

Vrentzos, G.^{1,*}, Daliakopoulos, I.N.¹, Louloudakis, I.¹, Papadimitriou, D.¹, Bosma, L.², Esin, S.³ and Manios, T.¹

¹ Department of Agriculture, Hellenic Mediterranean University, Estavromenos 71410, Heraklion, Greece;

² MetaMeta Research B.V., Nude 54 D, 6702 DN Wageningen, The Netherlands; ³ MetaMeta Anatolia, Narlıkuyu Mahallesi, 1110 Sokak, 4/A, Urfa, Türkiye

Introduction

Synthetic (chemical) rodenticides constitute the most common method for dealing with rodents. This method though, has been considered ineffective due to the development of resistances, direct and indirect impacts on non-targeted species, and the induced environmental pollution (Kholoud et al., 2020). Ecologically Based Rodent Management (EBRM) has been proposed as a comprehensive approach against rodents. However, the widespread adoption of EBRM is still limited. In Crete, the second largest Mediterranean Island, rodents are among the pests that threaten the local lucrative greenhouses production, nevertheless, evidence on the methods used against them, their effectiveness, and therefore the environmental pressure remains unclear.

Methodology

To address this knowledge gap, we conducted a two-stage survey between 2021 and 2023, involving 785 greenhouse managers, for the first-stage, from 2,179 greenhouses (16.95% of the total number of greenhouses in Crete). The aim was to collect information, specifically focusing on greenhouse managers perception on EBRM. In the second-stage survey we reached a sample of 79 greenhouse managers, from the first sample, who had participated in the first stage and experienced rodent issues in the past.

Results

The first stage survey showed that among the surveyed greenhouses, 40.9% reported a rodent infestation problem in the past 3 years. From these cases, 27.5% used exclusively chemical control to eradicate the problem, only 1.4% relied solely on non-chemical means, and 71.1% used a combination of chemical and non-chemical control such as traps and predators.

A second-stage survey among the farmers who had participated in the first stage and experienced rodent issues in the past, revealed a high satisfaction (91.1%) with the common commercial rodent control products. However, the average losses due to rodents were as much as 1240 €/ha, with the highest losses amounting to total loss of small fields. Land managers almost unanimously agreed (92.4%) that preventive measures drastically reduce the need for suppressive measures and that effective rodent management would save on average 75.3%, of the production. There was also significant interest (78.4%) in non-chemical methods such as EBRM.

Conclusions

This is the first time land managers in Greece are surveyed for rodent management. Findings highlight the need to increase awareness and adoption of EBRM among local greenhouse managers.

