INFLUENCE OF SOWING TIME ON ASPECTS OF PRODUCTIVITY IN A FEW LINES OF SAFFLOWER (CARTHAMUS TINCTORIUS L.) IN CLIMATIC CONDITIONS IN TIMIŞOARA

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Abstract: *Safflower was grown for its flowers, used for coloring and flavoring. Safflower name derives from the fact that it was cultivated as a cheaper alternative to saffron. This content carthamin because flowers, like saffron. Safflower flowers have a calming qualities of cough. Pigments from safflower flowers are particularly important because they leave no toxic residues colored products. Pigments which are synthesized in roots during vegetation migrate through tissues leading the petals. Carthamina is one of the most valuable non-toxic compounds used in the food or in the textile industry. The seeds are used to treat tumors, especially those located in the liver. Flowers are considered laxative properties, sedative, and is used to treat scarlet fever. Indicated that safflower oil is widely used in pharmaceutical industry and antirheumatism detention purgative effect, not oil in the diet increases the amount of cholesterol in the blood. The oil is used as a remedy for rheumatic pains.Chinese medicine recommends seeds to treat dysmenorrhea in women, they having an astringent effect on the uterus. Outside the fatty acid content of 32-40% and a percentage seeds contain 11-17% protein and 4-7% wate. To emphasise the yielding capacity of some new lines of safflower (Carthamus tinctorius L.) under study, we organised, in 2012, a bi-factorial experiment in which experimental factors were as follows: Factor A – sowing time - 1st time* ***MARCH*** *- 2nd time* ***APRIL****; Factor B – safflower lines T 9, T 10, T 33, T 40 short line. The experiment was set after the randomised block method. The experimental variants were set with three replications with randomisation of the Factor B (safflower lines). Research has shown the influence of planting dates on productivity elements obtained from testing of new lines of safflower.To achieve the objectives of the research were used 4 lines of safflower obtained by individual selection from a population of Timisoara.*

Key word: *safflower, lines, yield, sowing dates*

INTRODUCTION

Safflower (Carthamus tinctorius L.) is important as oil plant in Asia, North and Central America and in dry areas with poor soils. Due to its rich fruit oil: 30-35% was introduced in our country in human nutrition, dietetics and food but reducing the amount of cholesterol in the blood. The fruits and flowers are also used in medicine since they have hydrogogue purging and anticough properties. Due to the content of pigments in the petals (20% yellow pigments and 0.5% red pigments), they can be used to produce natural colouring agents for the food, textile, pharmaceutical, and cosmetics industry.

MATERIALS AND METHODS

Experimental field was located on a wet soil type mold bill (Gleize weak), weak decarbonat on lösoide deposits, clay argilo-prăfos/luto-argilos.

Experience has been placed in the field after bifactorială method in which experimental factors were:

Factor A – sowing time - 1st time ***MARCH*** - 2nd time ***APRIL***

Factor B – safflower lines - T 9, T 10, T 33, T 40 short.

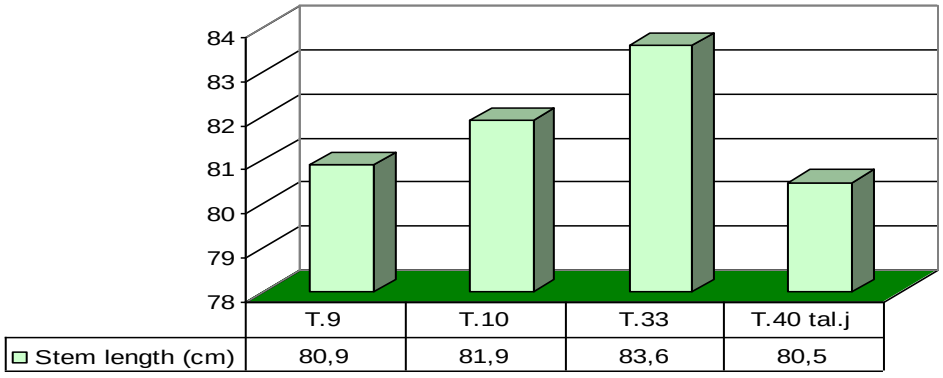
Settlement field experience was the method blocks with plots randomized.

