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TESTING HERBICIDES ON SUNFLOWER CROPS

We studied the herbicides' effect on sunflower crops on leached chernozem of heavy loam, mechanical composition.

In the soil's arable layer the pH of water extract was close on the neutral one (6.8-7.0), the volume of absorption varied from 37.5 to 41.3 MG-eq./100 g of soil, and the proportion of humus was 4.1-4.5%.

There was 640 mm of precipitation on the experimental area, with an uneven distribution over the seasons. Spring and summer precipitation accounted for more than 50% of the total for a year.

There were largely annual weeds on experimental plots such as Japanese baryard millet (Echinochloa crus galli Roem. et Schult), yellow foxtail (Setaria glauca P.B.), fat hen (Chenopodium album L.), and redroot amaranth (Amaranthus retroflexus L.). Grass weeds prevailed as a rule.

We tested over 30 preparations of the derivatives of 2.4-dichlorphenolhydroxyacetic, propionic, and carbomine acids, triazines, urea, anilides, etc.

Herbicides were introduced before the sprouting stage and their effect was studied with or without their incorporation into the soil.

Simazine, atrazine, seson, phalon, dalapon and natrium trichloracetate proved inapplicable for placement before the sprouting stage because they depressed sunflower plants and decreased the seeds' yield by 2 to 9 c/ha. On the other hand when chlor-IFK and vegadex (6 and 9 kg/ha), alypur, eptame and tillame (3 and 4 kg/ha), and herbane (4 and 6 kg/ha) were used before sprouting they did not produce a noticeable toxic effect on the plant, but decreased the total weeding 25 to 50%, killing

Table 1

The Herbicides' Effect on Weeds in Sunflower Crops

Average for 1974-1975

Variants	Number of plants per 1 sq m	Weeds killed, % of check	Wet weight of plants, g/sq m	Weight decrease, % of check
Check	49	-	492	-
Acylide, 4 kg/ha	9	82	35	93
Cartex, 8 kg/ha	6	88	20	96

Table 2

The Herbicides' Effect on Yield and the Quality of Sunflower Seeds

Average for 1974–1975

Variants	Yield, c/ha	Mass of 1,000 seeds, g	Seed germination, %	Oil content, %
Check	96.6	66.6	97.0	51.7
Acylide, 4 kg/ha	40.8	68.0	97.0	51.7
Cartex, 8 kg/ha	41.4	66.9	97.0	51.5

the seedlings of both grass and dicotyledonous annual sweeds.

The preparations gezagard, mezaronile, topogard and malorane were tested on sunflower crops in the central zone of the Krasnodar territory on chernozem with the heavy loam mechanical composition and with insufficient moistening; they proved little effective when grass weeds, such as foxtail and Japanese baryard millet prevailed in the crops.

11 to 26% of grass weeds were killed and the quantity of dicotyledonous weeds was decreased by 45 to 80%.

When applied on the surface (i.e. without incorporation into the soil) the toxic effect of these preparations largely depended on the soil moisture. In years with a humid spring they were more active.

Especially interesting are the results obtained in testing the herbicides cartex and acylide (Table 1).

In 1975 acylide and cartex killed 96 to 98% of weeds under favourable weather conditions. The dozes applied did not negatively affect the yield, mass of 1,000 seeds, their oil content and germination (Table 2).

Thus the herbicides acylide and cartex we tested on sunflower crops in the central zone of the Krasnodar territory are effective killers of annual weeds.