Modeling of Economic Growth of Agrarian Production

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Abstract. Authors by the correlation and regression analysis conducted a research of influence of various elements of costs of productivity of separate species of crops. The highest interrelation between variable expenses and an indicator of productivity of crops, except for corn and sunflower was as a result established. Based on results we worked out the optimizing model directed to achievement economic growth of agricultural production on Russia by the set the pace. Within the developed model the most effective option of a ratio of the state subsidies and investments is presented on the basis of what rational restrictions and criteria of formation of optimum investment policy are designated. As one of additional sources of financing of branch it is offered to use the state support. Proceeding from it possible methods of application of the budgetary resources are considered: compensation of a part of expenses of economic entities; public financing of profitability of farmers; use of a subsidy in the form of investments into current assets. The most rational option of use of budgetary funds agricultural producers determined the third. As key criteria of economic growth of agrarian production the indicator of level of profitability (payback) which as a result of realization of the offered actions has to increase up to 42,2% and above is presented and reasonable. The received values of this indicator demonstrate the steady or accelerated development of branch of agriculture.

1. Introduction

Agriculture belongs to the most difficult and labor-consuming spheres of the national economy of the country. Production of agricultural production is characterized by duration and seasonality of the performed works and operations. It is also necessary to add to it a number of the problems designated now within the agrarian sphere of Russia: high degree of amortization of material means, unsatisfactory level of a food supply, imperfection of a distribution system of the made production and many other problems. As a result there is a situation when one of the most needing additional financial injections branch at the same time is extremely unattractive for most of investors. The system of the state support of agricultural producers which volumes are limited today can become the solution of this problem.

In our opinion, the untied support of income of agricultural producers entered since 2013 in the field of crop production is interesting. Proceeding from the fact that the size of this type of a subsidy, first, significantly more former compensations is also not limited, secondly, it is not tied to certain articles of expenses, it expands a circle of opportunities of its practical application. For example, new conditions of granting the mechanism of untied support of branch allow to use it as investments on acquisition of seeds of highly productive plant varieties, more effective mineral or organic fertilizers, means of protection of plants, etc. In this case budgetary funds represent the additional investments...
providing increase in a harvest of crops which repeatedly pay off the cost of additional production at the same expenses. Thus, the considered form of the budgetary support of production of crop production can be considered as one of ways of investment into agriculture.

Results of agrarian production in many respects are defined by efficiency of investment activities and the system of distribution of the budgetary resources. In this regard there is an objective need for research of various forms and methods of granting means of the state support and other financial resources, identification of the most optimum of them and also formation of the qualitative analysis of requirements and potentials of investment into agricultural production. However taking into account impact on national economy of external political, economic and other conditions which periodically change the system of distribution of financial resources between agricultural producers needs periodic adjustment.

Proceeding from it, we will note that this task can be realized by the principle of modeling of agrarian production.

2. Relevance, the scientific importance of the question with the short review of literature

Now the rural economics of Russia develops in the conditions of new external economic calls [19] which treat: the anti-Russian sanctions, noncompetitiveness of a number of food domestic products, urgent need in modernization and innovative development of branches of the agricultural sphere. It is necessary to add a problem of realization of processes of import substitution of separate types of food and ensuring food security of the country to it in general which the highly profitable, steadily developing agricultural producers are capable to solve, first of all. These conditions in total predetermined need of a conclusion of the Russian agricultural producers to such level of functioning at which the economic growth of branch could be reached by the accelerated rates.

However, despite the arisen need of process of the import substitution assuming increasing production of production of agriculture, first of all, it is necessary to define expediency of its realization. In other words, first of all the problem of sale of the production taking into account needs of potential consumers has to be solved. For this purpose it is possible to use assessment of the territorial organization of agricultural production.

It should be noted that now works mainly of scientists – ecologists or economists in the sphere of ecology are devoted to questions of assessment of the territorial organization of production. For example, A.P. Vorontsov emphasizes that "the territorial organization of the national economy of the country is understood as the spatial interface and interaction of branch, interindustry and territorial and production complexes, infrastructure and the non-productive sphere based on rational use natural, material and a manpower and also savings of cost of overcoming discrepancy in mutual placement of sources of raw materials, fuel, energy, places of production and consumption of production" [22].

