ASPECTS OF MECHANIZATION POSSIBILITIES OF WEEDING WORKS IN RESINOUSE CROPS

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Abstract

Obtaining valuable stands involves applying the appropriate time and with discernment the cultivation of forest crops. Works to remove herbaceous and woody vegetation in crops invasion forest, being correlated with vegetation conditions and that the composition of regeneration is interventions. In crops of resin uses species are the invasion species of herbaceous and woody species belonging to that pioneer vegetation. Use Stihl FS 300 moto-tool for realization the works of weeding modernization is a possibility to optimize achievement and thus these interventions. Realizing mechanized works of weeding in resin uses stands has several advantages as a result thereof should apply in all situations where vegetation and terrain conditions require.

Key words: Forest crops, resinous crops, invasion vegetation, vegetation conditions, consumption fuel, consumption lubrification.

INTRODUCTION

Timely application of maintenance works of forest crops is a reliable means of ensuring the realization that the composition and regeneration of close crop in a relatively short period of time.

Weeding works apply to forest crops, before the conclusion of solid state and consists of removing the herbaceous cover, under shrubs, shrubs, shoots and root-shoots around the seedling main species to warn their shading and even stifled.

Timely execution of these works is very important especially in the main crop species that do not support shading.

MATERIAL AND METHODS

The case study was realized in U.B. V Mărgău, u.a. 34 C, from the Forest District Mărgău R.A, in a crop of spruce (Picea abies) in the age of five years, an average slope of 280 on an area of 2.0 ha.

The work weeding was realized with motorized mechanized tool STIHL FS 300, using the method for determining the fullness of fuel and lubricant consumption.

Diameter of the copies which were weeding was determined by sliding calipers on the collar.

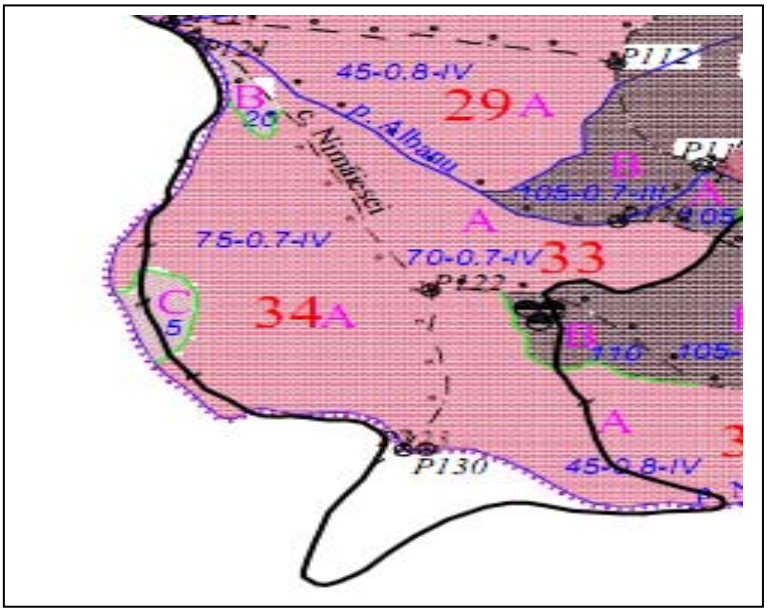

Fig. 1. Location sketch of the stand from u.a.34C

Table 1

Data on the stand where was realised the case study

Forest District Măgura R.A. – U.B. V Mărgău						
u.a.	**S(ha)**	**T(year)**	**CLP**	**K**	**Composition**	**Slope**
0	***1***	***2***	***3***	***4***	***5***	***6***
0	1	2	3	4	5	6
34C	2.0	5	II	1	10Mo	22[g]

Fig. 2. Copies of the spruce species with are invasion by herbaceous vegetation in the stand of u.a. 34 C, requiring the application of removal works invasion vegetation

Fig. 3. Copies of the spruce species with are invasion by herbaceous vegetation in the stand of u.a. 34 C, requiring the application of removal works invasion vegetation

RESULTS AND DISCUSSION

After browsing the weeding work of the stand in the u.a. 34 C was obtained a number of technical data regarding features of the works and respectively the consumption of fuel and lubricants.

Table 2 presents the total number of copies of spruce species which were weeding and respectively the diameter of their collar.

