# THE EFFECT OF PLANTING PERIODS AND NORMS OF AUTUMN CROPS ON THE CHANGE IN THE ACTIVE MOISTURE RESERVE IN THE SOIL

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**ABSTRACT:** The article is the development of improved agrotechnology for the production of high quality wheat winter wheat "Semurug" for areas of the country with water shortages, frequent soil and air drought and relatively low soil quality.

**Relevance of the topic.** At present, 4.3 mln. hectares of irrigated land are planted with winter cereals (mainly wheat) and other crops in the cotton-grain crop rotation complex. In order to improve the reclamation of 1.7 million hectares of irrigated lands and water supply in 2009-2019, large-scale irrigation and reclamation measures are being implemented within the framework of state programs.

However, winter wheat yields and quality remain low in many irrigated areas as a result of the ongoing shortages of water resources in recent years as a result of global climate change, the deterioration of irrigation and land reclamation networks, and inefficient use of water and other resources.

Taking into account the above, the President of the Republic of Uzbekistan adopted Decree No. PF-5742 of June 17, 2019 on measures for the efficient use of land and water resources in agriculture for 2020-2030.

The first experiments on the development of complex agrotechnology of cultivation of autumn cereals in irrigated areas at the Gallaorol Scientific Experimental Station (formerly Galla IIChB) of the Grain and Legume Research Institute began in the 70s of last century.

Numerous experiments have shown that one of the main factors limiting the yield of autumn grain crops in these areas is the lack of nitrogen-containing

($NO_3$ $NH_4$) and phosphorus-containing nutrients, which are easily assimilated by the soil plant in the most fertile, critical stages of growth and development of the country's irrigated lands.

Field experiments "method agroximicheskix, agrofizicheskix i mikrobiologicheskix issledovaniy v polivnix khlopkovix rayonax" adopted at the scientific research institute of agrotechnologies of cotton selection and cultivation of seeds (PSUEAITI, 1963 y.), "Methodology polevix opitov s khlopchatnikom" (PSUEAIT, 1981 y. and conducting field experiments (Tashkent, 2007).) was conducted on the basis of methodological guidelines [7,8].

From the experience conducted in different soil-climatic conditions in the past years, it became known that in the fields emptied from the grain crops with a spike irrigated, hot and dry air temperature in the summer months, as well as soil moisture under the influence of garmsel winds by the sowing season (October) the humidity of the soil at a depth of Naturally, in such moisture it is impossible to prepare the soil for quality planting, as well as planting at all.

In the years of the experiment, irrigation works (vlagozaryadka) were carried out to create an active moisture Reserve in the soil aerated layer (0-100 CM) at least 8-10 days before planting in order to fully germinate the seeds of the autumn variety "Semurug" for a short period of time on account of the natural moisture content of the soil. The irrigation standard for collecting moisture in autumn soil was 820-950 cubic meters per hectare, depending on weather conditions, soil moisture. in all years, for irrigation of autumn varieties with the same standard, a water meter device "Chippoletti" was used. The results of the study of soil moisture dynamics were as follows.

Table 1

Soil moisture changes depending on the planting times and norm of the autumn variety "Semurug", Gallaorol, average by 2019-2020 years

| Duration of planting | The norm of planting is million. dona/ga | Soil layer, cm | Sprouting-thumping (in autumn) | | Tumbling-throbbing (October) | | Grain-milk cooking | | Milk ripening-full ripening | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | % | м$^3$/га | % | м$^3$/га | % | м$^3$/га | % | м$^3$/га |
| 10 October | 4,5 | 0-20 | 13,8 | 359 | 16,4 | 426 | 14,0 | 286 | 13,2 | 343 |
| | | 0-60 | 16,2 | 1312 | 19,8 | 1604 | 15,8 | 1280 | 14,9 | 1207 |
| | | 60-100 | 15,8 | 866 | 18,5 | 1014 | 16,3 | 893 | 14,7 | 805 |
| | | 0-100 | 16,0 | 2178 | 19,2 | 2618 | 16,0 | 2173 | 14,8 | 2012 |
| | 5,0 | 0-20 | 13,8 | 359 | 16,5 | 429 | 14,7 | 382 | 13,8 | 359 |
| | | 0-60 | 14,8 | 1199 | 19,8 | 1604 | 15,3 | 1239 | 16,3 | 1320 |
| | | 60-100 | 13,6 | 745 | 18,5 | 1014 | 14,9 | 816 | 14,8 | 811 |
| | | 0-100 | 14,2 | 1944 | 19,2 | 2618 | 15,1 | 2055 | 15,6 | 2131 |
| | 6,0 | 0-20 | 12,8 | 312 | 15,8 | 411 | 14,8 | 385 | 13,9 | 361 |
| | | 0-60 | 14,0 | 1134 | 18,9 | 1500 | 17,5 | 1417 | 15,8 | 1280 |
| | | 60-100 | 13,6 | 745 | 16,7 | 902 | 16,9 | 926 | 16,2 | 888 |

