Volume 15(2), 231- 237, 2011
JOURNAL of Horticulture, Forestry and Biotechnology

Research on effective herbicides in combat weeds in the West country vineyards

Vior M.[1], Cârciu G.[1]

[1]Banat University of Agricultural Sciences and Veterinary Medicine Timişoara, Faculty of Horticulture and Forestry;

*Corresponding author. Email: vior_marius@yahoo.com

Abstract The purpose of this study was to determine the composition of weed flora of orchards and their chemical combat effectiveness through the application of herbicides. The research was conducted during the years 2009 and 2010 and had as its object of study and combat the spread of weed species in vineyards located in three separate locations: Growing Plantation Recaş, Didactic Station Timişoara and Growing Plantation Buziaş. Flora was predominantly composed of perennial plants in particular monocotyledonous and Agropyron repens, Cynodon dactylon latter holding the majority.
Agropyron repens is currently the highest weed spread in vineyards, followed by annual dicotyledonous species. Ensure the highest application rate of herbicides to combat weeds in particular by using high-spectrum herbicides such as Glyphogan, Roundup and Touchdown.

Key words

degree of weed, culture, vineyards, herbicides

Integrated control of weeds in vineyards is highly topical, given the continued reduction of the workforce involved in agriculture. Rapid proliferation of weed species propagated by vegetative buds on the rhizome or root should reduce mechanical works, chemicals for combating weeds, using herbicides.

Fighting weeds from growing crops is done by linking the chemical mechanical factors can thus ensure an effective fight against the spread.

Control of weeds in vineyards and is achieved by combining multiple diverse methods of fighting (1,2, 3, 4, 5, 6).

Material and Methods

The first site investigations were conducted Growing Plantation Recaş in Muscat of Hamburg grape variety, aged 9 years. This soil by its qualities provides good conditions for growth and development of vineyard plantations and environmental conditions are favorable for obtaining quality wines. In the second site investigations were carried out at the Station Timişoara Teaching large variety Burgundy.

Soil that were placed environmental experience is mold decarbonizes, glide weak-clay loam / clay-salty, located on lassoed deposits, with a humus content of 13,6%, moderately supplied with phosphorus, well supplied with potassium and a neutral reaction in the first 50 cm.

In the third place given the experience was located in an old private plantation located in the town five years Buziaş. Existing apple variety is the Pinot noir. The soil surface has a medium texture (loam and sandy, dusty, dusty clay-clay), with a high percentage of coarse sand and profile, medium-fine (clay-clay) and fine (clay-clay).

Type experiments were conducted in the field after sitting manufactories randomized block method with four repetitions and seven variants, 1 – not manual worked, 2 - Roundup (3 l / ha), 3-Gliphogan 480 SL (4 l / ha), 4 - Fusilade Super (1,5 kg / ha), 5 - Touchdown system 4 (4,5 l / ha), 6 - Gallant Super (1,5 l / ha), 7 - Basta (4 l / ha)

In all three locations herbicides were applied on the rows of vines, in strips of 60 cm wide, totaling approx. 0, 3 ha. Their implementation was done manually using the spraying device type Vermorel; 400l solution calculated using the total area per hectare.

Determining the number of weeds was done by quantitative numerical method (3) and statistical processing experimental data was done by analysis of variance (7).

Results

Principles with the research objectives is to determine the floristic composition of weeds in vineyard plantings in the western part of the country and combat effectiveness of chemical weed species generally weed problem in large numbers on such land.

The thermal regime of the years 2009 and 2010 was generally normal in the study area. Analyzing the floristic composition of weed found in the Vineyards Recaş in 2009 observed that the plants which hold the largest share are Agropyron repens (74,4) and Cynodon dactylon (11,00). Thus monocots have a share of 87, 07% (Table 1).

Table 1

Floristic composition of weed species in a vineyard in 2009 Recaş

Number	Weed Species	Number of weeds/ m^2	The degree of participation
1	Agropyron repens	311	74,40
2	Cynodon dactylon	46	11,00
3	Cirsium arvense	18	4,300
4	Stellaria media	16	3,82
5	Convolvurus arvensis	9	2,15
6	Sorghum halepense	7	1,67
7	Amaranthus retroflexus	4	0,95
8	Chenopodium album	3	0,71
9	Equisetum arvense	2	1,35
10	Solanum nigrum	2	1,35
Total		418	100,00

Dicotyledonous plants have the highest level of participation were Cirsium arvense and Star media (Table 1)

The degree of weed in 2009 ranged between 60, 33 when applied herbicide Gallant Super (1,5 l / ha) and 80,35 in the version that was used herbicide Fusilade Super (1,5 kg / ha) . All herbicides used have led to very significant values compared against the control (Table 2).

