According to biometric data, in the research of 2018-2020, sunflower plants were the highest in growth when used along with harrowing and pre-harvesting of Roundup herbicide. In this option, the height of sunflower plants was 131.30 cm for harvesting. Sunflower plants in the control version (110.38 cm) differed in the lowest growth. Before harvesting, the height of sunflower when taking care including 1 and 2 inter-row cultivations, along with spring harrowing and pre-harvest cultivation, was 119.02 and 124.38 cm.

In the research of 2018-2020, the effectiveness of sunflower photosynthesis depended on techniques of crop care. So, on average for 3 years in the flowering phase, if the photosynthetic potential was 0.70 million m^2/day ha, then the addition to the traditional technology of cultivation techniques with the introduction of Roundup herbicide at a dose of 2 l/ha ensured the growth of photosynthetic potential to 0.96 million m^2/day ha.

On the options of harrowing and cultivation of crops combined with 1 and 2 interdivisional treatments, the values of sunflower photosynthetic potential were 0.79 and 0.86 million m^2/day ha, respectively.

When Roundup herbicide is added to sunflower crops, the field surface is equalized and microbiological processes are improved due to the decompression of topsoil. All this has a positive impact on sunflower productivity.

In the research on average for 2018-2020, the highest collection of sunflower seeds is provided for the use of Roundup herbicide and soil harrows with pre-sowing cultivation of 21.03 c/ha.

On average for 3 years under control, the yield of sunflower seeds was 14.02 c/ha. When using harrowing in combination with pre-sowing cultivation and 1 interrow treatment, the yield of sunflower compared to the control increased by 2.19 c/ha and amounted to 16.21 c/ha. When included in the number of sunflower crop care operations, an additional second inter-row treatment, the yield of sunflower seeds was 18.25 c/ha, which is 4.23 c/ha more compared to the control.

On average for 3 years, the mass of 1000 seeds on the option with one inter-row treatment was 34.40 g, when conducting two inter-row treatments with the combination of harrowing and pre-harvest cultivation - 38.99 g.

When introducing Roundup under pre-sowing cultivation and harrowing, the mass of seeds increased by 6.72 g, respectively, compared to the control. On average in 2018-2020, the huskness of seeds when conducting one cultivation is 22.92%, when applying Roundup herbicide for pre-sowing cultivation with harrowing.

Sunflower oiliness for an average of 3 years under control was 49.59%. In the experiments, the highest raw fat content was determined on Roundap herbicide application option - 50.67%. When using 1 and 2 inter-row treatments, sunflower seed oiliness was at the level of 49.17-48.23%.

According to the research data, on average for 2018-2020, the highest oil collection was determined on the option of harrowing + pre-sowing cultivation with the application of Roundup (2 l/ha) - 9.57 c/ha.

When applying 1 and 2 interdivisional treatments combined with harrowing and pre-sowing cultivation, oil collection increased to 7.16-7.95 c/ha, which is more than the control by 0.92-1.71 c/ha (table 2, figure 1).

Table 2 – Quality of seeds and biological yield of sunflower depending on techniques of crop care, average for 2018-2020

Indication	Options for crop care			
	Harrowing + pre-sowing cultivation (control)	Harrowing + pre-sowing cultivation with Roundup (2 l/ha)	Harrowing + pre-sowing cultivation + 1 inter-row processing	Harrowing + pre-sowing cultivation + 2 inter-row processing
Mass of 1000 seeds, g	34,40	41,12	36,88	38,99
Huskness, %	24,07	22,92	23,52	23,04
Oiliness, %	49,59	50,67	49,17	48,23
Biological yield, c/ha	14,02	21,03	16,21	18,25
Oil yield, c/ha	6,24	9,57	7,16	7,95