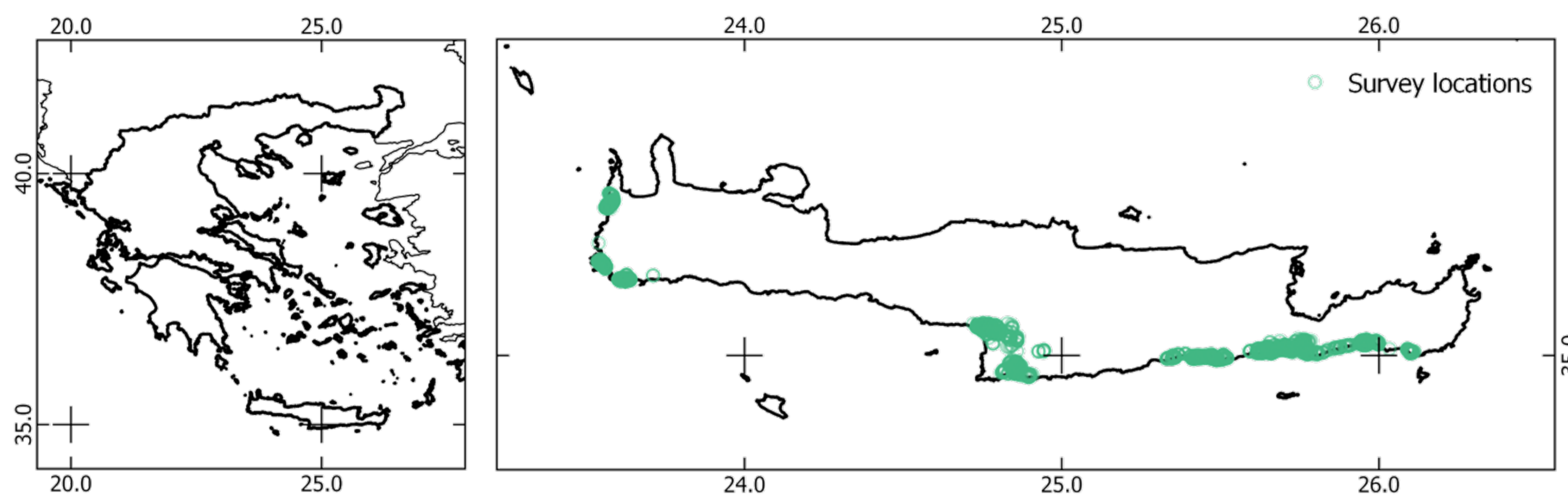


Fig 1. Surveyed locations in the Island of Crete, Greece.

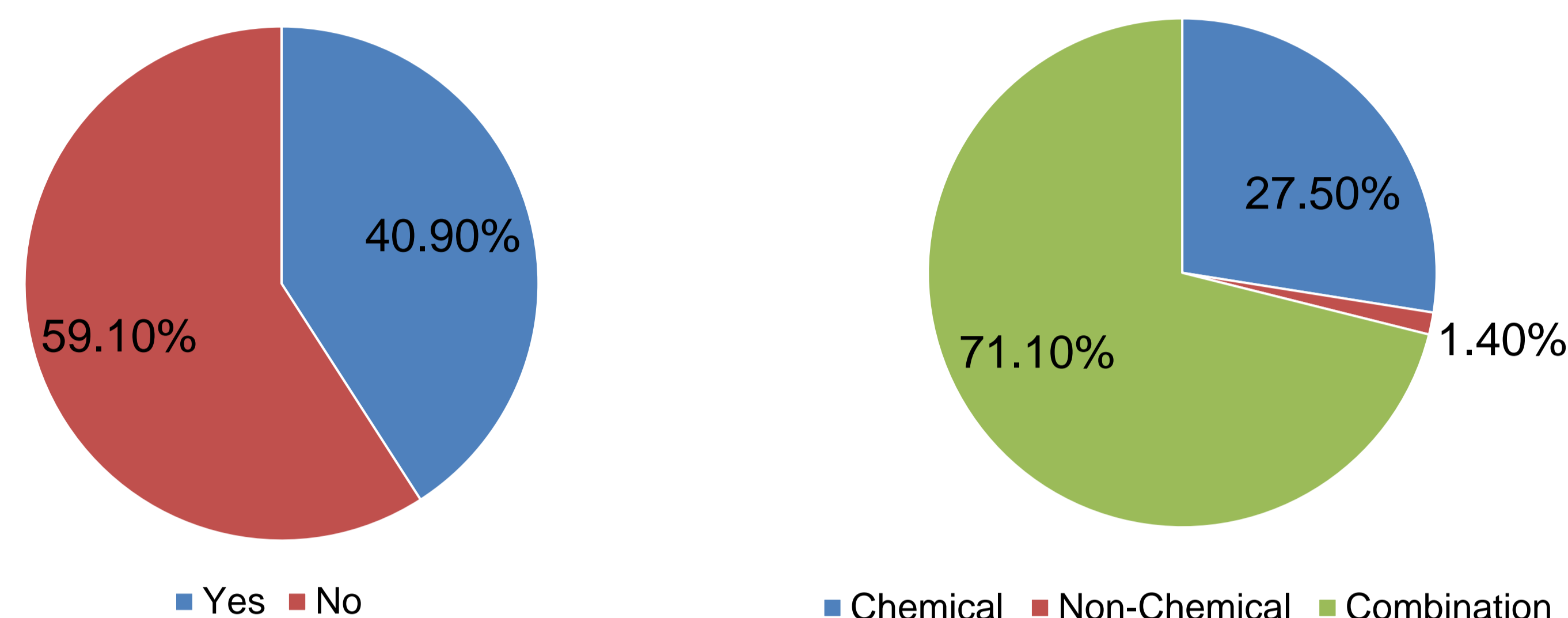


Fig 2. Rodent infestation in the last 3 years (left) and current preferred pest management method (right) during the first stage survey.

