%, 1000 тұқым массасы бойынша 70 % будандарда аса басымдылық байқалды. Басқа будандарда әр деңгейдегі әр түрлі басымдылық түрлері анықталды. Белгіленген комбинацияларды әрі қарай жаздық жұмсақ бидайдың бастапқы материалын шығару үшін іріктеу үшін қолдануға болады.

Кілт сөздер: жаздық жұмсақ бидай, селекция, будандастыру, тұқым қуалаушылық, будандық комбинация.

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CHARACTER OF INHERITANCE OF QUANTITATIVE SIGNS AT HYBRIDS OF SPRING SOFT WHEAT

Annotation

The results of crossing of spring soft wheat and character of inheritance of quantitative signs are in-process presented at hybrids. On the basis of undertaken studies we are distinguish combinations in that more grain was formed in an ear. It is such combinations, as: Shortandinskaya 2012 x Skarlett (51 grains) and Akmola 40 x Surenta 3 (58 grains). Character of inheritance of signs varied depending on hybrid combination: on the amount of grain in an ear over prevailing showed up in 50%, and on mass 1000 grains in 70% hybrids. There was in a different degree prevailing of parent on other hybrids, both with greater and with less expressed of sign.

Keywords: spring soft wheat, selection, hybridization, character of inheritance, hybrid combination.

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ESTABLISHING THE RESERVOIR PROVISION FOR SEASONAL REGULATION OF THE FLOW FOR COMPLEX APPOINTMENT

Abstract

In article proposed a formula for determining the provision of seasonal regulation in the complex use of water resources.

Key words: river flow, flow regulation, reservoir, complex use of water resources.

Introduction

Seasonal regulation of flow causes the presence of sharp and moreover repeated annual fluctuations in inflows by season or seasons. Some types of consumption (for example, irrigation) also experience seasonal fluctuations and according to the time of highs and lows of the runoff graphs and consumption can have different interrelations, starting from almost complete coincidence to the complete opposite.

A distinctive feature of seasonal runoff regulation is the use of water resources within one hydrological year. In this case, the amount of consumption should be assigned in such a way that it does not exceed the runoff of the design year. It should be noted that the appointment of a percentage of the provision of seasonal regulation of runoff depends on the nature of consumption [1]. For economy sectors relatively painlessly allow some restriction in the water supply, and unconditional satisfaction of their full needs is certainly not advisable. In such cases,

we began to focus on certain reductions in the water supply, limiting their repeatability by more or less conventionally chosen norms, For example, for irrigation of agricultural land, depending on the conditions of water supply and the type of irrigated crops, provision is assigned within P=75…95%.

Materials and methods

Based on the above conditions, the percentage of provision of seasonal flow regulation, corresponding to any term of the empirical series is calculated by the following formula:

$$P = \frac{m}{n+1}100\%, \quad (1)$$

where n - number of years in the row;
m - serial number of the years in the row located in the descending order.

This expression was proposed and theoretically justified by S.N. Kritsky and M.F. Menckel [2].

Currently, the formula (1) is recommended to SNIP standards 2.01.14-83 for determining the estimated hydrological characteristics [3].

Thus, the recommended formula allows to determine the provision of seasonal regulation of runoff in the sectoral nature of the water resources use.

Currently, the reserves of water resources of the Republic of Kazakhstan, that are available for use, are reduced as a result of their irrevocable consumption, pollution and depletion, and the demand for water increases not only in proportion to population growth, but especially in connection with industrial development and reclamation measures.

The complex use of water resources makes it possible to reduce the one-time costs for hydraulic structures in comparison with the costs of separate construction of such structures. Also, it allows to obtain an annual cost savings of money and material costs for operation in all branches of the water management complex in aggregate.

Hence the relevance of studying, researching and developing effective methods for assessing the cost-effectiveness of activities related to the complex use of water resources.