Table 2

Number of pieces weeding motorized tool STIHL FS 300

No.	**Specie**	**Diameter of the collar of weeding copie (cm)**	**The total number of weeding copies (pieces)**
0	***1***	***2***	***3***
1	Spruce	1	38
2	Spruce	1.1	50
3	Spruce	1.2	409
4	Spruce	1.3	425
5	Spruce	1.4	34
6	Spruce	1.7	5
Total			961

The analysis of data from Table 1 and histogram corresponding Figure 3 is noted that ponderability weeding copies belongs to the categories of diameter 1,1 and respectively 1,2 cm.

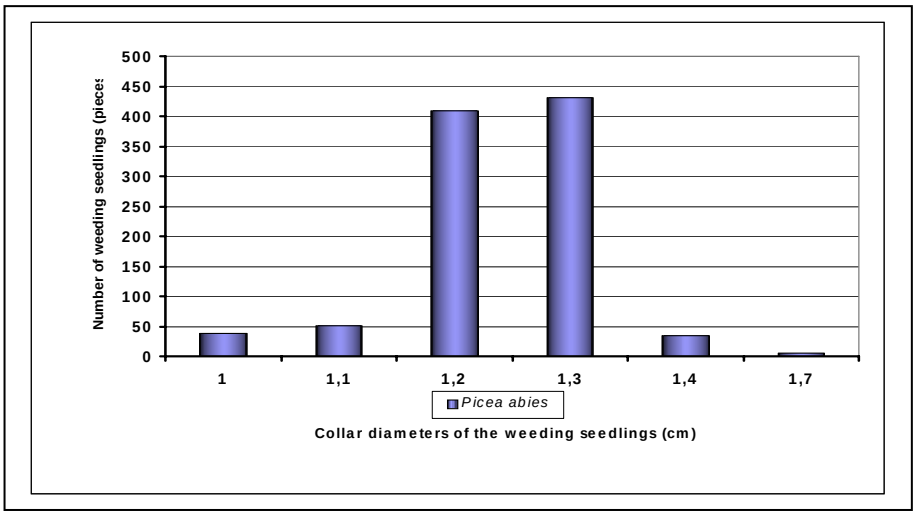

Fig. 4. Number distribution of weeding pieces of diameters category from the spruce species in the realized works from the Forest District Mărgău, the U.B. V Mărgău, u.a. 34C

Table 3 presents the data regarding the achievement time of the weeding work and respectively the degree of invasion.

Table 3

The influence of degree invasion above trim out times

No.	Specie	Invasion degree of seedling (%)	Trim out time around the seedling (hours)	Number of invasion copies related to the invasion degree (pieces)	Trim out time related to the number of copies from the invasion degree (hours)
0	***1***	***2***	***3***	***4***	***5***
1	Spruce	15	00.0026	1	00.0026
2	Spruce	20	00.0039	9	00.0551
3	Spruce	25	00.0047	26	00.2022
4	Spruce	30	00.0055	106	01.3710
5	Spruce	35	00.0104	111	01.5824
6	Spruce	40	00.0113	422	08.3326
7	Spruce	45	00.0121	185	04.0945
8	Spruce	50	00.0130	70	01.4500
9	Spruce	55	00.0138	28	00.4544
10	Spruce	60	00.0145	7	00.1215
Total				**965**	**19.2823**

Trim out time of the herbaceous vegetation was determined according to the degree invasion the seedlings of spruce species, obtain a total trim out time of 19 hours, 28 minutes and 23 seconds for all the study stand.

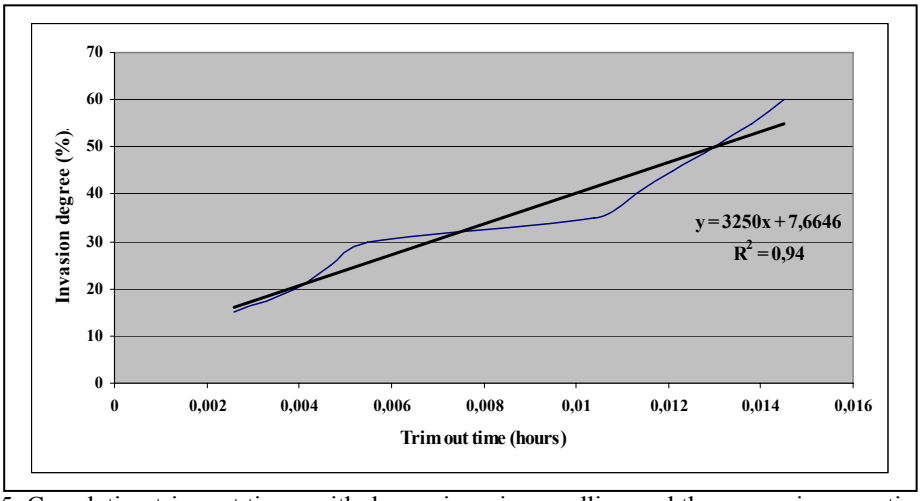

Fig. 5. Correlation trim out times with degree invasion seedling and the regression equation related to weeding works carried out at the Forest District Mărgău R.A., the U.B. V Mărgău, u.a. 34C