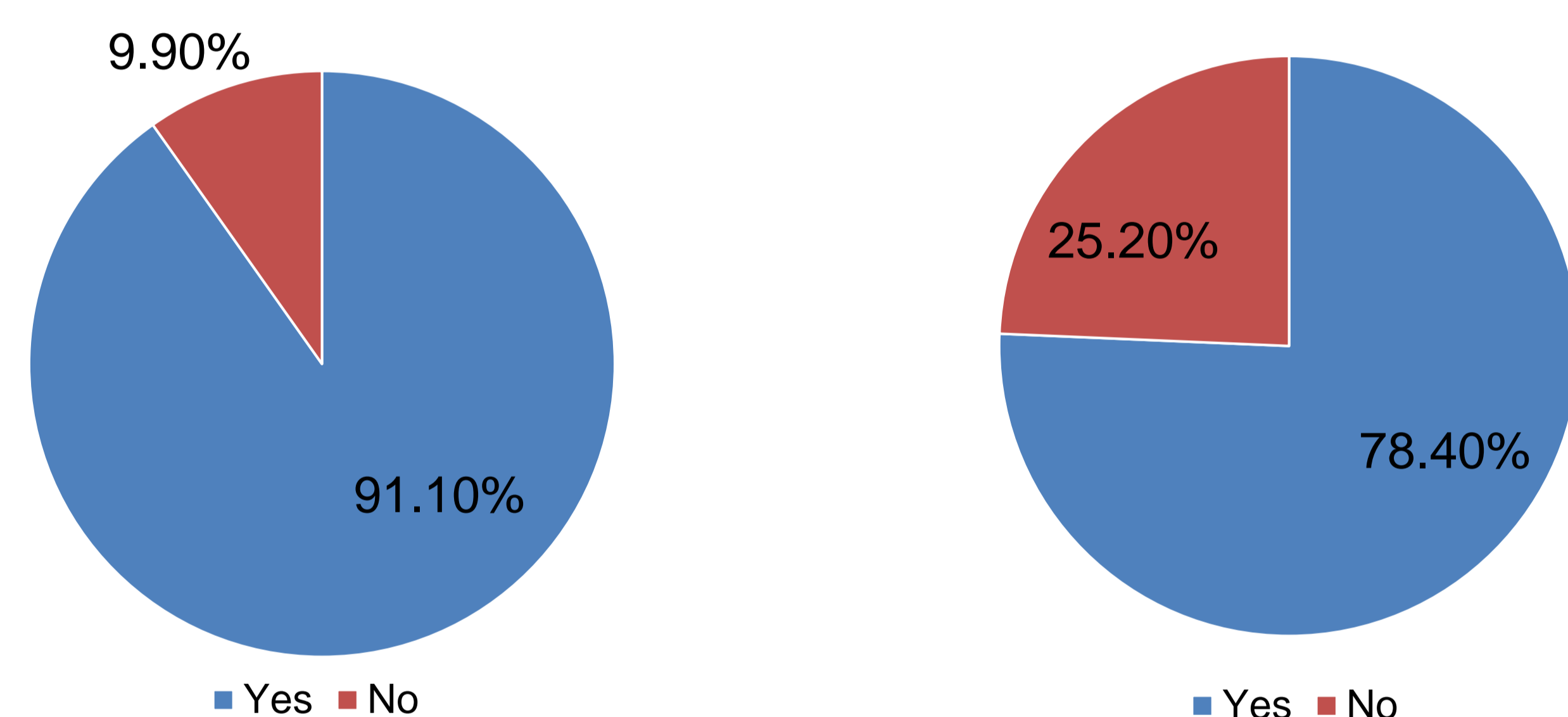


Fig 3. Satisfaction from current commercial products (left) and interest in non-chemical methods such as EBRM (right) during the first stage survey.