At present, the issues of determining the availability of a reservoir for seasonal regulation of complex water supply are insufficiently developed. We can only note the work of S.N. Kritsky, M.F. Menckel [4], V.G. Andreyanov [5], I.M. Panasenko [6] and others.

In this regard, the main and most important task of water management calculation of seasonal regulation is to correctly determine the availability of seasonal regulation, which could accurately determine the estimated annual inflow schedule, and then the amount of consumption and the necessary useful volume of the seasonal flow regulation reservoir for complex purposes.

For the first time in the work of S.N. Kritsky and MF Menckel [4] developed a dependence F (k_1, α_1, P_1, k_2,α_2,, P_2,) = 0, which allows the use of water resources in a comprehensive manner, where α_1 – guaranteed yield (irrigation) with provision P_1 и α_2 – guaranteed yield (water supply) with provision P_2, in α_i=k_i the given provision in the complex use of water resources is equal to:

$$P_{np} = P_1 + \frac{\alpha_2}{\alpha_1}\left(P_2 - P_1\right), \quad (2)$$

Further in the work of V.G. Andreyanov [5] it is noted: "As with the long-term and seasonal regulation for a constant yield of reservoir, the main task in each case is to find the

required capacity β By the given values of guaranteed yield α and provision P or finding guaranteed yield α for given values of capacity β and provision yield P. Thus, an exhaustive solution of this problem for a given object requires establishing for it a connection between the quantities β, α and P. The task of the general methodology for calculating flow regulation is to generalize these dependences to any objects, taking into account only the main indicators of the runoff regime, which should allow a simple and reliable calculation of regulation in unexplored or poorly studied rivers".

Further in this work it is noted "The same methods of equating the provision of yield and the provision of annual or low-level flow and the simplest schematization of intra-annual and intra-seasonal distribution of runoff by means of average ratios are usually applied to regional generalizations, performed in the process of mass schematic design of water management installations, for example... ".

The foregoing allows formula (2) to be used to determine the given provision for seasonal flow regulation in the complex use of water resources.

As shown in the figure, formula (2) is established from the following equation:

$$P_{np}\alpha_1 = \alpha_1 P_1 + \alpha_2 P_2 - \alpha_2 P_1, \tag{3}$$

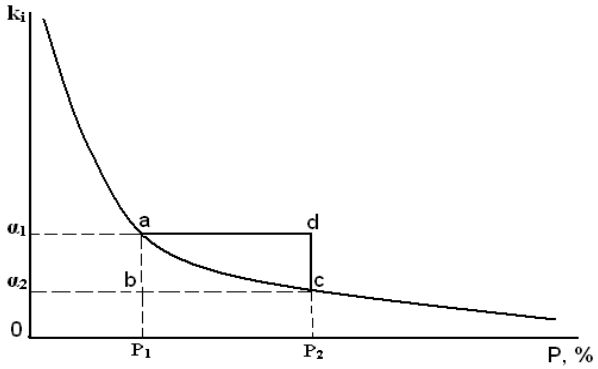

Figure - Scheme for the calculation by formula S.N. Kritsky and M.F. Menckel.

The above equality (3) is satisfied if to the right-hand side of equation (3) is added the area of the triangle abc:

$$P_{ПР}\alpha_1 = \alpha_1 P_1 + \alpha_2 P_2 - \alpha_2 P_1 + \frac{(\alpha_1 - \alpha_2)(P_2 - P_1)}{2}, \tag{4}$$

Or from $\alpha_1 P_2$ subtract the area of a triangle adc, then:

$$P_{ПР}\alpha_1 = \alpha_1 P_2 - \frac{(\alpha_1 - \alpha_2)(P_2 - P_1)}{2}, \tag{5}$$