Assessment of the territorial organization of agriculture in these conditions has to be based on the multilateral analysis, a various mathematical apparatus, the step and stage-by-stage solution of a number of tasks.

As one of versions of the solution of noted I.A. Romanenko's problem sees realization of the direction of the agrarian and economic researches connected with creation "adaptive innovative technologies of land use, considering both the bioclimatic capacity of the territory, and a condition and restriction connected with observance of ecological requirements of its sustainable development" [18]. The author points to essential superiority of requirements of the market over opportunities of production of crop production, provides the list of negative consequences of such principle of placement of production on the territory of the country. He rather positively estimates development in the 70-80th years of the last century of regional systems of farming in which each region (territorial subject of the Russian Federation) "was considered as uniform natural, social and economic system with unique soil and climatic properties and features". The scientist considers that it is possible to minimize a modern problem of agriculture by means of creation of the system of farming distributed on the territory of the country which is based on rational use of bioclimatic potential and other regional advantages. On this basis the methods of economic-mathematical modeling necessary for
statement of problems of branch placement and regional specialization and also their effective decision can be applied. In relation to our research this method is interesting that results of modeling can promote the solution of a problem of assessment of the territorial organization of agriculture in new operating conditions of national economy. In other words, such task has to be set and solved for definition of the most effective option of realization of process of food import substitution.

The main complexity of carrying out a research is that the available statistical information in the sphere of agriculture not fully promotes implementation of assessment of its territorial organization in the monitoring mode. Division of all subjects of agricultural production into three categories (the agricultural organizations, peasant farms (peasant farm) and personal farms of the population) left an essential mark on modern statistics. For example, now only on the agricultural organizations it is possible to obtain rather full information on their production and financial activities for data of the annual reports [20] submitted in higher instances. However even these data are in full almost inaccessible for a wide range of researchers. Thus, we will note that reliable assessment of the territorial organization of agriculture can be carried out only on the basis of statistical information of these enterprises.

The main criterion of efficiency of production activity is the profitability level indicator (profitability, payback) allowing to reveal a certain production capacity of the enterprise and a possibility of its participation in import substitution process realization. Proceeding from it, we can assume a possibility of use of this indicator as one of instruments of achievement of economic growth of agricultural branch the set rates.

Achievement of the highest rates of payback of agrarian production is possible by means of additional injections in branch – investments or the state support. The question results: "How funds received by an agricultural producer that the highest financial result could be received have to be distributed?" It is possible to solve this problem, in our opinion, by means of modeling of economic growth of agrarian production.

Separate aspects of modeling of agrarian production and also increase in efficiency of economic activity of agricultural producers are reflected in many works of both the Russian, and foreign scientists.

Works of many Russian scientists, such as N. Borkhunov [4], B. N. I. Kovtuna and Papelo [16], A .A are devoted to problems of increase in economic growth. Chernyaev [23], D. B. Epstein [9]. It is necessary to distinguish from foreign authors the following: O.O. Evetan, F. Adebisi, O. Emmanuel [8], V. Hartarsk, D. Nadolnyak, S. Shen [13], R. Grabovsky, [12], K. Müller, D.R. Robertson [15], A.H. Rusakovich, M.V. Papinova [6].

Questions of modeling of production of agricultural production found the reflection also in works of many foreign authors: K. Demestias, D. Plenet [7], M. Carlson, D. Brown, K. Callaghan [5], M. Talebizade, D. Moriazi, P. Govda [21]. L.Yu. Adadimova and Yu.G. Polulyakh's researches of [1, 2, 3, 17], A.B. of Golubev [10, 11], etc. are devoted to modeling of efficiency of agrarian production. However modeling of management of investment flows in the agrarian production considered as the mechanism of regulation of economy of branch represents rather difficult process which demands further studying.