Experimental variants were placed in three repetitions with randomisation factor B (safflower lines).

Production results were calculated and interpreted by analysis of variance method and the biometric features were calculated and interpreted by the method of variation of the string. Except when sowing which was established in factor experienced safflower technology applied to culture was the high culture specific. Plant prior to culture was safflower winter wheat. Fertilization culture was made using complex fertilizers such N15P15K15 the amount of 450 kg / ha complex which meant 70 kg / ha to of each N, P and K. Basic plowing to 20-22 cm depth was performed.

RESULTS AND DISCUSSION

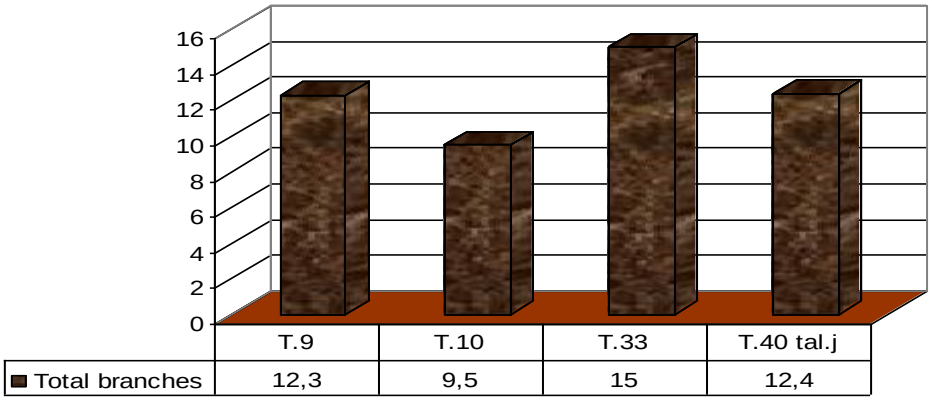
Results are presented of measurements of the safflower plant sown in March and April of 2012. For the determination used were 10 plants to which the measurements were made on the plant length, number of total branches, inflorescence diameter and mass achenes.Yields were obtained by harvesting the two epochs. Highest production was recorded at 1st time. Obtained at each post-harvest production was cleaned of impurities and eighed. Calculation and the result was interpretation variance analysis method (N.N. Saulescu 1967). Biometric measurements derived from plants of safflower crops sown in March 2012The analysis of the chart and the results obtained from the analysis of variation sequences are found: the average length of stems, safflower lines studied is located between 80.5 cm tj line T40., And 83.6 cm from the line T33.In all lines of safflower planted in March 2012 under the average length of the stem, exceeds the T9 line.This shows that in terms of seeding in March, safflower lines better use optimal growth conditions. Line behavior in terms of average length of the stem plants very well and clear graphic representation.



	T.9	T.10	T.33	T.40 tal.j
X	80,9	81,9	83,6	80,5
S^2	78,89	64,29	48,84	49,85
S	8,88	8,02	6,99	7,06
Sx	0,89	0,80	0,70	0,71
S%	10,98	9,79	8,36	8,77

Figure 1.Changes in average length from the strains of safflower crops sown in March of 2012 in terms of Timisoara

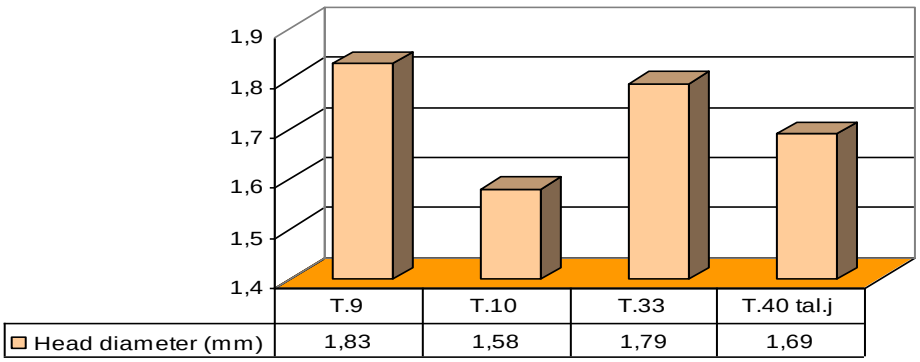
The average total number of branches per plant is shown in figure 2. From the results obtained from the analysis of variance string whose average values are plotted shows that the majority of those lines studied a degree of branching higher than that of the line T9. The coefficient of variation is high and indicates a character with a high degree of instability in most lines studied. It is possible that these higher values of coefficient of variation given to the purpose and the small number of rows of plants in various forms in each of the following study.



