

Vol. 12 (1): 1-6 (2022)

CHARACTERISTICS OF CONSUMPTIVE WATER USE OF MILLET AND SORGHUM DEPENDING ON THE SOWING TIME IN DRY CONDITIONS OF STEPPE ZONE

Alexander Vasilyevich Baranovsky¹, Alexey Sergeevich Sadovoy¹, Sergey Ivanovich Kapustin^{2,3},
Andrey Sergeevich Kapustin^{4*}, Alexander Mikhailovich Stroyny¹, Anna Sergeevna Golub³

¹Lugansk National Agrarian University, Town LNAU 1, Lugansk, UA-91008, Ukraine;

²North Caucasus Federal Agrarian Research Centre, Nikonov str. 49, Mikhailovsk, Stavropol region, 356241, Russia;

³Stavropol State Agrarian University, 12 Zootechnicheskiy Ln, Stavropol, 355017, Russia;

^{4*}North Caucasus Federal University, Pushkin str. 1, Stavropol, 355017, Russia;

*Corresponding Author Andrey Sergeevich Kapustin, e-mail: hpplus@bk.ru;

Received October 2021; Accepted November 2021; Published January 2022;

DOI: <https://doi.org/10.31407/ijeess12.101>

ABSTRACT

The article presents data on the influence of different sowing times on consumptive water use of millet and grain sorghum crops when grown in the conditions of the eastern part of Ukraine. The research was carried out on the experimental field of Lugansk State Agrarian University in 2011–2012 and 2016–2018. On average for 2016 – 2018 the total consumptive water use of millet from a metre-deep layer of soil was 2052.4 m³/ha. The greatest total consumptive water use was on the sowing date on May 5 (2589.7 m³/ha). The minimum total consumptive water use was during sowing on June 5 (1432.7 m³ / ha). The smallest amount of water for the formation of 1 ton of grain was on the sowing date on June 5 (631.9 m³/t). The greatest payback of water resources by grain yield was on late sowing dates (1.43-1.66 kg/m³). More economical use of soil moisture for the formation of 1 ton of grain when growing grain sorghum was noted on a sowing date on May 15 (462.7 m³/t). The maximum payback of water resources with sorghum yield was also obtained at this sowing period (2.16 kg/m³).

Key words: sorghum, millet, sowing time, water-use ratio, yield, water availability, moisture reserves.