3. Problem definition
The research problem consists in search of the most effective method of application of investment and public funds allowing to reach the highest rates of payback (profitability level) of agricultural production characterizing the economic growth of branch by the set rates. For this purpose it is required to develop the optimizing model directed to realization of an objective.

4. Theory
Modern conditions of external calls predetermined need of realization of processes of an import substitution for the country. As a result there are relevant problems of increase in efficiency of activity of agricultural producers and search of such conditions of their functioning which allowed to provide
deduction of factors of production in an agrofood complex.

Realization of food import substitution by the accelerated rates is possible, first of all, at the expense of highly profitable, steadily developing agricultural enterprises. These organizations function on the basis of expanded reproduction and therefore they are capable to increase volumes of the made production.

It should be noted that the economic entity can treat steadily developing enterprises in that case when the end result of its activity represents accounting profit. This indicator is defined as a difference between revenue and accounting (or obvious) by costs and has to be equal to the sum of interest income on the capital of the land rent and normal enterprise income called by implicit or alternative costs \[14\]. Let's note that the size of the sum of profit has to be sufficient in order that the enterprise could function freely in this field of activity. In that case when the volume of accounting profit increases, economic profit which provides development, that is expanded reproduction, its economic growth is formed.

*Sustainable development of agriculture* we understand the constant economic growth of branch with which separate declines in production in years, adverse on weather conditions, can be allowed as the term. At the same time the damages which are formed as a result of similar production recessions, as a rule, are insured, or compensated by the state \[17, 24\]. In case of non receipt of economic profit the enterprise needs financial support from the state.

As showed the calculations which are carried out by us early, for achievement of simple reproduction (renewal of production activity in former volumes and deduction of factors of production in agriculture) is necessary that the indicator of level of profitability of production of grain on average in Russia was 8–16%, in the Saratov region – 10–20%.

Sustained economic growth or expanded reproduction can be reached at the level of profitability of 30-40%, and the accelerated development of branch – outside these values.

Agriculture belongs to the most difficult and labor-consuming spheres of the national economy of the country therefore is unattractive branch for most of investors. Taking into account it we will note that one of sources of additional financing of branch can consider the state support.

As a concrete example we will consider crop production.

Now in Russia in relation to branch the "untied" mechanism of the state support which main objective is maintenance of a certain level of profitability of agricultural producers is used. It means that the budgetary resources provided to them, first, are not limited in sizes, and secondly, are not tied to concrete articles of expenses. This circumstance allows to use the received means as investments. In this case subsidies gain new quality, representing additional investments in means of production which can repeatedly pay off the cost of additional production at the invariable sums of conditionally constant expenses.

The main objective of an untied form of the state support of agricultural producers is maintenance of their income at the certain level which is possible for solving in three ways: compensation of a part of expenses of economic entities, public financing of profitability of farmers, use of a subsidy in the form of investments into current assets.

Proceeding from the fact that as key criterion of economic growth we used a profitability level indicator it is necessary to consider all three options of application of public funds. It should be noted that the gain of this indicator of economic efficiency of agrarian production to necessary level is defined by where the sum of subsidies in a basic formula – has to be directed to increase in numerator or at reduction of a denominator.

The initial formula for definition of an indicator of level of profitability has an appearance:

\[
R = \frac{P\times 100}{V\times Q\times C\times S}
\]

where \(R\) – the level of profitability, %; \(P\) – profit, thousand rubles; \(V\) – constant of variable costs of 1 c., thousand rubles; \(Q\) – quantity of the sold products, c.; \(C\) – constant of standing costs of 1 hectare (goal.), thousand rubles; \(S\) – area (livestock), hectare (goal.).

In that case when the subsidy goes for compensation of expenses of the producer of agricultural
production, she in a profitability formula with a minus sign joins a denominator:

$$R_Z = \frac{P_{100}}{V_Q - C_S - \Delta Z}$$

where $R_Z$ – profitability level at compensation of expenses, %; $\Delta Z$ – the size of the provided subsidy, rub.

