DOI: https://doi.org/10.5564/mjas.v23i01.1017

THE HERBICIDE EFFECT FOR CONTROLLING THE WEEDS IN WHEAT FIELD

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ABSTRACT

Of all reported distributions of weeds of 19 species belonging to 15 genera of 10 families in the wheat planted fields Tsagaannuur soum of Selenge aimag, annuals account for 57.9%, biennials for 10.5% and perennials for 31.5%. The use of herbicide Trimexa, Cliomex 300, Cliodmex plus and Trimexa + Cliodimex plus express for controlling both grassy and dicotyledonous weeds has Agropyron repens L, Panicium miliaceum L, Eragrostis minor Host, Amaranthus retroflexus L, Artemisia sieversiana Willd, Cannabis ruderalis Janisch, Chenopodium album L, Chenopodium aristatum L, Chenopodium acuminatum Willd, Convolvulus arvensis L, Convolvulus gortschakovii Schrenk, Erodium stephanianum Willd, Polygonum convolvulus L, Geranium siviricum L, Salsola collina (Pall), Salsola australis R.Br, Noneo pulla L, Malva mohileviensis Downer, Vicia cracca L. 84.4-90.9% technical effectiveness.

KEY WORDS: Herbicide, weed, technical effectiveness

INTRODUCTION

As a result of measures applied within the framework of "Third National Crop Rehabilitation Drive" by the government of Mongolia, such activities as protection of soil fertility, intensification of controlling weeds by chemical methods, and introduction of advanced technologies for land working are now being successfully accomplished. Therefore, transition of our country into market economy, followed by decrease of production sphere of economic entities requires bringing plant protection activities onto new stage in current contexts, minimizing crop production loss and improving the product quality via introduction of advanced technologies used worldwide. It has been essentially important to use the newest highly specific herbicides for the fallow-crop rotation. In last years, use of sole herbicide for controlling weeds on grain crop fields is avoided and instead, the combination of many new specific herbicides adjusting for the country's soil and climatic features has been necessary. Controlling measures are implemented in association with specific soil and climatic conditions of our country, shorter period of growth, droughts and aridity during spring and summer, and species composition of weeds.

MATERIALS AND METHODS

Field study conducted in wheat field of Gatsuurt LLC located in Tsagaannuur soum of Selenge province from 2016-2017.

Laboratory study conducted in Weed research laboratory of IPP, Infectious disease, immunology laboratory of Research Institute of Veterinary Medicine, also Fungi research laboratory and Plant anatomy and physiology laboratory at the Institute of Biology. Herbicides have been experimented against double seeded and single seeded weeds. Size of one plot is 16 m^2, experiment had been conducted with 3 repetitions on each variant. Distributions and density of weeds on the wheat fields were determined by coverage project method of I.I.Libershtein and A.A.Tulikov. Technical effectiveness of herbicide for each weed species was precisely estimated using 0.25 m^2 frame at days 3, 7, 14 and 21 before and after herbicide use, and those plants affected by the herbicide were recorded and estimated.

RESULTS OF THE STUDY

Of 71-121 individual weeds per 1m^2 in average, 19 species weeds, belonging to 15 genera of 10 families were recorded, 6.7% *Agropyron repens* L, 12.8% *Panicium miliaceum* L, 4.6% *Eragrostis minor* Host, 4.2% *Amaranthus retroflexus* L, 6.9% *Artemisia sieversiana* Willd, 1.1% *Cannabis ruderalis* Janisch, 8.3% *Chenopodium album* L, 3.6% *Chenopodium aristatum* L, 4.8% *Chenopodium acuminatum* Willd, 8.4% *Convolvulus arvensis* L, 4.1% *Convolvulus gortschakovii* Schrenk, 1.1% *Erodium stephanianum* Willd, 9.7% *Polygonum convolvulus* L, 3.6% *Geranium siviricum* L, 3.3% *Salsola collina* (Pall), 1.6% *Salsola australis* R.Br, 7.6% *Noneo pulla* L, 2.8% *Malva mohileviensis* Downer, 4.7% *Vicia cracca* L. accounted for 17.1% of these weeds. Annuals, biennials and perennials account for 57.9%, 10.5% and 31.5% respectively of the weeds (Figure 1).

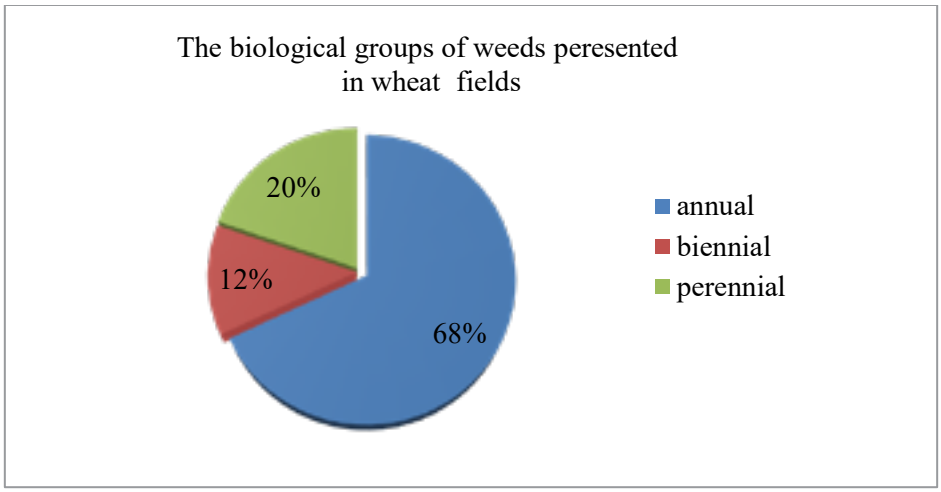

Figure 1. Ratio of biological groups of weeds

Each of herbicides made in German such as herbicide Trimexa, Cliomex 300, Cliodmex plus and Trimexa + Cliodimex plus, which are specific to growth stages from filleting to shooting, on wheat planted fields, were used solely in various doses against annual grasses and dicotyledonous weeds, and combinations of herbicides have 84.4-90.9% technical effectiveness (Figure 2).