	T.9	T.10	T.33	T.40 tal.j
X	12,3	9,5	15	12,4
S^2	10,21	12,65	94,2	16,24
S	3,2	3,56	9,71	4,03
Sx	0,32	0,36	0,97	0,40
S%	26,02	37,47	64,73	32,50

Figure 2. Variation of average total branch safflower plants derived from crops sown in March of 2012 in terms of Timisoara

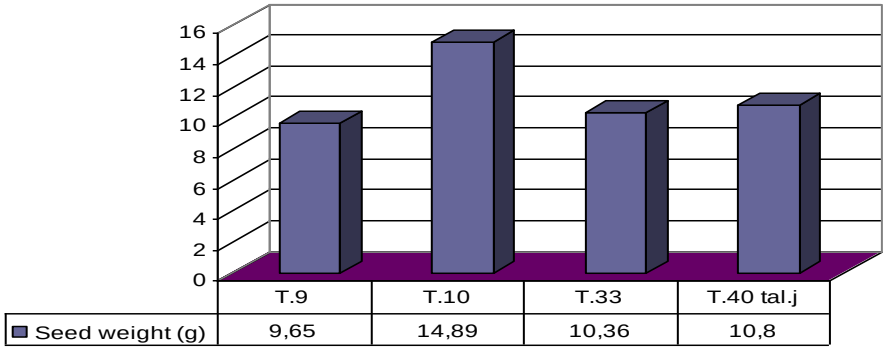
In Figure 3. are the average values obtained head diameter was noted at the 4 sowing safflower cultivation in conditions of March of 2012 in Timisoara. Analysis of the average values of character "head diameter" shows that the vast majority of new lines of safflower introduced in the study have a diameter ranged from 1.58 to 1.93 mm The coefficient of variation is low indicating the character set for all cultivars studied. The lowest values of the coefficient of variability is obtained from lines T10 - T40 1.58 mm and low waist (1.63 mm).



	T.9	T.10	T.33	T.40 tal.j
X	1,83	1,58	1,79	1,69
S^2	0,02	0,01	0,01	0,02
S	0,18	0,16	0,14	0,17
Sx	0,03	0,02	0,01	0,01
S%	10,20	9,70	8,58	8,72

Figure 3. Changes in the mean diameter calathidium the safflower plant derived from crops sown in March of 2012 in terms of Timisoara

The average weight of achenes per plant is shown in Figure 4. From the results obtained by calculating strings of variation is found that line T9 - 9.65 g, has the lowest weight of achenes, and is dwarfed by the other three lines (T10 - 14.89 g, T33 - 10.36 g, T40 low waist - 10.8 g). These values show a character with little stability.

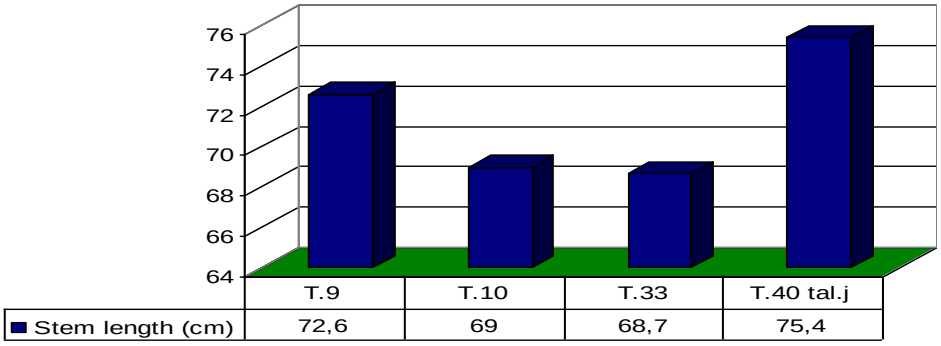


	T.9	T.10	T.33	T.40 tal.j
X	9,65	14,89	10,36	10,8
S^2	28,80	58,72	14,59	26,64
S	5,73	6,64	4,96	6,08
Sx	0,65	0,68	0,77	0,56
S%	55,76	45,06	39,89	55,50

