DIPARTIMENTO DI AGRONOMIA ANIMALI ALIMENTI
RISORSE NATURALI E AMBIENTE
DAFNAE

UNIVERSITÀ
DEGLI STUDI
DI PADOVA

PROGETTO REFF:

Riduzione delle emissioni nella filiera floricola

Abstract

The issue of sustainable floriculture and the continuous and increasing demand for environmentally-friendly products have produced, in recent years, several studies that tried to answer these requests and, simultaneously, to meet the companies needs for cost reduction and more attractive products. Nowadays, studies with an holistic approach to the problem, for example the evaluation of product's life cycle, are not very common; a complete study requires, in fact, a huge amount of data acquired throughout the investigation of a statistically significant sample of companies. The Life Cycle Assessment (LCA) methodology was first used to determine the environmental impact of industrial products; in the last decades its applications in the agricultural sector have increased, though studies on floriculture productions are still rare.

The goal of this project was to increase the knowledge on environmental impact and greenhouse gas emissions from production of some major types of pot flowers. In this study we performed a first inventory assessment (LCIA) of three species, Poinsettia (Euphorbia pulcherrima Willd.), Zonal geranium (Pelargonium x hortorum) and Cyclamen (Cyclamen persicum Mill.), that together cover a significant share (17%, 20% and 22% respectively) of Italian flowered plants market. Twenty farms located in the Treviso Province, in Veneto Region, were chosen in order to gather primary data regarding the flower cultivation process. The information gathered concerned greenhouse typology (structure and covering) and equipment (heating, irrigation, etc.), water consumption, use of fertilizers, pesticides, substrates, energy (mainly consumption of fuels (e.g. diesel) to heat the greenhouse environment). Life Cycle Inventory secondary data were sourced from software database (EcoInvent 2.2) and published literature. Some major difficulties were encountered during the data acquisition and evaluation process, mainly because of the farmers' lack of knowledge about the actual amount of water, fertilizers and pesticides used.

The environmental impact for the three species was expressed using three impact cathegories from EcoIndicator 99 H/A calculation method, and as single carbon footprint value (kg CO_2 eq, 100-years time horizon, calculated according to IPCC 2007 method. The impacts showed a positive trend with increasing pot diameter; which can be explained with higher input needs,

decreased density (plants per square meter) and longer cultivation period. The values for poinsettia and zonal geranium showed that the heating in the greenhouse is the single most important contribution to overall impact/emissions , but the use of plastic materials is also quite important for the pot plants, which is mostly due to the pot. Regarding the other cultivation inputs, growing medium, greenhouse construction material (glass covering and steel structure) and transport were important contributors to environmental impact of all three species.