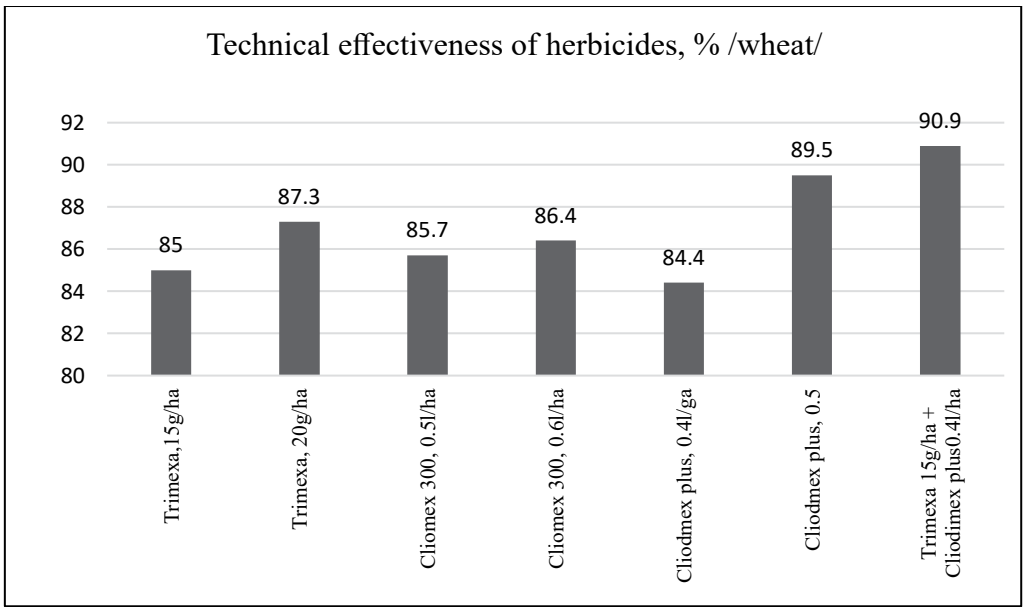

Figure 2. Technical effectiveness of herbicides

Above herbicides can be broadly used for controlling weeds distributed on crop fields of our country. During period from filleting to shooting, use of Trimexa herbicide against dicotyledonous weeds at the dosage of 15-20g/ha field decreased the number of weeds by 85-87.3%, increased crop production by 0.9-1.0 center, while use of Cliomex 300 at the dosage of 0.5-0.6 l per ha decreased weeds by 85.7-86.4% and increased crop by 0.8-1.5 centner. Variant using Cliodmex plus against grassy annual weeds at the dosage of 0.4-0.5 l/ha decreased weeds by 84.4-89.5% and increased crop production by 0.9-1.3 centner.

Table 1.

Effects of herbicides on wheat growth

No	Variants	Herbicide dosage, /l/hà/	Average production, centner/hà	Increased crop production centner/hà
1	Control	-	15.2	-
2	Trimexa	15	16.1	0.9
3	Trimexa	20	16.2	1.0
4	Cliomex 300	0.5	16.0	0.8
5	Cliomex 300	0.6	16.7	1.5
6	Cliodmex plus	0.4	16.5	1.3
7	Cliodmex plus	0.5	17.0	0.9
8	Trimexa + Cliodimex plus	15+0.4	17.3	2.1

DISCUSSION

Broader use of specifically acting herbicides in the technology for improvement of minimum tillage technology, transition into zero tillage crop production system, and introduction of technology without chemical and mechanical tillage for controlling the weeds will assist to reduce the density of weeds and limit their numbers. Therefore international organizations authorize to ensure optimal management of chemical use worldwide and upgrade the controls of these chemicals for crop production development.

CONCLUSIONS

1. 71-121 individual weeds per 1m^2 in average, 19 species weeds, belonging to 15 genera of 10 families were recorded in fallow-wheat fields of Bornuursoum in Selenge aimag, and annuals, biennials and perennials account for 57.9%, 10.5% and 31.45% respectively of the weeds.
2. Use of herbicide Trimexa, Cliomex 300 and Trimexa + Cliodimex plus for controlling dicotiledonous weeds has 85-90.9% technical effectiveness, while use of Cliodmex plus for controlling grassy anuual weeds has 84.4-89.5% effectiveness.
3. The use of Trimexa herbicide against dicotyledonous weeds at the dosage of 15-20g/ha field decreased the number of weeds by 85-87.3%, increased crop production by 0.9-1.0 center, while use of Cliomex 300 at the dosage of 0.5-0.6 l per ha decreased weeds by 85.7-86.4% and increased crop by 0.8-1.5 centner. Variant using Cliodmex plus against grassy annual weeds at the dosage of 0.4-0.5 l/ha decreased weeds by 84.4-89.5% and increased crop production by 0.9-1.3 centner.

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