operating in industrial technology in all regions, the organization of workshops for the
preparation of mixed fodder and processing of products, the widespread introduction of modern methods
of selection and accelerate a number of other measures [9, 13, 14]. The most glorious factor in the use
of development factors is the creation of a fodder base with the allocation of 0.30-0.40 and 0.60-0.70
hectares of land for each conditional animal, depending on the breed, breed productivity of livestock
on these farms, the optimal yield of crops to introduce in the structure the cultivation of 19-20 tons of
feed units per hectare and the widespread introduction of measures to increase productivity.

Furthermore, Restoration of selection work, which fell into disrepair after the reforms that began with
the privatization of livestock, establishment of a selection center and its regional branches in place of
the current breeding system to improve breeding; restoration of Elever (breeding bulls) and Zygota (8-
10 generations of record cows per year) laboratories, introduction of modern methods of selection in
breeding farms and dairy farms, wide use of achievements of biotechnology and engineering in
strengthening the breeding base [10, 12, 13]. Establishment of breeding nuclei of cattle, selection groups
and repair groups of young pedigree cattle in each breeding farm [14]. Widespread introduction of
selection and selection methods ensures selection efficiency in artificial insemination with bull semen,
which improves all females. In this regard, the achievements of the United States, Israel, South Korea
and even Saudi Arabia should be an example for us. They milk 10,000-12,000 kilograms of milk from
each Holstein cow.

In this research, different fodder crops, including alfalfa (hay), tretikali, oats, feed peas, barley, maize
(for silage and grain), seed for intermediate crops, and soybean, were studied and analyzed in term of
structure of arable land (%), Arable land, ha, Productivity (q/ha), Gross yield (tons).

3. Results and Discussions
The biggest problem in the republic’s livestock sector in achieving these results is the inefficiency of the
fodder base. It is known that feeding of cattle in the factors of formation of productivity potential is
60%. Without solving the problem of nutrition, the set goals cannot be achieved. Although 0.30-0.40
hectares of land were allocated for each conditional commodity for the fodder base, its targeted use was
not organized. According to 2006 data, 1870 hectares of land were allocated to 7902 livestock farms, of
which 58 thousand (29.5%) hectares were planted with grain and 48 thousand hectares (24.3%) were
planted with cotton. Fodder areas accounted for only 72,000 hectares, or 36.6 percent of the allotted land
area.

In the effective use of land resources in livestock farming farms, which are engaged in the care of
zoned cattle breeds in Uzbekistan property. The structure of the placement of feed crops should be
focused on obtaining at least 18-19 tons of feed units from each hectare of land area. This indicator is
achieved by the selection of fertile varieties and hybrids of crops, as well as the structure of their
placement, as well as obtaining abundant yields by agrotechnical methods, ensuring optimal
normalization with organic (20-30 tons) and mineral fertilizers. In particular, the area of land allocated
to livestock farms with 500 head of cattle, including 200 cows (380 conditional cattle), was 115 hectares
(0.30 hectares for each conditional cattle). According to the results of the experiment, it was proposed
to plant alfalfa in 25% of this fodder area and intermediate and secondary fodder crops in 75% (Table
1).
Table 1. Structure of placement of fodder crops on livestock farms, productivity, gross yield and their nutritional value.

| Fodder crops                  | Type         | Structure of arable land, % | Arable land, ha | Productivity, q/ha | Gross yield, tons | Gross yield feed unit, tons | Weight, % |
|-------------------------------|--------------|-----------------------------|-----------------|--------------------|------------------|----------------------------|-----------|
| Alfalfa (hay)                 | Main         | 25                          | 29              | 160                | 464              | 227                        | 9.2       |
| Tretikali, oats, feed peas and barley | intermediate | 71                          | 82              | 350                | 2870             | 947                        | 38.4      |
| Maize (for silage)            | repetitive   | 25                          | 29              | 500                | 1450             | 290                        | 11.7      |
| Maize (for grain)             | repetitive   | 46                          | 53              | 140                | 742              | 987                        | 40.0      |
| Seeds of intermediate crops   | intermediate | 4                           | 4               | 50                 | 20               | -                          | -         |
| Soybean                       | repetitive   | 4                           | 4               | 30                 | 12               | 18                         | 0.7       |
| Total                         |              | 100                         | 115             | -                  | -                | 2469                       | 100       |

