PHYSICAL WEED CONTROL IN URBAN HARD SURFACES AND TURFGRASSES

Andrea Peruzzi, Christian Frasconi, Luisa Martelloni, Marco Fontanelli*, Michele Raffaelli.

Sezione Meccanica Agraria e Meccanizzazione Agricola-Dipartimentio di agronomia e Gestione dell'Agroecosistema-Università di Pisa,Via San Michele degli Scalzi 2, Pisa, 26124 Italy

**Corresponding author. E-mail:* mfontanelli@agr.unipi.it

Abstract

Weed management is a major issue not only in agriculture but also in cities and in public and sport turfs. Weed development often generates negative aesthetic effects, a sense sloppiness, mechanical damages to hard surfaces, the reduction of visibility for drivers, the reduction of the quality of the quality of the turf, and can make difficult for pedestrians to walk.

Specific trials were carried out in order to develop and set up machines and techniques for weed control in urban and sub-urban areas and on turfs.

Key words: flaming, steaming, warm season turfs

1. Introduction

Weed management is a major issue not only in agriculture but also in cities and in public and sport turfs. Weed development often generates negative aesthetic effects, a sense sloppiness, mechanical damages to hard surfaces, the reduction of visibility for drivers, the reduction of the quality of the quality of the turf, and can make difficult for pedestrians to walk.

In this context, public concern about agrochemical is more and more increasing, thus alternative means for weed control are needed (Kristoffersen et al., 2004; Larsen et al., 2004).

This paper aims to summarize the main results achieved by the University of Pisa in about 8 years of research carried out on thermal weed control in urban hard surfaces and turfgrasses.

2. Material and Methods

Concerning with flame weeding in urban areas, specific trials were realized in three important Tuscan Municipalities. Different kind of weed management were compared. Flaming was carried out by means of equipments on purpose projected and realized (Fig. 1).

Regarding thermal weed control in turfgrasses, both steaming and flaming were tested and compared to herbicides application in order to achieve the complete devitalization of an old lawn composed by Lolium sp. and Festuca sp. aiming at a replacement with a Cynodon hibryd obtained with an innovative sod planting technique (Fig, 1). Moreover, a thermal disinfection tecnique, able to well control weed seed bank, was tested before the installation of a warm season turfgrasses on tilled soil.

FIGURE 1: Operative machines for flaming and steaming applied on turf.

3. Results/Conclusion

Concerning weed control in urban areas, the results emphasized that also in tipical Mediterranean urban areas flaming was able to efficiently control spontaneous weed flora, allowing to obtain best results with respect to the conventional strategies (mowing and herbicides application).

Concerning the trials carried out on turfs, the preliminary results of these tests showed that thermal treatments realized applying steam and open flame at very high doses allowed to obtain levels of weed control comparable to those reached by herbicide application, stressing the very good future perspectives of these innovative techniques.

Acknowledgements

This Project has been founded by the Ministero delle politiche agricole alimentari e forestali.

References:

Larsen, S.U., Kristoffersen, P., Fischer, J. (2004) Turfgrass management and weed control without pesticides on football pitches in Denmark, Pest Management Science, 60, 579-587

Kristoffersen, P., Larsen, S.U., M∅ller, J., Helse, T. (2004) Factors affecting the phase-out of pesticide use in public areas in Denmark, Pest Management Science, 60, 605-612