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|---|---|---|---|---|---|---|---|---|---|---|
| | | 0-100 | 13,8 | 1879 | 17,8 | 2402 | 17,2 | 2343 | 16,0 | 2168 |
| 20 October | 4,5 | 0-20 | 14,0 | 364 | 17,4 | 452 | 15,8 | 411 | 14,3 | 372 |
| | | 0-60 | 15,9 | 1288 | 18,9 | 1531 | 17,9 | 1450 | 16,3 | 1320 |
| | | 60-100 | 16,2 | 888 | 16,5 | 904 | 16,5 | 904 | 15,0 | 822 |
| | | 0-100 | 16,0 | 2176 | 17,7 | 2435 | 17,2 | 2354 | 16,7 | 2142 |
| | 5,0 | 0-20 | 13,8 | 359 | 17,2 | 447 | 15,7 | 408 | 13,8 | 359 |
| | | 0-60 | 15,0 | 1215 | 18,0 | 1458 | 16,8 | 1361 | 14,9 | 1207 |
| | | 60-100 | 14,2 | 778 | 15,7 | 860 | 15,0 | 822 | 14,0 | 767 |
| | | 0-100 | 14,6 | 1993 | 16,9 | 2318 | 15,9 | 2183 | 14,4 | 1974 |
| | 6,0 | 0-20 | 14,0 | 364 | 16,8 | 437 | 16,8 | 437 | 13,6 | 354 |
| | | 0-60 | 15,0 | 1215 | 19,4 | 1571 | 17,2 | 1393 | 14,3 | 1158 |
| | | 60-100 | 13,8 | 756 | 18,2 | 997 | 14,3 | 784 | 12,7 | 696 |
| | | 0-100 | 14,4 | 1971 | 18,3 | 2568 | 15,7 | 2177 | 13,5 | 1854 |
| 30 October | 4,5 | 0-20 | 14,8 | 385 | 17,3 | 450 | 17,3 | 450 | 14,2 | 369 |
| | | 0-60 | 16,7 | 1353 | 18,7 | 1515 | 16,4 | 1328 | 15,0 | 1215 |
| | | 60-100 | 14,0 | 767 | 17,0 | 932 | 13,8 | 756 | 12,9 | 707 |
| | | 0-100 | 15,4 | 2120 | 17,8 | 2447 | 15,1 | 2084 | 14,0 | 1922 |
| | 5,0 | 0-20 | 14,9 | 387 | 16,8 | 437 | 14,8 | 385 | 13,7 | 356 |
| | | 0-60 | 17,2 | 1393 | 19,0 | 1539 | 16,9 | 1369 | 14,7 | 1191 |
| | | 60-100 | 15,7 | 860 | 17,9 | 981 | 16,0 | 877 | 13,9 | 762 |
| | | 0-100 | 16,5 | 2253 | 18,5 | 2520 | 16,4 | 2246 | 14,3 | 1953 |
| | 6,0 | 0-20 | 14,0 | 364 | 16,3 | 427 | 13,8 | 359 | 12,7 | 330 |
| | | 0-60 | 15,4 | 1247 | 18,8 | 1523 | 15,6 | 1264 | 14,9 | 1207 |
| | | 60-100 | 13,8 | 756 | 17,6 | 964 | 14,2 | 778 | 13,6 | 745 |
| | | 0-100 | 14,6 | 2003 | 18,2 | 2487 | 14,9 | 2042 | 14,3 | 1952 |

The dynamics of soil moisture during vegetation in the autumn planting experiment" Semurug " changed as follows (Table 4). In this experiment, too, the moisture content in the account layer of 0-60 cm of soil formed relatively high indicators at the initial stages of growth and development of vegetation, regardless of the planting period: in autumn – 15,2-17,3% (1532-1422 $m^3$), in soil-13,2 – 19,2% (1575-1578 $m^3$), in soil-0-100 cm, the moisture Reserve in the layers 17,2% or 1979-2341 cubic meters per hectare.

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