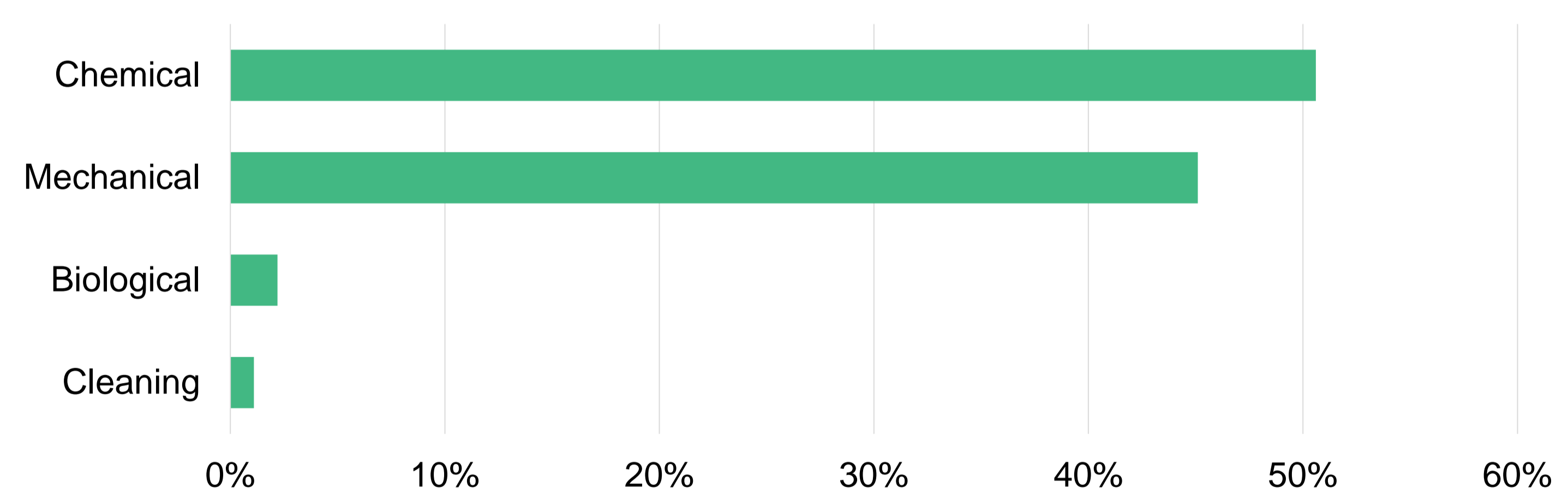


Fig 4. Rodent management measures taken by land managers, in order of perceived effectiveness (second stage survey).

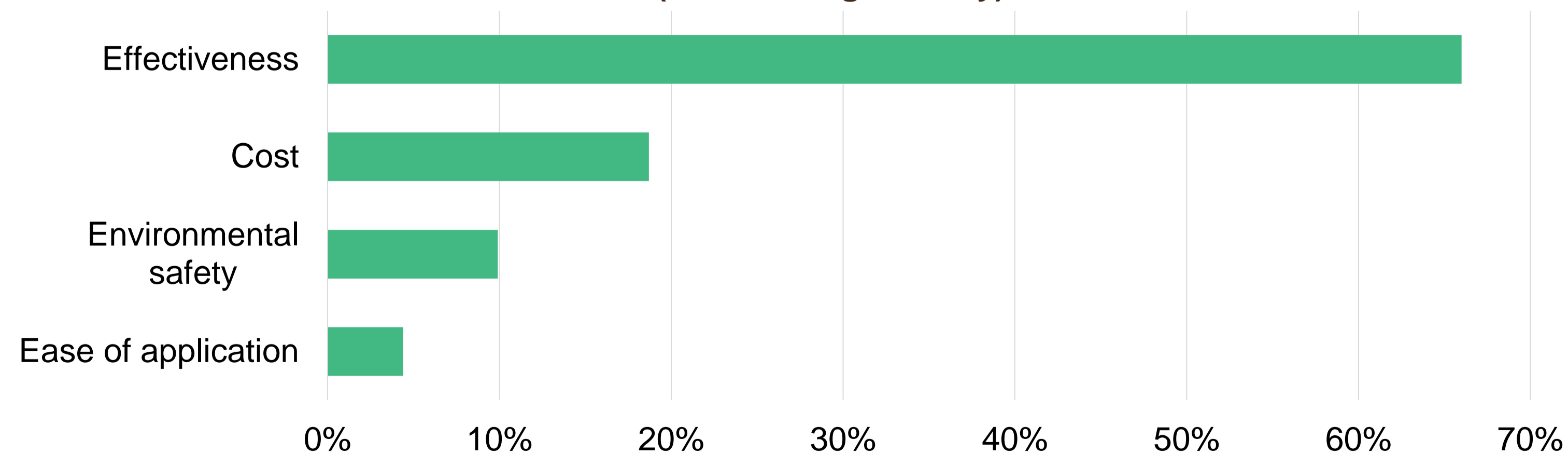


Fig 5. Most important criterion for land managers to adopt a new rodent management method (second stage survey).