If the subsidy goes for increase in revenue of a producer, then the formula of calculation of level of profitability will take a form:

$$R_W = \frac{P + \Delta Z}{V_Q + C_S}$$

where $R_W$ – profitability level at increase in revenue, %.

In the third option of use of the subsidies directed to increase in factors of growth of indicators of efficiency, the formula of level of profitability can be presented as follows:

$$R_{III} = \frac{P + \Delta Z / V \cdot (\Pi - V) \cdot 100}{V \cdot Q + C \cdot S + \Delta Z}$$

where $R_{III}$ – the level of profitability, %; $C$ - the strike price of production, rub; $(\Pi - V)$ – the profit of a covering, rub.

Thus, it is obvious that from the point of view of achievement of the highest values of an indicator of level of profitability, more effectively when the budgetary resources are used as investments into means of production, that is:

$$R_W < R_Z < R_{III}$$

The fourth formula is rather difficult for carrying out calculation of real economic effect, in particular, when it is necessary to define the need for investments for the purpose of achievement of the set profitability level. The task becomes complicated several times when it is required to calculate a required indicator in relation to several types of production at once. In this case the decision is creation of the model directed to increase in level of profitability of agrarian production of Russia and achievement of economic growth of branch by the set rates.

The optimizing model constructed by us is universal and can be applicable for branch of livestock production. Proceeding from it, we will note that all indicators, necessary for calculations, are broken into three groups:

– the first group of indicators (commodity branches of crop production – grain and leguminous, corn on grain, soy, sunflower on grain, potatoes, vegetables of the open ground);

– the second group (production of forages for livestock production – long-term herbs, annual herbs, corn on a silo and a green forage);

– the third group (production of livestock production – milk, cattle meat, pigs, sheep, goats and a bird and also wool, eggs).

On the first group full calculation with identification of potential effect of the enclosed investments by each type of production is carried out. The second group differs from the first in the fact that a factor of impact on productivity are variable expenses, with the average value of coefficient of influence equal 0.60. Economic effect is determined by results of livestock production. In the third group calculation is made on the basis of changes in the first two groups exerting impact on diets of feeding of animals for each type of production. The cost of additional volumes of forages for livestock production is estimated as the need for investments.

5. Practical importance, offers and results of introductions, results of experimental studies

To develop the optimizing model directed to the solution of an objective it is necessary to define the most influential group of factors, influencing which it is possible to receive the set gain of productivity (efficiency). The set gain of efficiency can be presented in a general view as follows:

$$\Delta U = \frac{I_{PEP}}{V} \cdot K_V$$

where $\Delta U$ – the required gain of productivity (efficiency), unit; $I_{PEP}$ – investments into variable
expenses, rub; \( K_v \) – coefficient of reliability of influence of factors on result.

That volumes of the state support are limited it is necessary to define the most effective ways of its distribution. Thus, we carried out the correlation and regression analysis of interrelation of various elements of expenses and productivity of all crops (groups) according to 38 areas of the Saratov region (table 1).

**Table 1.** Interrelations of productivity and expenses on the main groups of cultures in the agricultural organizations of the Saratov region.

|                      | Grain and leguminous | Corn on grain | Soy | Sunflower on grain | Potatoes | Open ground vegetables | Long-term herbs | Annual herbs | Corn on a silo |
|----------------------|----------------------|---------------|-----|--------------------|----------|------------------------|-----------------|--------------|----------------|
| variable expenses    | 0.54                | 0.76          | 0.40 | 0.75               | 0.64     | 0.65                   | -0.05          | 0.20         | 0.04          |
| constant expenses    | 0.37                | 0.72          | 0.31 | 0.70               | 0.67     | 0.62                   | -0.03          | 0.19         | 0.20          |
| Expenses of all      | 0.82                | 0.38          | 0.51 | 0.75               | 0.79     | 0.68                   | 0.28           | 0.54         |               |
| Per 1 hectare of cultivated area |                      |               |     |                    |          |                        |                 |              |               |
| variable expenses    | 0.79                | 0.30          | 0.24 | 0.67               | 0.51     | 0.49                   | 0.69           | 0.29         | 0.81          |

During the research the highest interrelation between variable expenses and an indicator of productivity of crops, except for corn and sunflower was established. On the basis of the received results the optimizing model directed to achievement of economic growth of branch was formulated.