Figure 4. Changes in average weight of achenes per plant in crops derived from safflower safflower sown in March of 2012 in terms of Timisoara

Biometric measurements of safflower plants in culture results achieved by sowing in April 2012

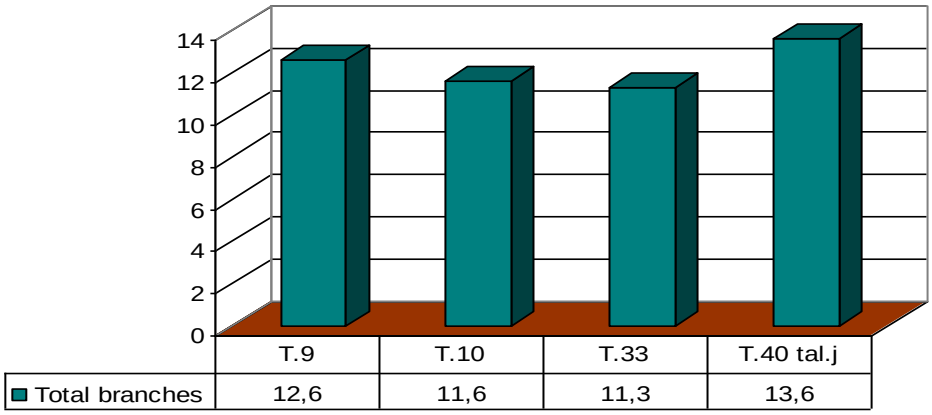
And safflower sowing in April 2012 biometric measurements were made on some characters safflower plant expressing both reaction conditions and vegetation productivity in touch with cultivars studied. The following measurements were obtained the following results. Results after determining the length of the 4 lines strains are represented in Figure 5. The results obtained from measurements of the variation sequences were obtained and the mean stem length of safflower plant. Graphical representation of stem length shows a high variability in the size of the character.



	T.9	T.10	T.33	T.40 tal.j
X	72,6	69	68,7	75,4
S^2	34,44	29,4	15,81	63,84
S	5,87	5,42	3,98	7,99
Sx	0,59	0,54	0,40	0,80
S%	8,09	7,86	5,79	10,60

Figure 5.Mean stem length of plants obtained safflower crops grown by sowing in April 2012

In Figure 6. are plotted, the average values of the average number of branches per plant safflower. The analysis of the average number of branches emphasize that safflower by sowing in April degree of branching (expressed in total number of branches per plant is higher than the one obtained by seeding safflower in March). It should be noted that the two branch lines in the plant where the average is more than 11 branches per plant. Analysis of the coefficient of variation shows that these lines are averages T33 - 11.3% and T40talie low - 13.6