In the optimal structure of crop placement and in increasing their productivity, the required amount of coarse, succulent and concentrated nutrients is grown. The unit of feed per hectare was 18-21 tons, which is 6.0 tons of feed per conditional animal. 9% of it was raw, followed by 50% was juicy and 41% was concentrated. The same type of feeding was organized, concentrated feeds were prepared in a special recipe in a mixed feed shop. If 5,000 kilograms of milk are milked from each cow on these feeds, the daily weight gain of young cattle will increase to 700-750 grams. In self-sufficiency of seeds of intermediate crops, its seed area is formed. The seeds of triticale “Prag I”, oats “Uzbekistan broad-leaved”, oats “Vostok” and barley “Oykor” were grown in the intermediate crops. The breeding plant of the livestock farm requires the creation of special technologies and feed base for the breeding of Holstein cattle. When providing 12-14 tons of feed units to cows yielding 10-12 thousand kilograms of milk, including 50% mixed fodder, it is targeted to allocate 0.60 hectares of land for each conditional animal. In particular, factory-type breeding farms with 600 conditional cattle, including 300 cows, have to grow 8,200 tons of various feed units, including 3,700 tons of concentrates (Table 2).

Table 2. Structure of placement of fodder crops in plant-type breeding farms, productivity, and gross crop nutrition.

| Fodder crops                  | Structure of crop fields, % | Crop fields, ha | Productivity, q/ha | Gross yield, tons | Gross yield feed unit, tons | Weight, % |
|-------------------------------|-----------------------------|-----------------|--------------------|------------------|----------------------------|-----------|
| Alfalfa (hay)                 | 20                          | 72              | 160                | 1152             | 564                        | 6.8       |
| Intermediate crops            | 76                          | 274             | 350                | 9590             | 3165                       | 38.4      |
| Repeated maize (grain)        | 50                          | 180             | 150                | 2700             | 3591                       | 43.6      |
| Repeated maize (silage)       | 18                          | 65              | 600                | 3900             | 780                        | 9.5       |
| Repeated soybean (grain)      | 8                           | 29              | 30                 | 87               | 135                        | 1.6       |
| Seeds of intermediate crops   | 4                           | 14              | 50                 | 70               | -                          | -         |
| Total                         | 100                         | 360             | -                  | -                | 8235                       | 100       |

Modernization of existing cotton and grain farms and the formation of multi-sectoral farming and livestock farms on its basis 15% (12 hectares) of the optimized land area of 80 hectares are planted with fodder crops, of which 25% (3 ha) alfalfa, 75% intermediate and secondary crops were grown. In 40% or 5 hectares of the area freed from intermediate fodder crops, repeated corn is grown for silage and 35% for grain. The seeds of intermediate crops were sown repeatedly on 1 hectare of cultivated land. In
addition, in the area of land allocated for corn (grain) (15% or 12 ha), intermediate crops were grown in the spring and harvested for haylage (in the first decade of May), then corn was planted. Half of the wheat-free areas (15% or 12 ha) were planted with repeated corn silage, while half were planted with shade. These intermediate and secondary crops provide additional fodder reserves, which were used by permanent workers on the farm to develop family livestock. In return, they take manure from their livestock to the farm's arable land and prepare seedlings of vegetables and melons for planting. Mutual coordination relations would be launched. The fodder grown in the multi-sector farm fodder base and fodder stocks were given in Table 3.

Table 3. Fodder grown on diversified farming and animal husbandry.

| Fodder crops                  | Structure of crop fields, % | Crop fields, ha | Productivity, q/ha | Gross yield, tons | Gross yield feed unit, tons | Weight, % |
|-------------------------------|----------------------------|-----------------|---------------------|------------------|---------------------------|-----------|
| Alfalfa (hay)                 | 25                         | 3               | 160                 | 78               | 24                        | 3.7       |
| Intermediate crops            | 74                         | 9               | 300                 | 270              | 89                        | 13.7      |
| Repeated maize (grain)        | 40                         | 5               | 500                 | 250              | 50                        | 7.7       |
| Repeated maize (silage)       | 35                         | 4               | 140                 | 56               | 74                        | 11.4      |
| Repeated soybean (grain)      | 1                          | 1               | 50                  | 5                | -                         | -         |

Feeds grown in supplementary feed stocks (24 ha)

| Intermediate crops in maize fields | - 12 300 360 119 18.4 |
| Repeated maize (silage) on wheat-free fields | - 6 400 240 48 7.4 |
| Repeated soybean in areas vacated by wheat | - 6 30 18 24 4.3 |
| Wheat straw, soybean straw and maize stalks | - 36 300 1080 216 33.3 |
| Total nutrients:                   | - 36 - - 648 100 |