The offered model can be also used in relation to branch of livestock production (table 2). Its main objective is comparison of investments and means of the state support and identification of their most effective ratio. It will allow to calculate the optimum indicator of level of profitability of agricultural production characterizing the economic growth of branch set (steady or accelerated) rates and also to define conditions, necessary for its achievement.

Within optimizing model we offered the formula defining communication between the set level of profitability and an indicator of an increment of necessary quantity of the made production:

\[
R_{\text{opt}} = \left( \frac{\Pi_i \* (Q_i - \Delta Q_i)}{V * Q_i + C_i \* S_i + V_i \* \Delta Q_i} - 1 \right) \* 100
\]

(7)

In table 2 the general version of the solution of a problem of definition of the minimum need for investment and public financing of branch for achievement of its economic growth by the accelerated rates is presented in a general view.

The indicator of need for investments displayed in table 2 represents result of the solution of a task. It shows the optimum sum of money which taking into account the coefficients revealed earlier (watch table 1) has to be distributed on a covering of these or those articles of expenses.
The necessary volume of subsidies is also a productive indicator. It includes the minimum value of the sum of the budgetary appropriations and investments which are required in order that the branch could develop the set rates. This indicator represents the optimum size of the target subsidies necessary for maintenance of functioning of the weakest and vulnerable branches of agriculture. It calculate as follows:

\[
L = \begin{cases} 
Z_j \left( \frac{RI_j}{100} \right) - p_j, & e \le q_j \le l_j, \text{ if } p_j > 0 \\
0, & e \le q_j \le l_j, \text{ if } p_j < 0 
\end{cases}
\]

(8)

where \( L \) – a productive indicator of need of agricultural producers for subsidies; \( z_j \) – the expenses exerting impact on growth of productivity (efficiency); \( p_j \) – productive expected indicator of profit; \( r_i \) – indicator of level of profitability of production of \( j \) production, \%; \( r_{ij} \) – profitability level taking into account the state support, %. This indicator is criterion of production efficiency of separate types of agricultural production and demonstrates achievement of economic growth of branch the set speed (42,20%).

Other key settlement indicator – productivity which has to increase taking into account investment injections in branch. It is determined by a formula:

\[
UI_j = U_j \left( 1 + \frac{P_{ij}}{Z_{ij}} \right) * KV_{ij}
\]

(9)

where \( UI_j \) – productivity which has to increase taking into account investment injections in branch; \( u_j \) – actual (initial) productivity of \( j \) crop (efficiency of an animal); \( p_{ij} \) – need for investments; \( z_{ij} \) – \( i \)-article of expenses exerting impact on growth of productivity of \( j \) crop (efficiency); \( KV_{ij} \) – coefficient of correction of influence of \( i \)-that article of costs of production of \( j \) type of production (from table 1).

Volumes of production are calculated on a formula (10):

\[
Q_j = S_j * U_j
\]

(10)

where \( q_j \) – the actual output of \( j \) production; \( s_j \) – cultivated area (livestock) of \( j \) culture (species of animals).

Volume of production is defined with investments as follows:

\[
QI_j = S_j * UI_j
\]

(11)

where \( q_{ij} \) – the settlement volume of \( j \) production.

The prime cost of unit of potential volume of production is determined by a formula:

\[
C_{Rj} = \left[ \left( \frac{C_{FRj} * Q_{FRj}}{Q_{FRj}} \right) + P_{ij} \right] * 1000
\]

(12)

where \( CR_j \) – prime cost of unit of potential volume of production; \( CFR_j \) – prime cost of actually sold products; \( Q_{FRj} \) – the volume of actually sold products; \( Q_{FRj} \) – the actual volume of the made production; \( QF_j \) – the potential volume of the made production.

