

The application of the electroencephalograph for the measurements of changes of electric potential differences in plants

A. PASZEWSKI

I used Kaiser's Electroencephalograph (Copenhagen) for measuring change of differences of electric potentials in higher plants.

I suppose that the application of the electroencephalograph for research on higher plants could be interesting, as in the literature available to me I did not find measurements in the range of microvolts. Also the frequency can be more precisely tested. The amplification of the currents was 10⁷. The set has eight pairs of canals. Till this time I used only one pair of electrodes, but in future I intend to utilize all possibilities.

I used two platinum electrodes. At first I plugged them in the stem, later I hung them up on the plant. The set is joined to a writing-apparatus, which takes down automatically on a paper band the changes of potential differences and the frequencies of changes. The measurements were taken in a Faraday's cage. In this communication I state the result of the measurements of changes of potential differences and frequencies, which rose under the influence of several stimuli. For my experiments I used following plants: *Pelargonium zonale*, *Mimosa pudica*, *Avena sativa*.

I performed my investigations at a temperature of 18°C, and an airmoisture of 70%.

Plant Physiology Laboratory
Maria Curie-Skłodowska University
Lublin

LITERATURA

- Diannenleidis Th., Umrath K., 1953, Über das elektrische Potential und über den Erregungsvorgang bei dem Myxomyceten *Physarum polycephalum*. *Protoplasma*. Band XLII, Heft 3, 312—323.
Umrath Karl., 1956, Elektrophysiologische Phänomene. Handbuch der Pflanzenphysiologie. Band II. p. 747. Berlin.
Umrath Karl. p., 1959, Die Wirkung elektrischer Reize. Handbuch der Pflanzenphysiologie. Band XVII/1 p. 135. Berlin.

Table 1

Tablica 1

Stimulus and plant Budziec i roślina	Attachment of electrodes Przymocowanie elektrod	Fréquency Częstotliwość	Amplitude, microv Amplituda, mikrov	Remarks Uwagi
1. Tapping above the electrodes Uderzenie nad elektrodami Mimosa	Weak girdling of the stem with platinum electrodes in one in- ternode.Dist. 30 mm Lekkie ścinanie ko- wygi drutem platynowym w tym samym miedzynie- wężu.Odległość 30 mm	About 10 Okolo od	from 10 to 100 do	
2. A fly is wal- king on the leaf above the electrodes Chodzenie mu- chy po lisciu nad elektroda- mi Mimosa	v - u	About 2 Okolo	About 25 Okolo	
3. Piercing the stem with electrodes Przebicie w jednym miedzynie węgu. Odległość 25 mm Pelargonium	Piercing in one inter- node.Dist. 25 mm Przebicie w jednym miedzynie węgu. Odległość 25 mm Pelargonium	from 3 to 17 od 3 do 17	from 10 to 120 do	

Table 2 Tablica 2

Stimulus and plant	Attachment of electrodes	Frequenoy Częstotł	Amplitude, microV Amplituda, mikrov	Remarks Uwagi
Bodziec 1 rośliny	Przymocowanie elektrod			
4. Daylight	as number one 1 jak numer jeden 1	from 3 to 10 od 3 do 10	from 20 to 60 do do	The plant was etiolated, then exposed to daylight. The distance from the window 100 cm. The opening of the leaflets.
Swiatlo dzienne Mimosa				Rosliny zaciemiona, nastepnie osietlona swiatlem dzennym. Odelegosc od okna 100 cm. Otwieranie listkow.
5. Drops of ether	as number 1 jak numer 1		from 1 to 25 od 1 do 25	from 10 to 120 do do
on leafz Kropelki eteru na liści				
Pelargonium				
6. Watering of the soil with ether	as number 1 jak numer 1		about 0,5 okolo 0,5	from 20 to 120 do do
Polanie gleby eterem				
Pelargonium.				
7. A drop of IAA 50 p.p.	as number 1 dist.6 mm jak numer 1 od 1,6 mm		from 0,5 to 5 od 0,5 do 5	from 10 to 60 do do do do
on decapitated Avena coleopti- le				I did not succeed in repeating the experiment Nie udalo się powtorzyć doświadczenia.
Eropla IAA 50 p.p. na de- kapitowane kore- optile owsa				





