TABLE I

COUNTED OF ^{32}P IN MANY PART OF PLANT AT FIVE INJECTION POINT OF $KH_2{}^{32}PO_4$ SOLUTION

Counted (dpm) at a part of	root		stem		Upper leaf axil		Middle leaf axil		Lowest leaf axil		Sum of frond and leaf	
Point of injection	Initial	Ending	Initial	Ending	Initial	Ending	Initial	Ending	Initial	Ending	Initial	Ending
Upper leaf axil	4.222a^{p}	2.389b^{q}	4.938d^{p}	3.105d^{q}	5.407f^{p}	3.574g^{q}	4.811i^{p}	2.978j^{q}	4.459l^{p}	2.626l^{q}	4.755n^{p}	2,922n^{q}
Middle leaf axil	6.430a^{p}	4.597a^{q}	4.843d^{p}	3.010d^{q}	4.936f^{p}	3.103g^{q}	4.448i^{p}	2.615j^{q}	5.731k^{p}	3.898k^{q}	4.956n^{p}	3,123n^{q}
Lowest leaf axil	4.190a^{p}	2.357b^{q}	4.865d^{p}	3.032d^{q}	5.301f^{p}	3.468g^{q}	5.026i^{p}	3.193i^{q}	4.063l^{p}	2.230l^{q}	6.819m^{p}	4,986m^{q}
At the soil 5 cm from the trunk	5.094a^{p}	3.261c^{q}	4.342d^{p}	2.509e^{q}	4.030f^{p}	2.197h^{q}	4.680i^{p}	2.847j^{q}	4.374l^{p}	2.541l^{q}	6.611m^{p}	4,778m^{q}
Base of trunk	5.024a^{p}	3.191c^{q}	4.618d^{p}	2.785e^{q}	6.622g^{p}	4.789f^{q}	4.921i^{p}	3.088i^{q}	4.908l^{p}	3.075l^{q}	4.284n^{p}	2,451o^{q}

Note: the mean number followed by the same subscript shows no difference in counts between injection points according to the DMRT level of 5%, while the same superscript shows no difference in counting at the initial and at the ending of the counted according to the t test at the 5% level

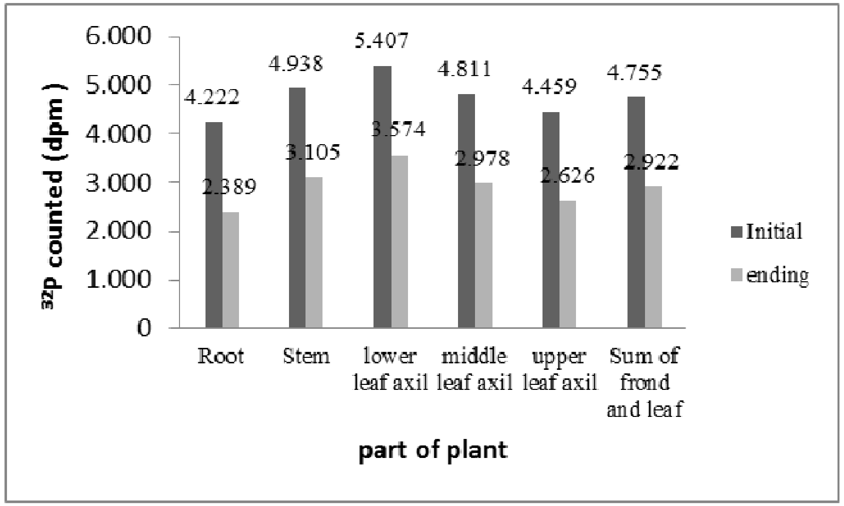

Fig.4. The dynamics of ^{32}P counted in some parts of oil palm seedlings at the injection point of $KH_2{}^{32}PO_4$ solution in lthe upper leaf axil

Data on the dynamics of ^{32}P at the upper of leaf axil injection point showed, the highest ^{32}P uptake at the start of the injection was seen at the lower injection point. The^{32}P distribution then leads to the stem, roots and finally to the upper leaf axil. However, when comparing the ^{32}P counts in he root, ^{32}P distribution was higher in the canopy (Figure 4).