By analyzing the data in Table 3 and the analysis shows a diagram of Fig. 5 it is observed direct correlation between the trim out time and respectively the invasion degree of the copies, underline aspect by the regression equation and respectively the coefficient of determination.

As a result, they note that during the removal of herbaceous invasion vegetation around the copies runned with work of weeding is directly correlated with the invasion degree, an aspect which has direct influence on the norm time and implicitly affect on the hourly rate for respective work.

Table 4 presents the data related to fuel consumption (gasoline) of moto-tool STIHL FS-300 with which the work was done, the invasion degree of weeding copies.

Was constated the fact that for the weeding of a number of 965 copies from the spruce species, in the stand from u.a. 34 C has been recorded a fuel consumption of 5.592 liters?

And in this situation is observed a close correlation between the invasion degree and respectively that fuel consumption, aspect that can be observed from the data in Table 4 and the diagram in Fig. 6.

Table 4

Inventory data regarding on fuel consumption depending on the invasion degree of copies from spruce species were weeding

No.	Specie	The invasion degree of the copie (%)	Fuel consumption/invasion degree (litres)	Number of invasion copies related to the invasion degree (pieces)	Fuel consumption related to the number of copies from the invasion degree (litres)
0	***1***	***2***	***3***	***4***	***5***
1	Spruce	15	0.00208	1	0.002080
2	Spruce	21	0.00291	3	0.008736
3	Spruce	22	0.00305	1	0.003051
4	Spruce	23	0.00319	4	0.012758
5	Spruce	24	0.00333	1	0.003328
6	Spruce	25	0.00347	2	0.006934
7	Spruce	26	0.00361	1	0.003606
8	Spruce	27	0.00374	10	0.037442
9	Spruce	28	0.00388	10	0.038829
10	Spruce	29	0.00402	3	0.012065
11	Spruce	30	0.00416	17	0.070723
12	Spruce	31	0.00430	26	0.111771
13	Spruce	32	0.00444	23	0.102064
14	Spruce	33	0.00458	22	0.100677
15	Spruce	34	0.00471	18	0.084868
16	Spruce	35	0.00485	10	0.048536
17	Spruce	36	0.00499	16	0.079876
18	Spruce	37	0.00513	18	0.092356
19	Spruce	38	0.00527	32	0.168627
20	Spruce	39	0.00541	35	0.189289
21	Spruce	40	0.00555	92	0.510318
22	Spruce	41	0.00569	123	0.699330
23	Spruce	42	0.00582	87	0.506712
24	Spruce	43	0.00596	48	0.286222
25	Spruce	44	0.00610	72	0.439317
26	Spruce	45	0.00624	79	0.492984
27	Spruce	46	0.00638	18	0.114822
28	Spruce	47	0.00652	44	0.286776
29	Spruce	48	0.00666	34	0.226315
30	Spruce	49	0.00679	10	0.067950
31	Spruce	50	0.00693	15	0.104005
32	Spruce	51	0.00707	18	0.127302
33	Spruce	52	0.00721	17	0.122587
34	Spruce	53	0.00735	5	0.036748
35	Spruce	54	0.00749	15	0.112325
36	Spruce	55	0.00763	9	0.068643
37	Spruce	56	0.00777	1	0.007766
38	Spruce	57	0.00790	5	0.039522
39	Spruce	58	0.00804	7	0.056301
40	Spruce	59	0.00818	6	0.049090
41	Spruce	60	0.00832	3	0.024961
42	Spruce	61	0.00846	3	0.025377
43	Spruce	64	0.00888	1	0.008875
Total				**965**	**5.591864**

Regression equation and respectively the coefficient of determination due show that between the invasion degree and fuel consumption is a direct connection - Fig. 6.