Table 2

The degree of weed control in plantation Recas wine in 2009 after herbicide application

Variant	Number of weeds irrefutable	Number of weeds fought	The degree of control	Significance of difference
Unfertilized	378	witness	0	-
Roundup(3 l/ha)	94,19	283,81	75,08	xxx
Glyphogan 480 SL (4 l/ha)	107,12	270,88	71,66	xxx
Fusilade super(1,5kg/ha)	74,26	303,74	80,35	xxx
Touchdown system 4 (4,5 l/ha)	85,31	292,69	77,43	xxx
Gallant super (1,5 l/ha)	89,92	288,08	60,33	xxx

DL 5% = 1,35 weeds/ m^2 DL 1% = 2,61 weeds/ m^2 DL 0,1% = 4,16 weeds/ m^2

In 2010, the flora was represented mainly by increasing monocotyledonous perennial plant of which the highest rate of participation were Agropyron repens (68, 67) and Cinodon dactylon (14, 78) (Tab. 3).

Table 3

Floristic composition of weed species in a vineyard in 2010 Recaş

Number	Weed Species	Number of weeds/ m^2	The degree of participation
1	Agropyron repens	274	68,67
2	Cynodon dactylon	59	14,78
3	Cirsium arvense	23	5,76
4	Convolvurus arvensis	14	3,50
5	Stellaria media	11	2,75
6	Sorghum halepense	9	2,25
7	Amaranthus retroflexus	3	0,75
8	Chenopodium album	3	0,75
9	Solanum nigrum	2	0,50
10	Equisetum arvense	1	0,25
Total		399	100,00

Table 4

The degree of weed control in plantation growing following erbicidării Recas 2010

Variant	Number of weeds irrefutable	Number of weeds fought	The degree of control	Significance of difference
Unfertilized	447	witness	0	-
Roundup(3 l/ha)	106,03	340,97	76,27	xxx
Glyphogan 480 SL (4 l/ha)	98,88	348,12	77,87	xxx
Fusilade super(1,5kg/ha)	116,97	330,03	73,83	xxx
Touchdown system 4 (4,5 l/ha)	121,73	325,27	72,75	xxx
Gallant super (1,5 l/ha)	143,15	303,85	67,97	xxx

DL 5% = 1,35 weeds/ m^2 DL 1% = 2,61 weeds/ m^2 DL 0,1% = 4,16 weeds/ m^2

Herbicides applied in 2010 had a control rate ranging from 67,97 when it was used herbicide Gallant Super (1,5 l / ha) and when to use Glyphogan 77,87 480 SL (4 l / ha).

Monocots are 62, 73% and 37, 27% plants dicotyledonous (Fig.5). Floristic composition of the Didactic Station Timişoara is made up of eight species, three Ditrău they are perennial monocotyledonous and five dicotyledonous being (Table 5). Dicotyledonous although in small numbers are represented by Convolvurus arvensis and Stellaria media which holds the smallest share (Table 5).

Table 5

Floristic composition of weed species in a vineyard plantation growing gallery in 2009

Number	Weed Species	Number of weeds/ m^2	The degree of participation
1	Agropyron repens	215	44,14
2	Cynodon dactylon	142	29,15
3	Sorghum halepense	46	9,44
4	Convolvurus arvensis	27	5,54
5	Stellaria media	22	4,51
6	Amaranthus retroflexus	17	3,49
7	Chenopodium album	11	2,25
8	Cirsium arvense	7	1,43
Total		487	100,00

Applying the herbicide to reach a high of 80.79 against the system when using herbicide Touchdown 4 (4.5 l / ha) and only 68.24 when using super Gallant herbicide (1.5 l / ha) (Tab. 6).