Level of profitability (Rj) – fundamental criterion for evaluation of production efficiency of \( j \) production, is calculated by a formula:
\[ \frac{\text{Profitability level taking into account subsidies}}{\text{Profitability level}} \times 100\% \]  
(13)

Table 2 in the allocated cells contains settlement indicators which values can be changed according to statements of the problem of optimizing model. The indicators designated in the allocated cells in the fourth column (million rubles) concern them, for example.

In the fifth column the selected fragment shows settlement coefficients of influence which were revealed by us earlier. Noted indicators in the sixth column designate the deviations considering specifics of poultry farming – instead of efficiency in these cells the livestock of birds is established (one thousand a goal).

Within the offered optimizing model the system of restrictions is also installed. The allocated settlement indicator in a line 18 of column 19 in table 2 concerns one of them. It displays a share of subsidies in the total amount of the financial resources necessary for achievement of economic growth by the set rates. Restriction is set in the range from 0 to 1,0 that gives the chance to investigate a full range of ratios of investments and subsidies and to define the most optimal variant. Also productivity indicators which by the made calculations have to increase up to the greatest possible real values of efficiency of branch which were already reached by agricultural producers in the past belong to restrictions. In relation to livestock production the volume of need for investments pays off proceeding from security with sterns.

**Table 2.** A fragment of the optimizing model directed to achievement of the accelerated economic growth of agriculture of Russia.

| № | Cultures, types of production | Area, hectare | Livestock, goal | Productivity, efficiency, c/hectare (goal) | Eggs, piece | Coefficients of influence, piece | The productivity increased due to investments | Expenses are actual, million rubles | Expenses, million rubles | Level of profitability, % | Necessary volume of subsidies, million rubles | Profitability level taking into account subsidies |
|---|-------------------------------|---------------|-----------------|-----------------------------------------------|------------|---------------------------------|-----------------------------------------------|--------------------------------|------------------------|--------------------------|-----------------------------------------------|-------------------------------------------------|
| 1 | Grain and leguminous          | 109580        | 7               | 9,6                                           | 0,7        | 9,6                             | 55,0                                          | 7218,9                        | 6551,1                 | 37,3                     | 2                         | 319,9, 42,2                                                      |
| 2 | Corn on grain                | 43237         | 31,2            | 0,0                                           | 0,5        | 31,3                            | 67,7                                          | 744,4                          | 792,3                   | 28,2                     | 111,1                    | 42,2                                                                      |
| 3 | Soy                          | 16866         | 12,3            | 0,0                                           | 0,7        | 12,3                            | 50,0                                          | 294,2                          | 290,3                   | 74,1                     | 0                         | 42,2                                                                      |
| 7 | Vegetables of the open ground | 2145          | 248,9           | 17,9                                          | 0,9        | 290,0                           | 290,0                                         | 321,2                          | 473,5                   | 37,1                     | 24,3                     | 42,2                                                                      |
| 8 | Long-term herbs              | 49758         | 14,6            | 121,6                                         | 0,7        | 29,6                            | 55,0                                          | 148,1                          | –                       | –                        | –                         | –                                                                          |
| 11 | Milk                         | 24193         | 48,1            | 248,8                                         | 0,3        | 60,0                            | 60,0                                          | 2082,1                         | 2215,6                  | 34,9                     | 160,0                    | 42,2                                                                      |
| 12 | Meat of cattle               | 55122         | 1,5             | 107,0                                         | 0,2        | 1,9                             | 2,0                                           | 967,4                          | 1183,2                  | 7,6                      | 589,0                    | 42,2                                                                      |
| 16 | Eggs                         | 1911,5        | 273,4           | 0,0                                           | 0,0        | 1911,5                          | 2389,38                                        | 1850,5                         | 1932,1                  | 34,9                     | 140,6                    | 42,2                                                                      |
| 17 | Fowl                         | 4361,8        | 64,4            | 0,0                                           | 4361,8     | 5452,25                         | 1811,7                                        | 3765,4                         | –                       | 1905,8                   | 8,42                     | 42,2                                                                      |
| 18 | Results and criteria         | 527,1         |                 |                                               |            |                                 |                                               | 5892,6                         | 28243                   | 32,4                     | 5365,8                   | 0,90                                                                     |

Let's note that the offered optimizing model is multipurpose and can be used not only for calculation of a certain indicator (profitability level), but also some other. For example, determination of the greatest possible profit level of production or cost of the made production and also a minimum
of expenses in general on agriculture or by a certain type of production can be the purpose of the solution of a task.

