

Experimentation on the potato

Huplaso effect on potato yield

Foreword

The first results obtained of the Huplaso analysis show it has several physicochemical properties involved in improving agricultural soil fertility. Its macro and microelement composition would be able to meet the nutrient requirements of several crop types while remaining below the metal trace element concentration thresholds imposed in Canada.

The study proposed here will determine Huplaso's influence on potato yield.

Material and methods

The experiment took place on a commercial potato field owned by Mr. Eddy Robichaud. This field is located in Baie-du-Petit-Pokemouche, New Brunswick. Huplaso, coming from a St-Isidore Asphalt mine, was spread at different dosages to evaluate its effect on yield. Assays for this experiment are: 3 kg / m², 2 kg / m², 1 kg / m² and 0 kg / m² (control).

Each treatment was spread manually on blocks of experimental plots (block size 45.82 m by 15m), then mixed with the earth using a rake. One block corresponds to four rows of tubers planted by a potato planter. Experimental plots were then delineated within the rows. The plots cover an area of 305 cm by 82 cm and include 10 potato seedlings. . For each treatment, four plots are selected for harvest: two in the second row and two in the third row for a total of 16 plots.

Potatoes provided by Mr. Eddy Robichaud are of the late variety, recovered from the previous harvest of the same field. The potatoes were planted on June 11, 2016 and harvested on September 29, 2016.

40 potato plants were harvested for each treatment in order to estimate the yield. The height of three plants was also collected from each plot: the second, fifth and eighth plant.

Agricultural practice

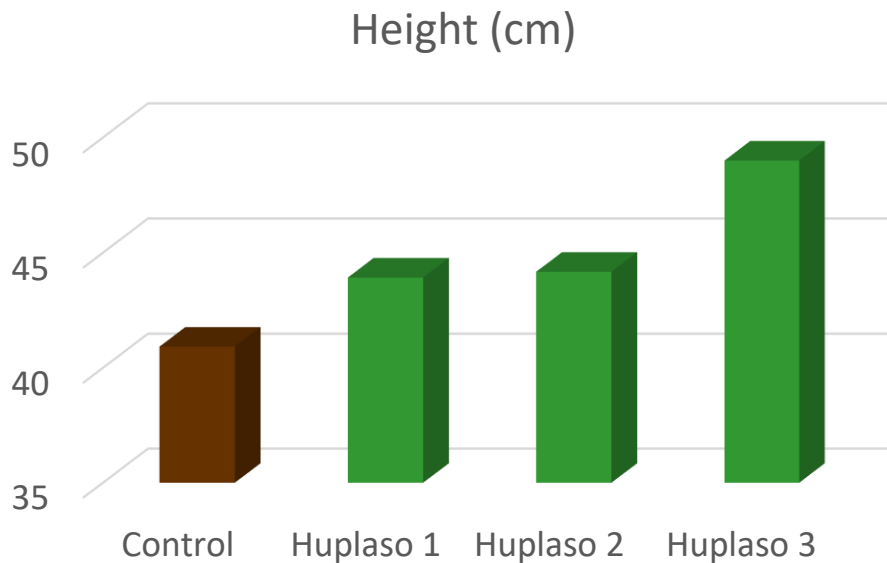
"As part of the experiment, the potato field was submitted to the farmer's usual farming practices. These consist of spreading manure every two years, treating the seeds with Actara 25WG and spreading fertilizers, herbicides, insecticides, fungicides and chemical desiccants. "

Plant height

Plant height was measured at the end of the experiment on September 29, 2016 (three months after planting). For each experimental plot, 3 seed potatoes were selected, the second, fifth and third. Eight of the same row of plants, for a total of 12 observations per block. The data presented hereunder demonstrates the relationship between the height of the potato plant and the presence of Huplaso. The graph below shows there is an excellent correlation between the Huplaso dose and the height of the potato plant, with a correlation

coefficient of 0.95 and a determination coefficient of 0.89. The height of the potato plants is greater as the dose of Huplaso spread is important.