Table 6

The degree of weed control in plantation growing gallery in 2009 after herbicide application

Variant	Number of weeds irrefutable	Number of weeds fought	The degree of control	Significance of difference
Unfertilized	487	witness	0	-
Roundup(3 l/ha)	105,72	381,28	78,29	xxx
Glyphogan 480 SL (4 l/ha)	137,04	349,96	71,86	xxx
Fusilade super(1,5kg/ha)	128,11	358,89	73,69	xxx
Touchdown system 4 (4,5 l/ha)	93,54	393,46	80,79	Xxx
Gallant super (1,5 l/ha)	154,66	332,34	68,24	Xxx

DL 5% = 1,35 weeds/ m^2 DL 1% = 2,61 weeds/ m^2 DL 0,1% = 4,16 weeds/ m^2

Table 7

Floristic composition of weed species in Timişoara Vineyards 2010

Number	Weed Species	Number of weeds/ m^2	The degree of participation
1	Agropyron repens	284	54.61
2	Cynodon dactylon	113	21,73
3	Sorghum halepense	53	10,19
4	Amaranthus retroflexus	19	3,65
5	Stellaria media	17	3,26
6	Cirsium arvense	13	2,50
7	Chenopodium album	12	2,30
8	Convolvurus arvensis	9	1,73
Total		520	100,00

In 2010 recorded values are not much different from 2009, but higher number of plants growing at 399-487 per m2. And this time hold most monocotyledonous plants pondered, as shown in Table 7. After applying herbicides performed best against a Glyphogan 480 SL herbicide (4 l / ha) with a control of 74, 72 percent while the lowest rate of fighting is done Fusilade super herbicide (1, 5 kg / ha) combating only 65, 27 of super weeds, followed by Gallant (1, 5 l / ha) with a control rate of 66, 42% (Table 8).

Table 8

The degree of weed control in plantation growing gallery after herbicide application in 2010

Variant	Number of weeds irrefutable	Number of weeds fought	The degree of control	Significance of difference
Unfertilized	502	witness	0	-
Roundup(3 l/ha)	154,18	347,82	69,28	Xxx
Glyphogan 480 SL (4 l/ha)	126,88	375,12	74,72	Xxx
Fusilade super(1,5kg/ha)	176,31	327,69	65,27	Xxx
Touchdown system 4 (4,5 l/ha)	131,87	370,13	73,73	Xxx
Gallant super (1,5 l/ha)	168,54	333,46	66,42	Xxx

DL 5% = 1,35 weeds/ m^2 DL 1% = 2,61 weeds/ m^2 DL 0,1% = 4,16 weeds/ m^2

Table 9

Floristic composition of weed species in 2009 Buzias Vineyards

Number	Weed Species	Number of weeds/ m^2	The degree of participation
1	Agropyron repens	194	51,32
2	Cynodon dactylon	65	17,19
3	Veronica hederifolia	41	10,84
4	Convolvurus arvensis	36	9,52
5	Stellaria media	34	8,99
6	Amaranthus retroflexus	11	2,91
7	Sorghum halepense	11	2,91
8	Cirsium arvense	9	2,38
9	Cardaria draba	7	1,85
10	Chenopodium album	7	1,85
11	Echinochloa crus galli	5	1,32
12	Equisetum arvense	2	0,52
13	Solanum nigrum	1	0,26
Total		378	100

In Buziaş location can be seen that the number of species is higher than in other places to locate their experiences, which shot 13 in 2009 and 12 in 2010 (Table 9, 11). In 2009 Agropyron repens has a weight of 51,32 percent followed by Cynodon dactylon with a participation rate of 17,19. At the opposite end stands Solanum nigrum with a share of 0,26 percent and Equisetum arvense with the participation of 0.52% (tab.9). The species with the highest degree of participation (Agropyron repens and Cynodon dactylon) have a weight of 68,51 which is apparent from Table 9.

