



**ANTHER CULTURE RESPONSE IN WHEAT (*TRITICUM  
AESTIVUM* L.) VARIETIES AND HYBRIDS**  
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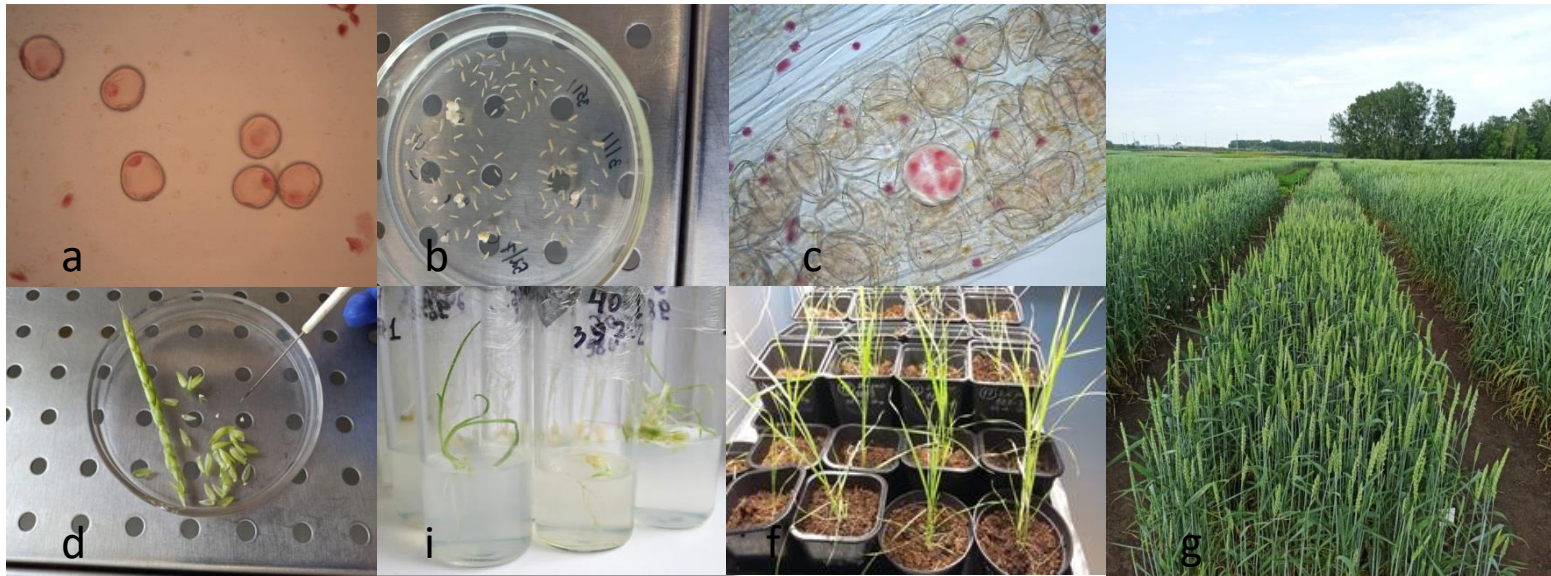
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# Materials and methods



- Two wheat varieties of Russian breeding (Obskay 2 and Novosibirskay 15 ) and their F1 and F2 progenies were used in this work.
- Donor plants were grown on the experimental field. Tillers were harvested when the majority of anthers in the spikes contained mostly mid to late uninucleate stage microspores (Fig. 1a). The stems were placed in beaker with distilled water and put in the dark at 4<sup>o</sup> C for 4 to 9 days. After cold pretreatment spikes were sterilized with 70% ethanol and placed in the sterile conditions of a laminar box. Anthers were transferred in 10 mm Petri dishes with 15ml induction medium (Fig. 1 b,d). For induction of pollen callus/ELS are used N6 medium with 55 g/l sucrose; 35 g/l maltose; 1 or 2 mg/l 2,4-D; 0,5mg/l kinetin; 100mg/l mio-Inositol; 6g/l agar. The anthers were incubated in the dark at 28<sup>o</sup> C. For the regeneration process the developed embryo-like structures (ELs) and callus were transferred to B5 medium with 30g/l sucrose, 5g/l agar and cultivated at 21<sup>o</sup>C , 16h of photoperiod for 3-4 weeks. Well-derived green plantlets were planted in growing pots and cultivated in the greenhouse (Fig. 1f).
- Efficiency of AC were analyzed according to the following parameters: number of productive anthers per 100 anthers (PA), number of callus/ ELSs per 100 anthers, green plants per 100 anthers (GP), albino plants per 100 anthers (AP) and number of total regenerated plants per 100 anthers (TR).
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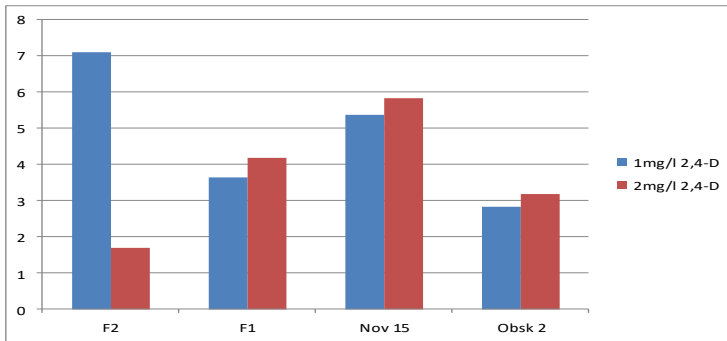
# Results