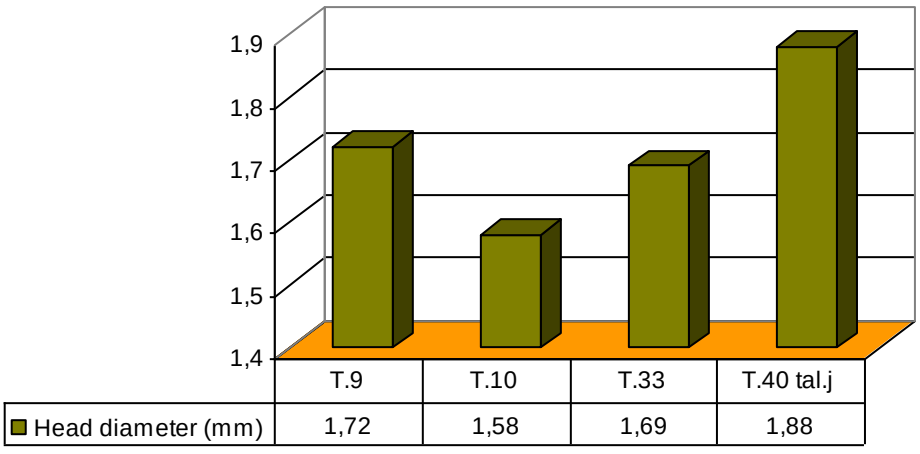


	T.9	T.10	T.33	T.40 tal.j
X	12,6	11,6	11,3	13,6
S^2	7,64	2,24	2,01	4,64
S	2,76	1,5	1,42	2,15
Sx	0,28	0,15	0,14	0,22
S%	21,90	12,93	12,57	15,81

Figure 6. Changes in the average number of total branches on the tree planting safflower in April of 2012 in terms of Timisoara

Values calatidiu average diameter of the safflower seed in April 2012 are shown in Figure 7. The average diameter of the lines analyzed calatidiului varies between 1.58 and 1.88 mm line T10 T40 low waist line.

Variability coefficient values show a character with average stability.

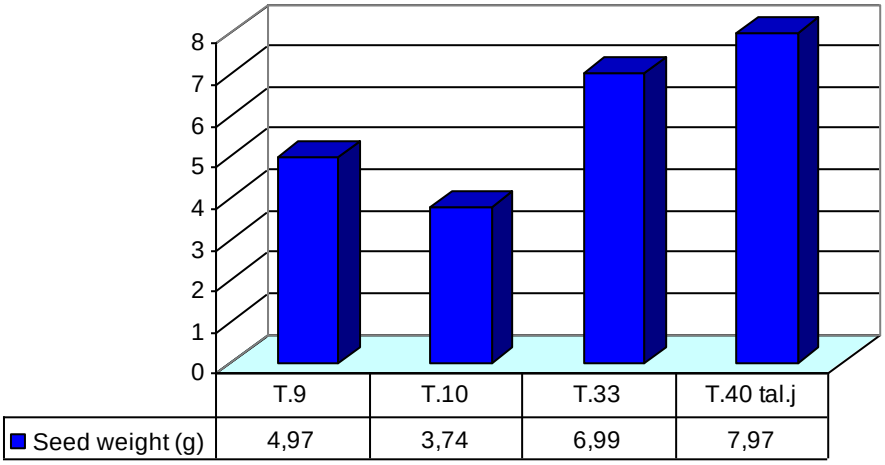


	T.9	T.10	T.33	T.40 tal.j
X	1,72	1,58	1,69	1,88
S^2	0 ,05	0,03	0,06	0,06

S	0,26	0,18	0,21	0,20
Sx	0,05	0,02	0,02	0,02
S%	13,73	13,82	14,78	11,93

Figure 7. Changes in the mean diameter of calathidium sown crops derived from safflower oil in April of 2012 in terms of Timisoara

The average weight of safflower achenes per plant is shown in Figure 8. In terms of weight per plant achenes lines studied had higher values in respect of this aspect of productivity.From the highest values of the average weight of achenes per plant is obtained at low waist lines T40 - 7.97 g, T33 - 6.99 g The character "weight of achenes per plant" is a low degree of stability.



	T.9	**T.10**	**T.33**	**T.40 tal.j**
X	4,97	3,74	6,99	7,97
S^2	6,28	11,87	13,34	17,77
S	2,79	1,67	3,98	4,46
Sx	0,28	0,33	0,36	0,42
S%	48,54	35,97	55,47	54,89

Figure 8. Changes in the mean weights per plant in safflower achenes sown in April of 2012 in terms of Timisoara

CONCLUSIONS

Results to production and other field and laboratory measurements allow us to formulate some conclusions. Biometric characters of safflower plants of different lines and analyze different variants depending on the time of sowing. In 2012 recorded the lowest average values of stem length from safflower seed in April. The degree of branching is achieved safflower plant with higher yields in March. The average diameter of calatidiului is dependent Drill (variety, line). The average weight of seeds per plant is a very important feature from research productivity.

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