Settlement indicators of model which is reformatted from definition of opportunities of the exit to the fixed result designated by us as the accelerated economic growth, on search of a maximum of unlimited economic indicators are presented in table 3.

In this example the following restrictions are added:

\[ \sum L_{j} \leq L_{d} \]

\[ R_{I} \geq 42,2 \]

where \( L_{j} \) – value of total amount of possible, additional subsidies of \( j \) culture, rub; \( L_{d} \) – value of total amount of possible, additional subsidies, rub; \( 42,2 \) – restriction of profitability at the level of \( 42,2\% \) is used as one of criteria stimulating production development as less profitable and unprofitable types of production, and more profitable.

**Table 3.** A fragment of model of forecasting of economic growth of agricultural producers on the basis of optimization of distribution of investments and subsidies.

| № | Area, livestock (hectare, goal) | Productivity, c/hectare (goal) | Coefficients of influence, piece | Investment, thousand rubles | Profit, million rubles | Profitability level % | Necessary volume of subsidies, million rubles | Profitability level % taking into account grants |
|---|---|---|---|---|---|---|---|---|
| 1 | Grain and leguminous | 109580 9,6 | 74362 0,73 10,9 | 104 2983 40,90 0 | 40,9 |
| 5 | Sunflower on grain | 616559 8,8 | 43510 0,60 8,9 | 543 5083 79,06 0 | 79,0 |
| 6 | Potatoes | 589 211,0 | 12047 0,84 290,0 | 124 59,9 52,26 0 | 52,2 |
| 9 | Annual herbs | 37 635 16,6 | 25560 0,29 18,4 | 624 3 | – – 0,0 | – |
| 11 | Milk | 24193 48,1 | 24883 0,47 60,0 | 116 4,7 775 34,98 36,0 | 36,6 |
| 13 | Pork | 71160 2,6 | 14403 0,14 2,9 | 181 4 738,9 42,39 5,7 | 42,7 |
| 17 | Fowl | 4361,8 64,4 | 25258 0,30 5452 | 281 1 292,6 7,28 8,6 | 7,49 |
| 18 | In total | – – | 35294 – | – 11230 35,93 1000 | 39,1 |

Features of model and its practical importance consist in the following:

– first, a main objective of the offered model is search of the most optimal variant of the ratio of investments and subsidies allowing to reach the highest rates of development of branch. At the same time we will note that the model is aimed not only at the development of the most perspective spheres of agriculture, but also at maintenance of the least profitable branches that has the special importance in the conditions of realization of processes of import substitution and achievement of food security;

– secondly, the offered model can be successfully applicable for forecasting of various prospects of development of branch of agriculture for the purpose of its exit to higher level of economic development at the level of the certain region, the area or economy. The optimizing model can be also
applied when forecasting results of activity of agricultural producers directly in the current year;

– thirdly, intermediate settlement indicators of model can be used when forming business plans and production and financial plans of the enterprises. For example, calculation of coefficients of influence allows to define those articles of expenses to which the agricultural producer has to pay attention first of all.

6. Conclusion
As the key criterion characterizing the economic growth of agricultural production by the steady or accelerated rates it is offered to use a profitability level indicator. The developed model is directed to identification of the optimum amount of investments and means of the state support, definition of the most effective ratio and rational distribution of these financial resources. Realization of the offered actions will allow to raise indicators of level of profitability and payback of agricultural production of Russia to 42.2% and above. This level of efficiency of functioning of agricultural producers demonstrates achievement of economic growth of branch both the steady, and accelerated rates.

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