**Table 1.** Efficiency of anthers culture in wheat varieties Obskaya 2, Novosibirskaya 15 and their F1 and F2 hybrids

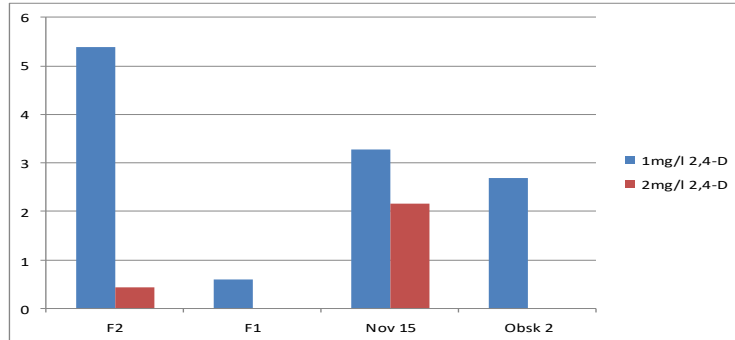
Genotype	Total number anthers	Number of productive anthers/100 anthers	Number of ELS/100 anthers	Number of all plantlets/100 anthers	Number of albino plants/100 anthers	Number of green plants/100 anthers
F2 (Ob2xN15)	1115	3,41 <sup>a</sup>	7,00 <sup>a</sup>	2,24 <sup>ab</sup>	1,70 <sup>ab</sup>	0,54 <sup>a</sup>
F1 (Ob2xN15)	499	3,81 <sup>a</sup>	5,21 <sup>a</sup>	0,40 <sup>b</sup>	0,20 <sup>b</sup>	0,20 <sup>a</sup>
Novosibirskaya 15	749	3,87 <sup>a</sup>	6,81 <sup>a</sup>	2,80 <sup>a</sup>	2,14 <sup>a</sup>	0,67 <sup>a</sup>
Obskaya 2	769	2,6 <sup>a</sup>	4,29 <sup>a</sup>	1,82 <sup>ab</sup>	1,56 <sup>ab</sup>	0,26 <sup>a</sup>
Mean	783	3,42	5,83	1,82	1,4	0,42
LSD 5%		1,32	2,93	2,30	1,88	0,5

# Results

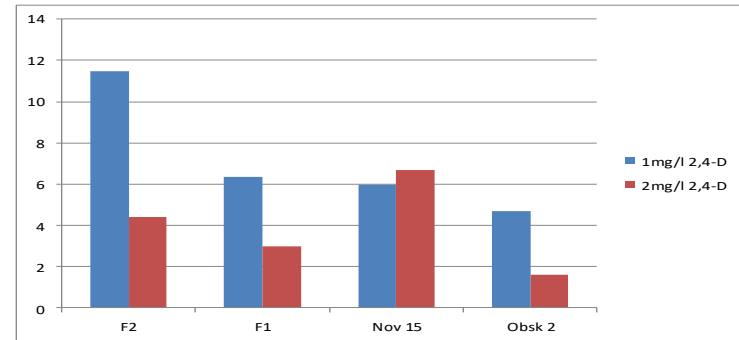
Influence concentration of the growth regulator 2,4-D to the anther culture parameters



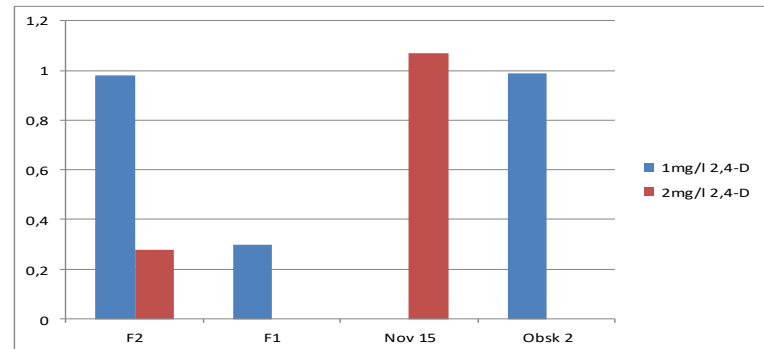
Productive anthers per 100 anthers (PA)



Total regenerated plants per 100 anthers (TP)



Callus/ ELSs per 100 anthers



Green plants per 100 anthers (GP)

# Results

- In Table 1 shows the results of anthers culture. For the Novosibirskaya 15 variety, there is a tendency for a higher anther culture response than for the second parental variety Obskaya 2. Thus, in Novosibirskaya 15, the number of PA, number of callus/ELs, TR and AP is about 1.5 times higher, and the value of GP exceed 2.5 times. The efficiency of anther culture of hybrid combinations was different; the parameters of F2 hybrids were like the higher parent, Novosibirskaya 15. The values of the traits F1 hybrid for callus/ ELs, AP, GP were lower than higher parent and F2 and were like the lower parent Obskaya 2. The TR and the AP indicated significant differences (at  $p < 0.05$ ) between F1 and Novosibirskaya 15.
- In this work was studied influence concentration of the growth regulator 2,4-D to the anther culture response (Fig. 2). Was found that number of productive anthers per 100 anthers (PA) were more on media with 2 mg/l 2,4-D for Novosibirskaya 15, Obskaya 2 and F1 hybrids, but for F2 more effective was 1 mg/l 2,4-D. Number callus/ELs and GP were more at concentration 1mg/l for Obskaya 2, F1 and F2, but for Novosibirskaya 15—2mg/l 2,4D. Total regenerated plants were more at 1 mg/l for all genotypes, green plantlets of Novosibirskaya 15 regenerated only 2 mg/l, all plantlets regenerated at 1mg/l were albinos.