

## INTRODUCTION

In Morocco, potato crop occupies an area of about 50,000 to 58.000 ha annually. The national production is about 1,000,000 to 1,400,000 tones so with a national main yield of about 23 t/ha which is below potential yield of about 40% (Daoui, 2014). Optimizing different doses of nitrogen, phosphorus and potassium of fertilization is one way to reduce the gap between actual and potential yield. Therefore, control of fertilization remains one of the most important techniques to consider. It is based mainly on the determination of mineral elements in plant needs and optimal doses to make.

## STUDY AREA



Figure 1: Location map of the study area.

## OBJECTIVE

- ❖ Test the response of the potato to the contribution of the different doses of nitrogen, phosphorus and potassium;
- ❖ Determine optimal doses of nitrogen, phosphorus and potassium for the potato;
- ❖ Study the mycorrhizal load and its role in the assimilation of mineral elements in the cultivation of the potato by the enumeration of the spores.

## MATERIALS & METHODS

### A- Experimental section

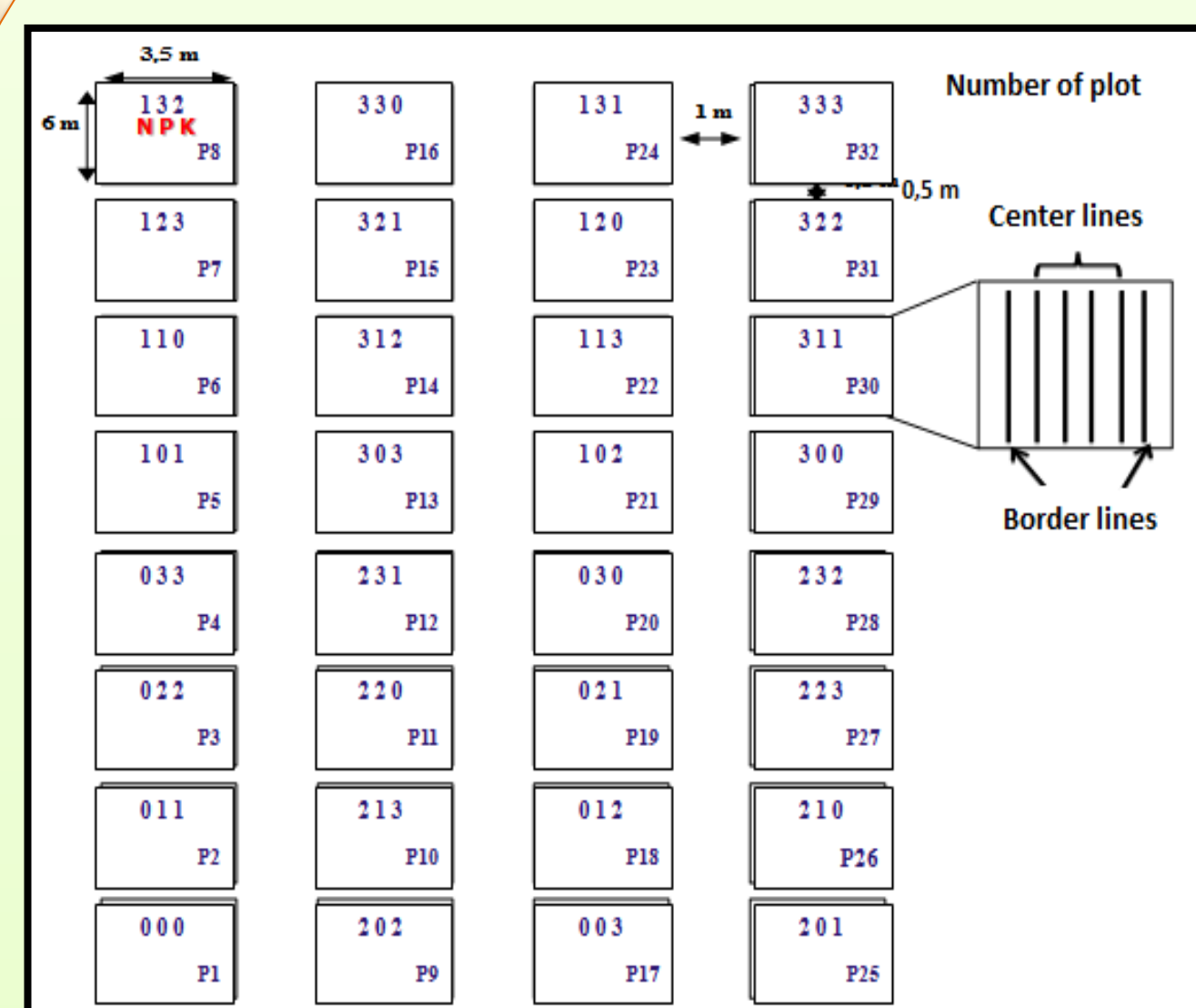


Figure 2: Plan fertilization trial of potato crop.