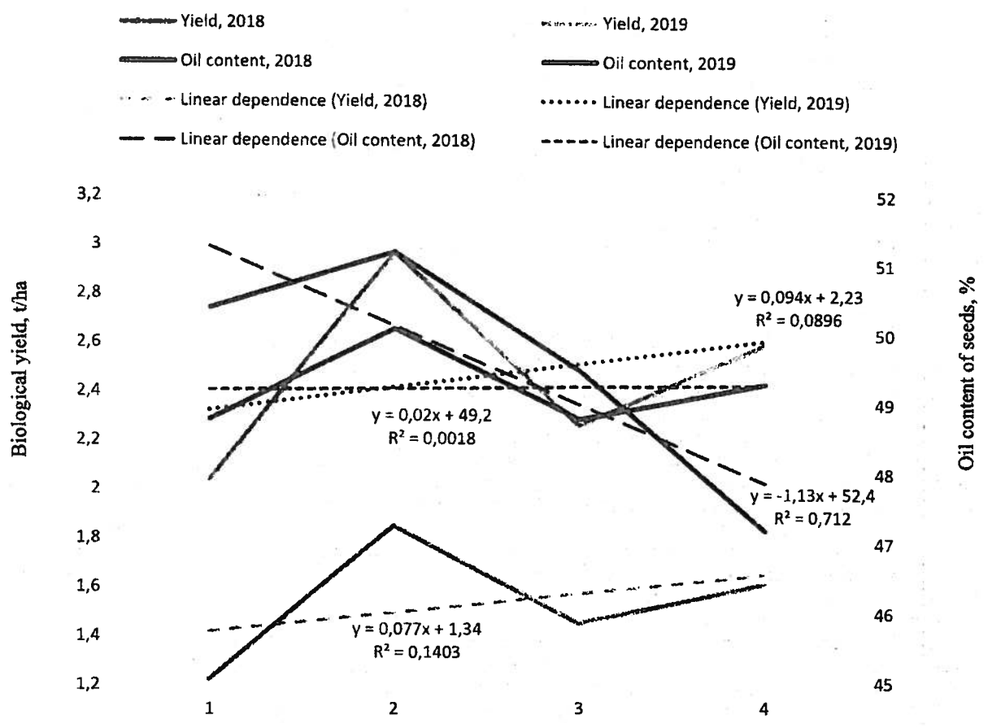

Figure 1 – Yield (t / ha) and oil content of seeds (%) depending on the methods of care for sunflower crops:
1 – Harrowing + pre-sowing cultivation (control); 2 – Harrowing + pre-sowing cultivation with Roundup (2 l/ha);
3 – Harrowing + pre-sowing cultivation + 1 inter-row processing;
4 – Harrowing + pre-sowing cultivation + 2 inter-row processing

Conclusion. One of the important elements of adaptive technology of sunflower cultivation in 1 dry-steppe zone of West Kazakhstan region is the fight against weed vegetation, which is achieved by selection of optimal methods of crop care. The research of 2018-2020 determined the feasibility in the fight against weed vegetation on sunflower crops of using Roundup herbicide in a dose of 2 l/ha. On average for 3 years, the highest collection of sunflower seeds (21.03 c/ha) and oil collection (9.57 c/ga) is provided when using Roundup herbicide and soil harrows with pre-sowing of. In the dry-steppe zone of West Kazakhstan region, the inclusion of adaptive technology in the system along with harrowing and pre-sowing cultivation, the treatment of crops with Roundup herbicide (2l/ha) significantly increases the yield and quality of seeds, as well as sunflower oil collection compared to the traditional technology.

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КҮНБАҒЫС ЕГІСІН КҮТУДІҢ ТИІМДІ ТӘСІЛДЕРІ

Аннотация. Батыс Қазақстан климаты жағдайында күнбағыс өсіру жылумен жақсы қамтылатындықтан әрі вегетация мерзімінің ұзақтығына байланысты аса тиімді саналады. Бейімделгіш технологиялар жүйесінде топырақты егіс алдында дұрыс дайындау мен егіс егудің оңтайлы мерзімі айтарлықтай маңызды.

Күнбағыс түсіміне арамшөпті өсімдіктер ірі залал келтіреді. Жерасты және жерүсті массасы қуатты болатындықтан, күнбағыс басқа егіс дақылына қарағанда арамшөпке қарсы күресе алады. Дегенмен БМДҒЗИ мәліметтері бойынша бүлінген алқаптағы түсімі 2,5 ц/га-ға төмендейді [48, 49, 50].