Treatment	0 kg/m ²	1 kg/m ²	2 kg/m ²	3 kg/m ²
Number of observation	12	12	12	12
Minimum	20,00	32,00	33,00	40,00
Maximum	50,00	53,00	56,00	56,00
1st Quartile	38,75	41,00	41,00	46,00
Mean	42,00	43,50	43,50	50,00
3rd Quartile	45,75	48,00	49,25	53,25
Average	40,92	43,92	44,17	49,00
Standard deviation	7,87	5,60	6,74	5,27



Yield and total mass

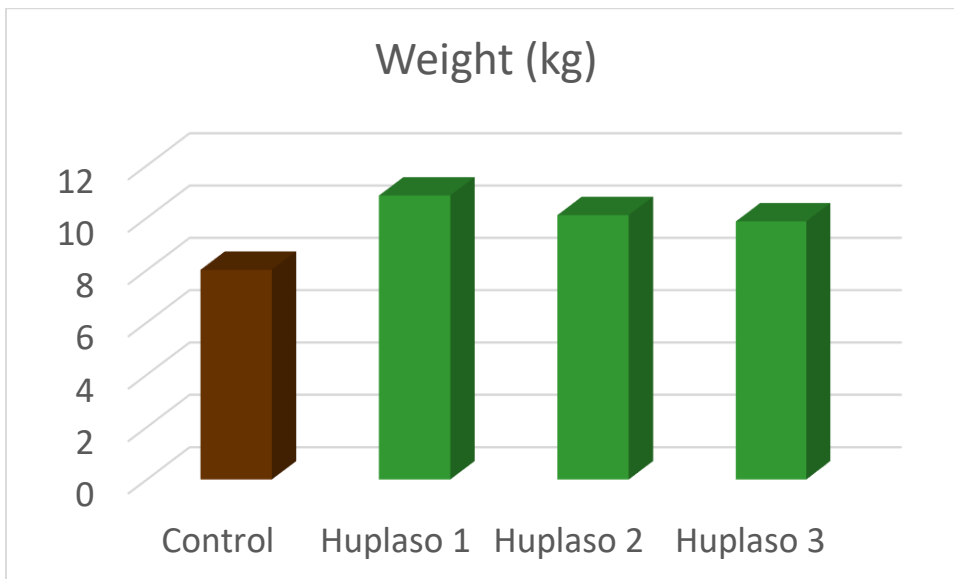
For each treatment block, four plots of ten plants were identified. A total of 160 plants were harvested on September 29 for all four treatments.

Similar to the previous analysis, the difference between the control treatment and the Huplaso treatment is important. The control treatment has the lowest yield at 8 kg / plant and a maximum weight of 8.63 kg per plot. At harvest, there was a difference in size between the control and Huplaso treatments. This one had smaller tubercles than those having received Huplaso and this, regardless of the dosage applied (1kg / m², 2kg / m² and 3kg / m²).

Yield was calculated to obtain the average tuber weight per plant. Unlike height, the 3kg / m² treatment has the lowest average yield of Huplaso treatments, 9.86 kg / plant. This is

related to the low weight of one of the four experimental plots. The 2kg / m² treatment is slightly higher (10.09 kg / plant).

Traitement	0 kg/m ²	1 kg/m ²	2 kg/m ²	3 kg/m ²
Nombre of observation	4	4	4	4
Minimum	7,27	10,56	9,34	8,12
Maximum	8,63	11,39	10,52	11,07
1st Quartile	7,46	10,60	9,92	9,26
Mean	8,07	10,72	10,27	10,39
3rd Quartile	8,62	10,97	10,44	10,73
Average	8,01	10,85	10,10	9,86
Standard déviation	0,71	0,38	0,53	1,54



The graph shows a trend towards an increase in yield correlated with an increase in Huplaso dosage. The 1kg / m² treatment has the highest average yield (g / plant). The lowest yield value of the block at 1kg / m², i.e. 10.5kg, is higher than treatment medians of 2kg / m², i.e. 10.2kg, and the 3kg / m² treatment, i.e. 10.3kg. Its yield surpasses that of the witness by more than 2kg.

Synthesis

The potato experiment shows results in favor of Huplaso treatments. Results obtained in this study indicate that Huplaso positively influences both the growth of seed potatoes and the yield of the crop. More specifically, treatment at 3kg / m² produces higher plants. There is an excellent correlation between the dose of Huplaso and the height of the potato plant. However, the results on the yield (g / plant) show that the treatment at 1kg / m² produces the most massive tubers.

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Soils, peat and sustainable development

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* For ease of understanding, the original term that was basalt powder was replaced by the name Huplaso. *