Truffles, a natural product for the rehabilitation of degraded land and sustainable territorial development

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Abstract
In Morocco, land degradation continues to worsen. The factors are both human and natural. The valorization of natural products, such as truffles, can help to relieve the pressure on these natural ecosystems and to rehabilitate them. This work aims to show the environmental and socio-economic importance of truffles, to study the possibilities of rehabilitating degraded forest and pastoral lands through their valorization and cultivation. The methodology was based on a documentary analysis, field surveys, and workshops in the truffle regions of Oriental, Maâmora, Sahel Doukkala-Abda and Moroccan Sahara. For the truffle cultivation, we diagnosed the 3 unique black truffle production farms under holm oak planted in Debdou and Imouzzer Kandar belonging to Dr. Laqbaqbi. In Morocco, a dozen species of truffles exist. From an environmental point, they promote the development of the host plants and help to reduce the pressure on the rangelands during the production seasons. Socioeconomically, their collection is an important source of income, especially for women. Their share in the overall income of collectors varies from 2 to 3 times that of other activities. Truffle cultivation allow to replant fragile spaces with a local species more adapted to climate change (holm oak) and ensure a more stable income for the farmer than that of fruit trees, 300 to 400 thousand dh/ha/year. The valorization of truffles by the organization of the sector and truffle cultivation can contribute to rehabilitate degraded areas by improving the income of the populations and reforestation by a truffle tree, adapted to ecological conditions.
Key words: Truffles, Truffle cultivation, Rehabilitation of natural areas, Rural development.

INTRODUCTION

Morocco, by its geographical position, has a very important diversity of natural resources and in particular forestry. These resources are subject to increasingly intense degradation, whether on the landscape aspect (degradation of landscapes) or on the aspect of biodiversity. Indeed, a very large number of species appear on the red list.

Good management and rational exploitation of this potentially significant wealth could help restore and rehabilitate natural ecosystems. This rehabilitation can be carried out through the valorization of non-timber forest products, in particular truffles.

How can truffles be a solution for the reconstitution of degraded natural areas?

OBJECTIVES

Emphasize the importance of the Moroccan truffle on aspects of diversity and geographical distribution

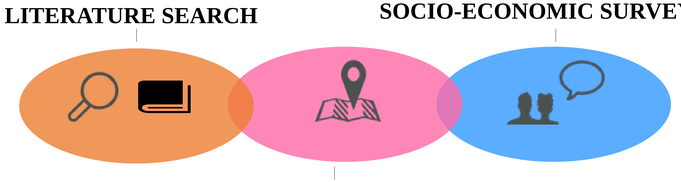
Emphasize the influence of truffles on environmental, ecological and socio-economic aspects

Study the possibility of moving from collecting truffles to their cultivation for the reconstitution of the natural space

MATERIALS AND METHODS

LITERATURE SEARCH

SOCIO-ECONOMIC SURVEYS



FIELD PROSPECTING

RESULTS AND DISCUSSION

ECOLOGICAL IMPORTANCE

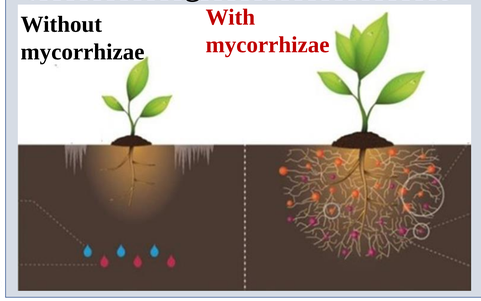
Improvement of mineral nutrition

Enhancement in physical exploration of the ground

Modification of the physical root environment

Enhancement in stored amount of nutrients

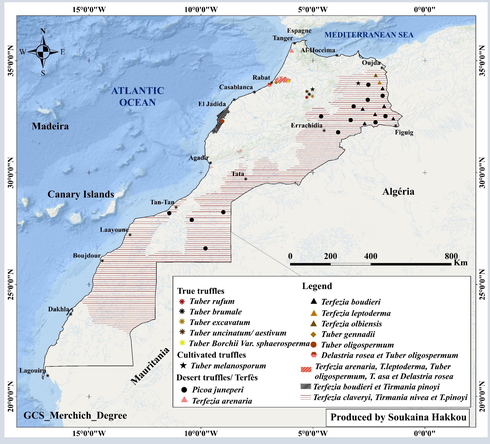
Improvement of host plant growth + Enhancement in drought tolerance



TRUFFLE POTENTIAL

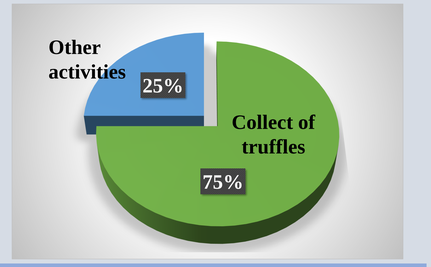
In Morocco, there are about ten species of desert truffles called "*terfes*" associated with *Helianthemum*. Other species of the tuber genus, called real truffles, also exist.

Habitat: typically arid and semi-arid climates + light sandy soils, arenaceous and made up of fine silt.



SOCIO-ECONOMIC IMPORTANCE

The collect of truffles is an important source of income for rural populations and especially for women. It creates significant economic dynamism.



The truffle farms of doctor Laqbaqbi, a success story

3 truffle holm oak farms: one in Debdou in the Oriental region and 2 in Imouzzer Kandar in the Middle Atlas.

Reconstruction of the natural space by reforestation with holm oak.

Transition from importing inoculated plants to local inoculation from Moroccan acorns.

Truffles bring in a lot of money on average: 12 MAD/gram, or 12,000 MAD/kg.

The demand greatly exceeds the offer.

CONCLUSION

The Moroccan truffle is a wealth on which we can rely for the preservation of the environment. Adequate regulation and enhancement of existing species while moving towards truffle cultivation can help restore natural areas and create job opportunities for the rural population.