- The trial consist on 32 basic plots (936 m<sup>2</sup>).
- 4 doses of each nutrient (N, P and K) and their interactions.
- The following formula has been used to determine the other two doses X1, X2:  $S = (X3^{1/2} - X0^{1/2}) / 3$ .
- X3 is the maximum dose, X0 = 0 is the minimum dose.

### C- Laboratory section

Various elements have been identified including:

- Texture (pipette Robinson);
- pH & EC (pH meter);
- Organic Matter (Walkley & Black);
- Nitrogen (Kjeldhal);
- Available Phosphorus (Olsen);
- Potassium (by using a flame photometer);
- The density of the AMF (Arbuscular Mycorrhizal Fungal) of spores in each sampling point ([www.invam.wvu.edu](http://www.invam.wvu.edu)).

### B- Field sampling

Soil samples were taken:

- At different stages of development of the potato.
- At two depths: 0-20 and 20-40 cm.

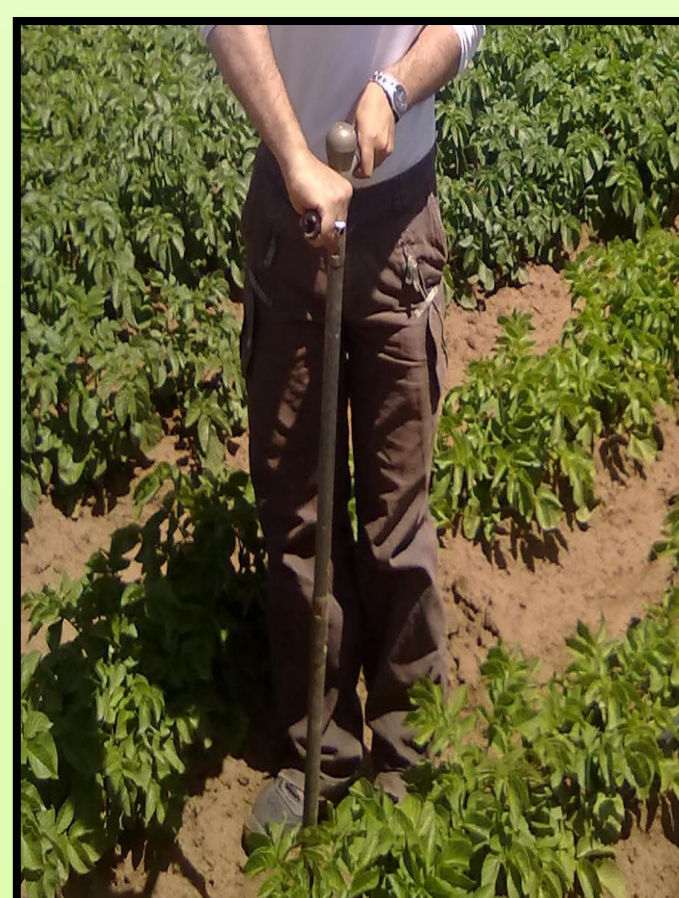
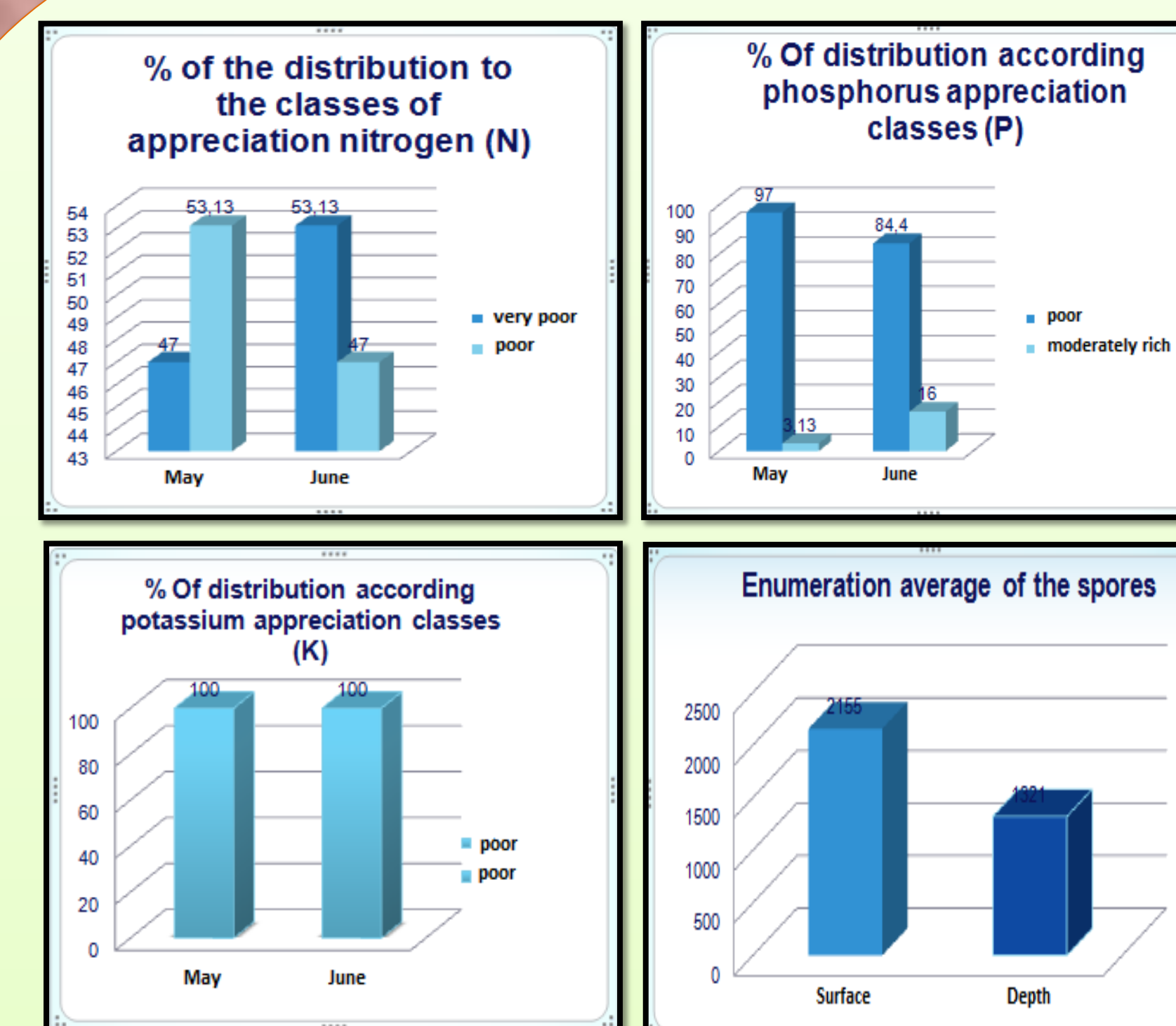


