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EFFECT OF CYCLACHAENA XANTHIIFOLIA (NUTT.) FRESEN. EXTRACT ON THE GROWTH AND DEVELOPMENT OF THE ROOTS OF ALLIUM CEPA L.

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Fig. 1 Cyclahena - object of study

Fig. 5 Results of the growth of the onion on a high concentration cyclahen with addition of potassium bichromate

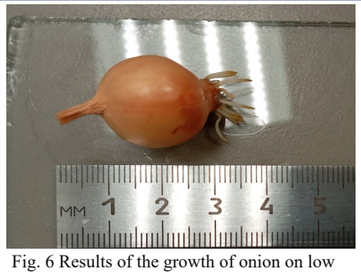

Fig. 6 Results of the growth of onion on low concentration cyklachene with addition of potassium bichromate

Introduction

Cyclachaena xanthiifolia (Nutt.) Fresen is an invasive annual plant with pronounced phytotoxicity affecting the ecosystem and human health. Evaluation of toxicity of plant extracts is convenient by the Allium-test method.

Results

- Cyclahene extracts caused mitotic delay and suppression of root formation: average root length 4-6 mm.
- The option «extract (more concenter.) + K2Cr2O7» demonstrated partial removal of inhibition (7 mm) compared to the same extract without bichromate.
- Control (water): active root formation, 27 mm.
- Water + K2Cr2O7 0.4 mg/l: growth stimulation, 44 mm.
- The average inhibition rate of extracts relative to control is about 81%.

Fig. 7 Low concentration onion growth results

Fig. 8 High concentration onion growth results

Purpose

To evaluate the phytotoxicity of water extractions cyclenoses by the Allium-test method.

Materials and methods

Product: Allium cepa L., «Stütgarten rizes» class, 10-15 g.
Scheme of experience: in a container by 80 ml of solution; by 3 bulbs per option; triple repetition.
Medium: distilled water (control); water + K2Cr2O7 0.4 mg/l; extracts cyclene 1:20 and 1:10; their combinations with K2Cr2O7.
Incubation: 7 days at 22-24 °C.
Estimate: length and condition of the roots.

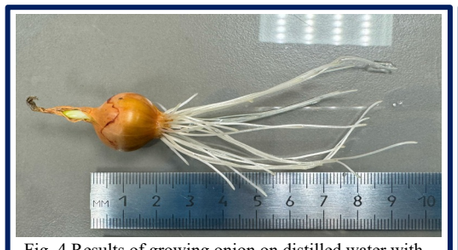

Fig. 4 Results of growing onion on distilled water with bichromate

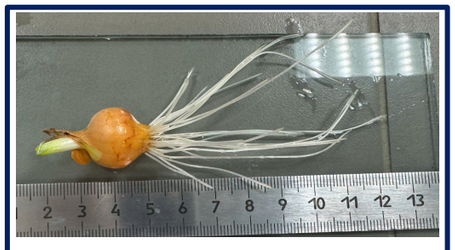

Fig. 3 Results of growing onion in distilled water

Fig. 2 Production of allium-test - growing onions in the studied environments

Conclusions

- The extracts of Cyclachaena xanthiifolia in both concentrations have a pronounced phytotoxic effect on Allium cepa roots; the strength of the effect depends on the concentration.
- The addition of K2Cr2O7 (0.4 mg/l) has a modifying effect: it antagonistically weakens the inhibition by the high concentration extract and itself causes growth stimulation in water.
- Allium-test is an indicator for rapid screening assessment of phytotoxicity of invasive species.

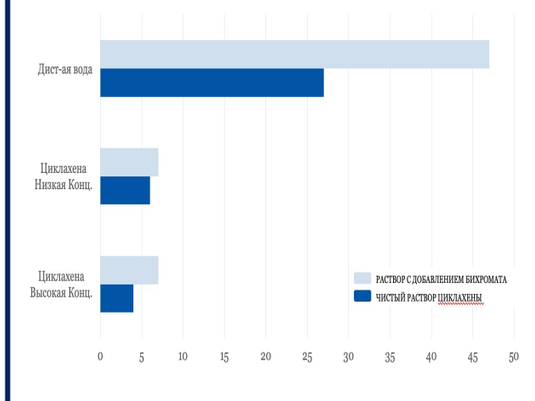

Fig. 9 Average length of the roots of the onion