PROGETTO SOSPADO

SOSTENIBILITÀ DEL PROCESSO PRODUTTIVO E CARATTERIZZAZIONE QUALITATIVA DELLA PATATA DOLCE

ABSTRACT

The project set the goal of developing new production processes of sweet potato varieties, a niche crop now widespread only in Padua and Treviso province, but with significant market potential. Different combinations of agronomic inputs were assessed both at private farms belonging to OPO Veneto association and at the facilities of Padova University. The main topic of the project was the reduction of production costs due to the low level of mechanization and production scale system/marketing limited. The experimental activities were focused on the main farming techniques (fertilization, crop density, transplant depth, and harvest technique) of traditional and innovative cultivar in typical growing environments. The results obtained showed that the cultivation of sweet potato (Ipomoea batatas) has several areas where the agronomic management and production can be improved. The fertilization techniques showed, for some aspects, the ability of the sweet potato to substantially increase production when fertilized in an appropriate way. This aspect has been verified in both experiments carried out despite the negative effect of excessive rainfall. The supply of nitrogen must still be carefully handled to avoid unnecessary lush vegetation that doesn't lead productive feedback. The application of organic matrices derived from industrial by-products represented a valid alternative to mineral fertilization, especially by employing the treatment T75 (75% organic nitrogen and 25% nitrogen in mineral form). The latter treatment even significantly affected the nutritional quality of the product by increasing the glucose content in the root, sugar that during cooking determines the formation of maltose which is mainly involved in the classic sweet taste of sweet potato. The use of this matrix, equally to other products of similar origin, also represents an interesting reduction of production costs: the cost of the anaerobic digestate of distillery can at the moment be quantified only with the transport cost in contrast to approximately 2 euros per nitrogen unit supplied with urea. Furthermore, the addition of organic matter together with the macro-nutrients required by the crop results in significant long time agronomic benefits by increasing the soil fertility. Considering the possibility of storing in the soil considerable amount of organic carbon, this practice supports what is required by recent European regulations concerning the carbon management and the cycle closure of waste recovery. About the crop density and the

transplant depth it was shown that high densities can lead to higher yields without significantly reducing the size of the roots. This could indirectly reduce production costs by improving weed management by promoting greater competition and faster closure of empty spaces. The reduced planting depth was favorable; however, this finding requires further confirmation because the high rainfall amount recorded during the crop cycle might have caused temporary waterlogging that have disadvantaged the deeper planting treatment. Finally, the harvest mechanization is an aspect of great interest which would allow to greatly reduce the production costs making this crop more profitable. The use of mechanical harvester occurred efficiently and accurately significantly reducing harvesting times without causing noticeable damage. Considering the time of collection, the simulations carried out in the field indicate that the mechanical harvester could be recommended for large open fields with the destination of the product to the industry. What emerged from the various tests the cultivation of sweet potato is an interesting alternative for horticultural producers which highlights interesting innovative input. These issues involve a reduction in production costs by increasing the profitability of the crop that, in recent years, it is increasingly required by the market as a result of increasing migration flows. Together, these capabilities allow to identify good scenarios for this product so far linked to niche locations.