Table 10

The degree of weed control in plantation Buzias wine in 2009 after herbicide application

Variant	Number of weeds irrefutable	Number of weeds fought	The degree of control	Significance of difference
Unfertilized	418	witness	0	-
Roundup(3 l/ha)	92,17	325,83	77,94	xxx
Glyphogan 480 SL (4 l/ha)	86,31	331,69	79,35	xxx
Fusilade super(1,5kg/ha)	102,85	315,15	75,39	xxx
Touchdown system 4 (4,5 l/ha)	73,91	344,09	83,31	xxx
Gallant super (1,5 l/ha)	59,43	358,37	85,73	xxx
Basta (4 l/ha)	88,71	329,29	78,77	xxx

DL 5% = 1,35 weeds/ m^2 DL 1% = 2,61 weeds/ m^2 DL 0,1% = 4,16 weeds/ m^2

The degree of weed in 2009 ranged between 75.39 when applied herbicide Fusilade Super (1.5 kg / ha) and 85.73 in the version that was used herbicide Gallant Super (1.5 l / ha). All herbicides used have led to very significant values compared against the control (Table 10).

Table 11

Floristic composition of weed species in 2010 Buzias Vineyards

Number	Weed Species	Number of / m^2	The degree of participation
1	Agropyron repens	237	53,02
2	Cynodon dactylon	53	11,85
3	Convolvurus arvensis	38	8,50
4	Veronica hederifolia	36	8,05
5	Stellaria media	34	7,60
6	Amaranthus retroflexus	17	3,80
7	Cirsium arvense	13	2,90
8	Chenopodium album	9	2,00
9	Cardaria draba	8	1,78
10	Sorghum halepense	5	1,11
11	Echinochloa crus galli	5	1,11
12	Solanum nigrum	2	0,44
Total		447	100,00

And in 2010 dominant are represented of monocotyledonous weeds, Agropyron repens being found in 53,02% and the proportion of Cynodon dactylon rate of 11,85%. Smallest percentage of participation we have Echinochloa crus galli with a participation of 1, 11 and Solanum nigrum with a participation of 0,44 (Table 11).

Table 12

The degree of weed control in vineyard plantation after herbicide application Buzias 2010

Variant	Number of weeds irrefutable	Number of weeds fought	The degree of control	Significance of difference
Unfertilized	399	witness	0	-
Roundup(3 l/ha)	97,34	301,66	75,6	xxx
Glyphogan 480 SL (4 l/ha)	105,65	293,35	73,52	xxx
Fusilade super(1,5kg/ha)	81,53	317,45	79,56	xxx
Touchdown system 4 (4,5 l/ha)	69,71	329,29	82,52	xxx
Gallant super (1,5 l/ha)	92,19	306,81	76,89	xxx

DL 5% = 1,35 weeds/ m^2 DL 1% = 2,61 weeds/ m^2 DL 0,1% = 4,16 weeds/ m^2

Herbicides applied in 2010 had a control rate ranging from 73,52 when the herbicide was used Glyphogan 480 SL (4 l / ha) and 82,52 when the system was used Touchdown 4 (4,5 l / ha). All variants present significant differences compared to controls (Table 12).

Conclusions

1. Monocotyledonous weeds were the perennial: Agropyron repens with the highest rate of participation, followed by Cynodon dactylon
2. Herbicides Gallant Super (1, 5 l / ha) and Touchdown 4 system (4, 5 l / ha) to have the best weed exceeding 80%.Dicotyledonous
3. Weeds smaller percentage found in the floristic composition range when weeds exceed 80% of total monocots.
4. Monocotyledonous perennial species with high growth rate and development and because of the difficulty of combating the problem are considered weeds orchards.

References

1. Carciu Gh.,2003 –Agrotehnică, Editura Agroprint Timişoara
2. Carciu Gh.,2004 –Agrotehnică şi herbologie, Editura Eurobit Timişoara.
3. Lăzureanu A., Văcaru Lia, Rusu I., Gheran I., Cârciu Gh., 1991 - Lucrări practice de Agrotehnică, U.S.A.M.V.B. Timişoara SC Helicon Banat SA Timişoara.
4. Lăzureanu A., Văcaru Lia, Rusu I., Borza I., Cârciu Gh., 1993 - Agrotehnica, U.S.A.M.V.B Timişoara S.C Helicon Banat SA Timişoara,
5. Lăzureanu A., 1994 - Agrotehnica, Editura SC Helicon Banat SA Timişoara.
6. Săulescu N., Săulescu N.A. 1967 - Câmpul de experienţă, Editura Agrosilvică, Bucureşti.
7.Ciulca, S., 2002 - Tehnica experimentală. Editura Mirton, Timişoara.