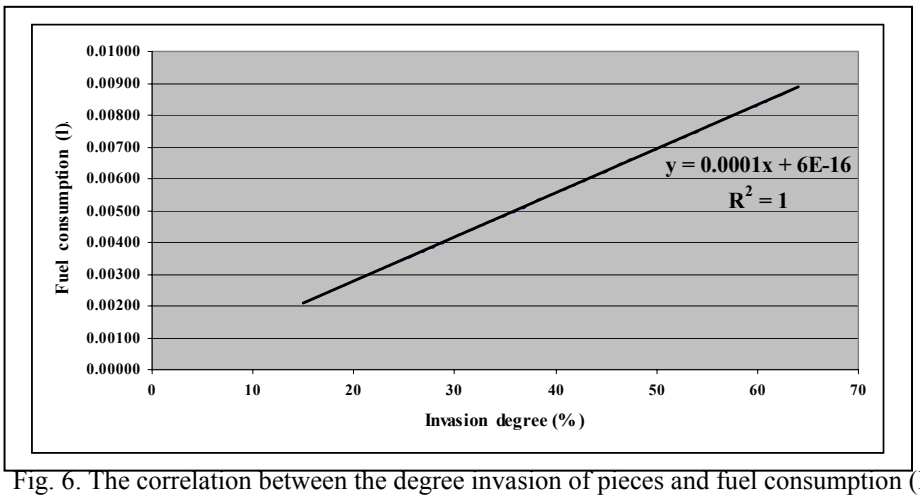

Fig. 6. The correlation between the degree invasion of pieces and fuel consumption (liters) for weeding works carried out in crops spruce from the Forest District Mărgău R.A., the U.B. V Mărgău, u.a. 34C

In fig.7 is presented the correlation between the oil consumption and respectively the invasion degree of the studied copies.

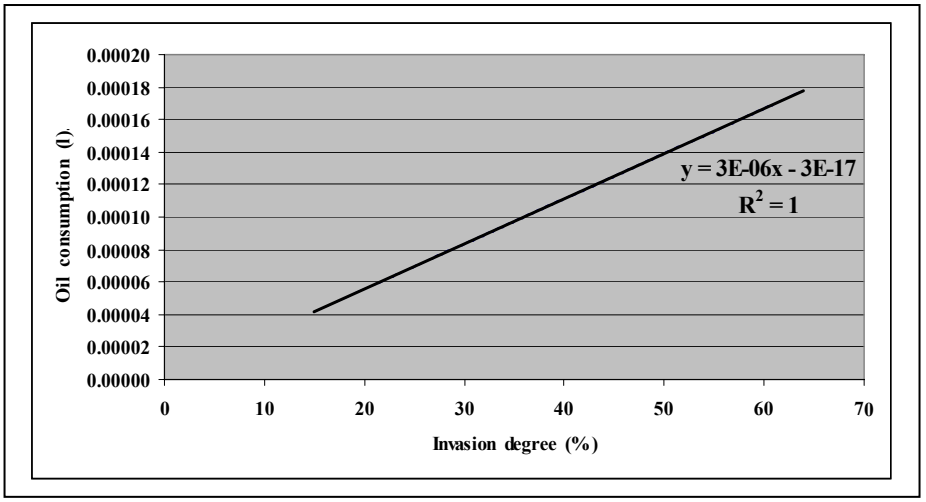

Fig. 7. The correlation between the invasion degree of pieces and 1:50 (liters) STIHL oil consumption for weeding works carried out in crop spruce from the Forest District Mărgău R.A., the U.B. V Mărgău, u.a. 34C

The relation between the invasion degree and respectively fuel and lubricant consumption represent an important element to establish different fuel-oil consumption, depending on the stand and respectively on specific working conditions, an aspect that presents a special importance in current practical activities related to forest crop.

CONCLUSIONS

Realizing a mechanized removal work of invasion herbaceous vegetation from the resinous forest crop represent a certain possibility of optimize the cultivation forest crop with implication on the period of achievement massif stage.

The invasion degree represents the main criterion for the achievement of the intervention, so what regarding the time needed to realized the work and the consumption of fuel and oil.

Also, the financial effort to achieve mechanized work weeding is directly correlated with the invasion degree of copies.

A decisive influence on the invasion degree have fitoclimatic storey and respectively vegetation conditions related to the studied stand, in this case stand of spruce species of the u.a. 34B.

To may propose technical norms relating to norm time and respectively fuel-oil consumption that are necessary series observation are complete, which should capture all aspects of storey vegetation and vegetation conditions for crops which is the object of cultivation.

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