From the above equation (5), we can write down the n-th number of consumers:

$$P_{ПР}\alpha_1 = P_n\alpha_1 - \left[\frac{(\alpha_1 - \alpha_2)(P_2 - P_1)}{2} + \frac{[(\alpha_1 - \alpha_2) + (\alpha_1 - \alpha_3)](P_3 - P_2)}{2} + \right.$$
$$\left. + \frac{[(\alpha_1 - \alpha_3) + (\alpha_1 - \alpha_4)](P_4 - P_3)}{2} + \ldots + \frac{[(\alpha_1 - \alpha_{n-1}) + (\alpha_1 - \alpha_n)](P_n - P_{n-1})}{2}\right], \tag{6}$$

or

$$P_{ПР}\alpha_1 = P_n\alpha_1 - \sum_{i=2}^{n} \frac{[(\alpha_1 - \alpha_{i-1}) + (\alpha_1 - \alpha_i)](P_i - P_{i-1})}{2}, \quad (7)$$

From the formula (7) the given provision for n consumers is calculated:

$$P_{ПР} = P_n - \sum_{i=2}^{n} \frac{[(\alpha_1 - \alpha_{i-1}) + (\alpha_1 - \alpha_i)](P_i - P_{i-1})}{2\alpha_i}, \quad (8)$$

For more convincing comparative calculations along with the formula (2) and proposed formulas (4) and (5), we cite the well-known formula for determining a average weighted expression:

$$P_{пр} = \frac{P_1\alpha_1 + P_2\alpha_2}{\alpha_1 + \alpha_2}, \quad (9)$$

Results of research

The results of comparative calculations obtained by formulas (2), (4), (5) and (9) are given in the table.

Table 1 - Comparisons of the calculations results of given provision on $C_S=2C_V$

Initial data					Results of formula			
C_V	α_1	P_1	α_2	P_2	(2)	(4)	(5)	(9)
0,2	0,94	60	0,70	95	86,06	90,53	90,54	75,00
	0,94	60	0,86	75	73,72	74,36	74,36	67,16
	0,85	75	0,70	95	91,47	93,23	93,24	84,03
0,8	0,63	60	0,12	95	66,67	80,83	80,84	65,60
	0,63	60	0,42	75	70,00	72,5	72,50	66,00
	0,42	75	0,12	95	80,71	87,85	87,86	79,44
1,4	0,28	60	0,004	95	60,50	77,75	77,75	60,49
	0,28	60	0,12	75	66,43	70,71	70,72	64,50
	0,11	75	0,004	95	75,72	85,36	85,36	75,70

As the table 1 shows, the differences of calculation results between existing (2), (9) and the proposed (4), (5) formulas is a significant value that depends on the ratio of the reservoir yield α_1 and α_2, how greater the difference between α_1 and α_2, it will be more deviations, which causes the need for their consideration in the design of water economy and hydropower objects.

Conclusions:

1. Proposed a formula for determining the given provision for any ratio of the reservoir yields;
2. Introduced correction in the formula S.N. Kritsky and M.F. Menckel allows to more accurately determine the amount of provision;
3. Proposed formula can be used to determine the provision of seasonal flow regulation in the complex use of water resources.

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СУ ҚОРЛАРЫН КЕШЕНДІ ПАЙДАЛАНУДА МАУСЫМДЫҚ АҒЫНДЫ РЕТТЕУДІҢ ҚАМТАМАСЫЗДЫҒЫН АНЫҚТАУ

Аңдатпа

Зерттеулердің нәтижесінде су қорларын кешенді пайдалануда маусымдық ағынды реттеудің қамтамасыздығын анықтауға формула ұсынылған.

Кілт сөздер: өзен ағыны, ағынды реттеу, суқойма, су ресурстарын кешенді басқару.

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УСТАНОВЛЕНИЕ ОБЕСПЕЧЕННОСТИ ВОДОХРАНИЛИЩА СЕЗОННОГО РЕГУЛИРОВАНИЯ СТОКА КОМПЛЕКСНОГО НАЗНАЧЕНИЯ

Резюме

Предложена формула для определения обеспеченности сезонного регулирования при комплексном использовании водных ресурсов.

Ключевые слова: сток реки, регулирование стока, водохранилища, комплексное использование водных ресурсов.