Feeding of 50 conditional (200 in total) cattle of 50 diversified farms and their family farms amounted to 648 tons of feed units. The total nutritional value of wheat and corn grown on grain is 10% of the grain with concentrates (7 and 14 tons) (27 tons per feed unit) left on the farm (67 tons per feed unit). Each conditional commodity accounts for an average of 3.5 tons of feed units. The milk yield of farm cows will increase by 4,000 kilograms and that of family farms by 3,000 kilograms. This diversified farming and animal husbandry farm and the livestock farms serving it are developing rapidly. In total, 260 tons of milk, 45 tons of meat (live weight), 1 million eggs, 1 ton of honey were produced annually in the diversified farm and all its family farms. Numerous farms (about 30,000) in the provinces and their family farms produce large quantities of milk, meat, eggs and honey. Numerous farms (about 30,000) in the provinces and their family farms produce large quantities of milk, meat, eggs and honey. Numerous farms (about 30,000) in the provinces and their family farms produce large quantities of milk, meat, eggs and honey.

Formation in dairy technology of dairy and fattening agro-firms established in each region. Herds of dairy farms for 8-10 head of cattle, including 4-5 thousand (50%) cows (4-8 thousand conditional cattle) are replenished by importing Holstein breed. In the construction of livestock buildings for their storage and maintenance, modern lightweight natural ventilation building projects were selected. All the hard work in it was done using mechanization and automation. As for the feed base 3840-4800 and feeding norms and types, they are carried out in a way organized in breeding plants. 0.6 hectares of land are allocated for each conditional animal, and 12-14 tons of feed units, including 45% mixed fodder, are used for milking 10-12 thousand kilograms of milk from each cow. The dairy farm produces and processes 40,000-50,000 tons of milk. The herd of agrofirms specializing in fattening 10-12 thousand head of a bull calf was replenished with 4-month-old male calves from farms and dehkan farms. Their young cattle were intensively fed until 16 months of age, then fattened up to 21 months of age and given
for meat weighing 560-600 kg. The design of the buildings in their storage was selected on the basis of technological convenience. Particular attention is paid to the creation of the most important nutrient base in technology. In particular, 2,200 hectares of land was allocated for feeding 10,000 head of cattle, where agro-technical works was carried out to increase crop yields and ensure efficient use of land resources (Table 4).

Table 4. Placement of fodder crops, productivity and gross crop nutrition in the grain farm.

| Fodder crops           | Structure of crop fields, % | Crop fields, ha | Productivity, q/ha | Gross yield, tons | Gross yield feed unit, tons | Weight, % |
|------------------------|-----------------------------|----------------|---------------------|------------------|-----------------------------|-----------|
| Alfalfa (hay)          | 15                          | 330            | 160                 | 5280             | 2588                        | 6.0       |
| Intermediate crops     | 76                          | 1672           | 300                 | 50160            | 16553                       | 38.1      |
| Repeated maize (grain) | 10                          | 220            | 550                 | 11000            | 2200                        | 5.1       |
| Repeated maize (silage)| 40                          | 880            | 150                 | 13200            | 17556                       | 4004      |
| Repeated soybean (grain)| 40           | 880            | 30                  | 2640             | 4092                        | 9.4       |
| Barley (grain)         | 5                           | 110            | 30                  | 330              | 422                         | 1.0       |
| Seeds of intermediate crops | 4            | 88             | 50                  | 440              | -                            | -         |
| Total                  | 100                         | 2200           | -                   | -                | 43411                       | 100       |

In the cultivation of 43.4 thousand tons of feed units from 2200 hectares of land, the average was 19.4 tons per hectare. Furthermore, each of the 10 thousand head moles was spent on 4.34 tons of feed units per year. 50.8 percent of this was due to concentrated nutrients. In 88 hectares of the listed fields, seeds of intermediate crops (tretikali, oats, feed peas and barley) were organized. Coarse and juicy feeds in this agro-firm were mixed in the feed shop. Corn, soybean and barley grains were ground in a mixed fodder plant and brought to full value. According to the results, the fattening farm produces 3450-3500 tons of beef a year. It should be noted that when collecting 8-10 tons of manure from the conditional goods of each of the above farms, their reserves of organic fertilizers was provided 20-30 tons of fertilizer per hectare, and creating a basis for increasing organic matter in the soil.

4. Conclusions
1. With the modernization of farms specializing in cotton and grain growing, diversified farming and animal husbandry will be formed, a large amount of cotton and ecologically clean agricultural and livestock products will be produced and processed, and export potential will increase.
2. With the expansion of livestock farms, the widespread introduction of selection methods and the strengthening of the feed base, as well as the introduction of advanced technologies, the milk yield of cows will increase by 5 and 10 thousand kilograms.
3. Formation of dairy and meat farms on the basis of industrial technology, replenishment with breeders, strengthening the feed base and full-fledged nutrition will form the potential for genetic productivity of cattle.

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