Figure 3: Levy of soil samples.

## RESULTS & DISCUSSION

### Soil characteristics

- The soil has a sandy texture (11% clay, 7% silt and 80% sand);
- (272  $\mu\text{S}/\text{cm}$ );
- Acid soil pH (5.5) poor organic;
- matter content (1.41%);
- moderately poor in nitrogen, potassium and available phosphorus.



Significant dominance of spores with an average of 2155 spores per 100 g of dry soil surface and an average of 1321 spores per 100 g of dry soil in depth.

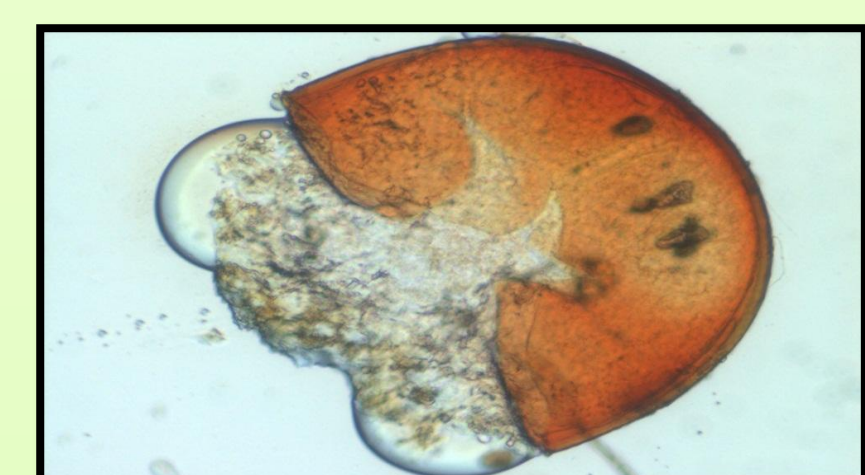


Figure 4: Glomus kind, magnification \*40

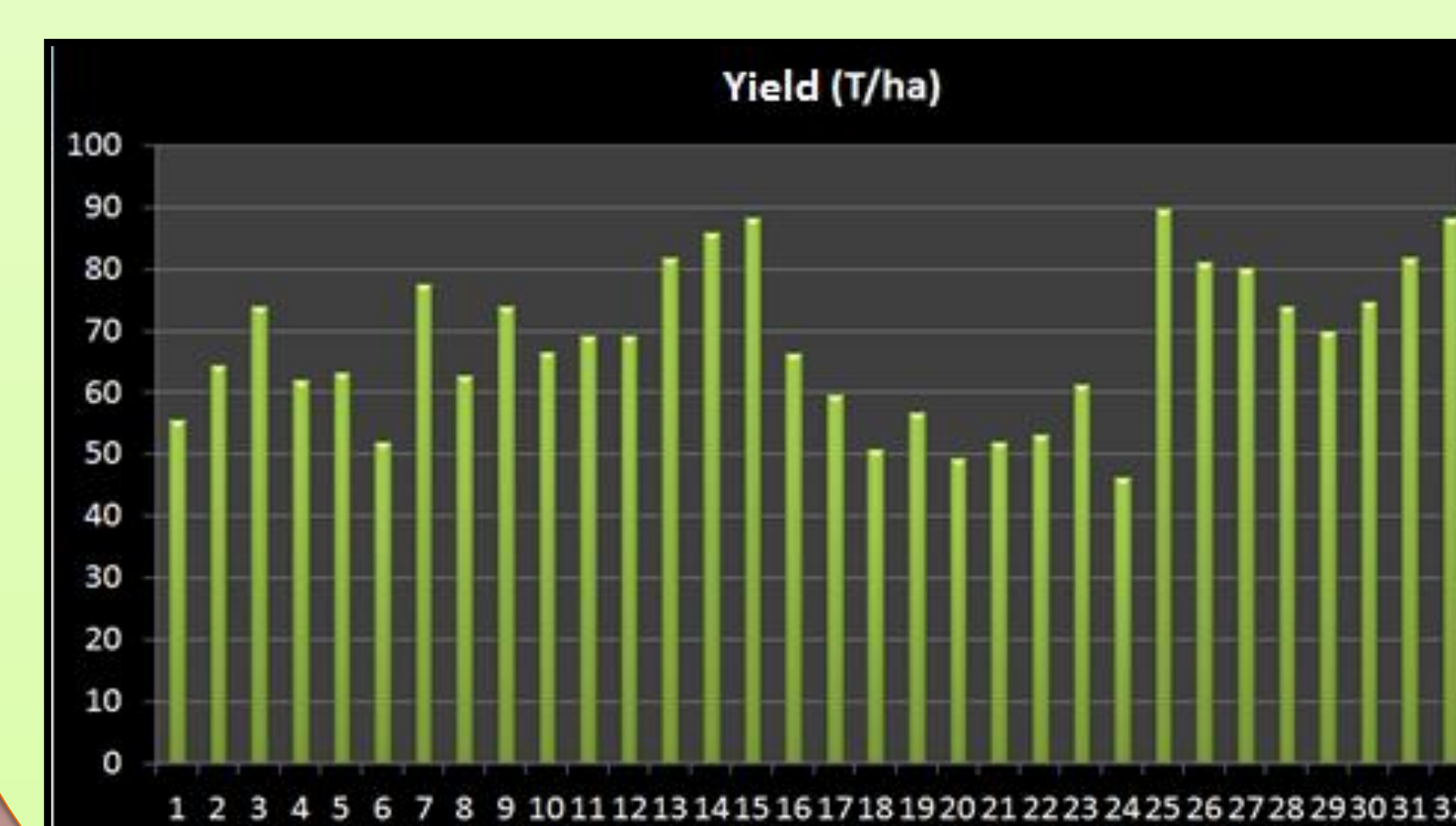


Figure 5: The yields obtained at each treatment.

The average yield obtained is 68,07 T/ha, remain important, however, the optimal performance is estimated at 89,68 T/ha, it is made in the treatment of X2 nitrogen, X0 phosphorus and X1 potassium (2 0 1).

## CONCLUSION

- ❖ This work has highlighted a correlation between these three variants: Fertilization, Mycorrhization and potato yield. Obtaining a good yield and improved product quality remains one of the main priorities of producers.
- ❖ However, the contribution of chemical fertilizers should be streamlined so as not to influence the mycorrhizal, which has enormous benefits for the plant and its performance and to the entire ecosystem.