At the injection point of soil ^{32}P radioisotope was incubated into the soil at a distance of 5 cm from the stem (trunk). The counted number shows that the P-^{32} is distributed up to the injection point of the uppermost leaf axil located at the top of the plant (Figure 5). The low value of counted P-^{32} at the root indicated a high level of dilution by nutrient elements in the roots, stems, lower and middle axil. At the top injection point, it is assumed that nutrient elements have not reached this part, so that the dilution level of P-^{32} isotope is very low which results in high counted value in this section. According to Ref. [19], the dilution of the ^{32}P radioactive element is influenced by the P nutrient content in the part of the plant where the element is given. If there are a lot of nutrients in that part, there will be fast ^{32}P dilution so that this isotope is distributed quickly as well as marked by the low value of the counted in that place. Ref. [20] also mentioned that the status of P plants and leaf physiology influences the uptake and translocation of P nutrients in fertilization.

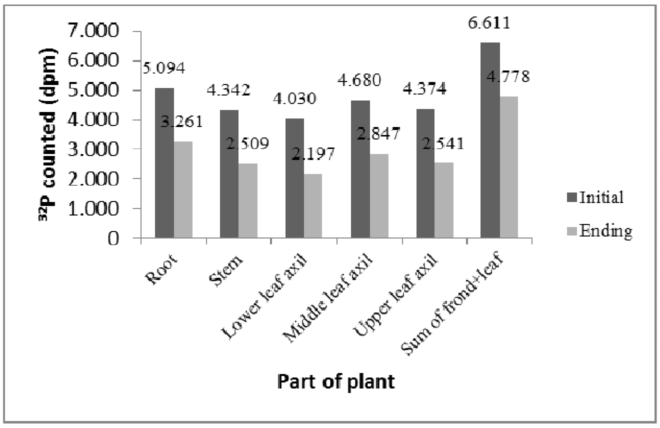

Fig. 5. The dynamics of ^{32}P counted in some parts of oil palm seedlings at the injection point of $KH_2{}^{32}PO_4$ solution at soil 5 cm distance from root zone

At the last treatment, radioisotope P-^{32} was incubated into the base of trunk or stem. The counted number showed that the radioisotope wass distributed to the farthest injection point, which was the upper leaf axil. The high number of counted at the lowest axil injection point and the low number of counted on the top axil indicate that nutrient distribution has taken place from the bottom to the top of the plant thereby diluting the P-^{32} radioisotope in plant parts (Figure 6).

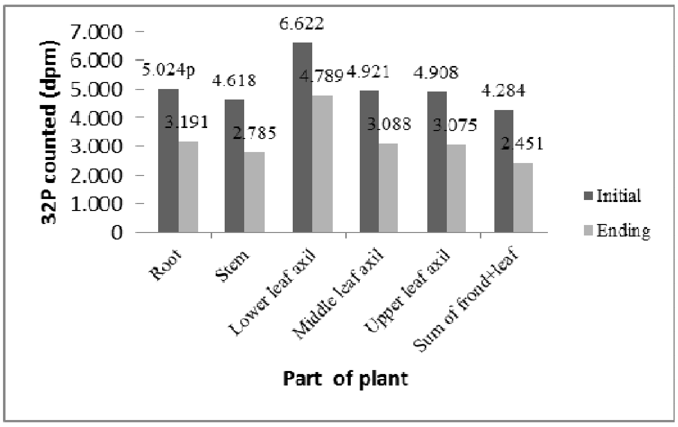

Fig. 6 . The dynamics of ^{32}P counted in some parts of oil palm seedlings at the injection point of $KH_2{}^{32}PO_4$ solution at the base of trunk

IV. CONCLUSION

It can be concluded that ^{32}P radioisotopes can trace the distribution of nutrients in oil palm plant parts, wherever radioisotope is given. Provision of radioisotopes through the leaf axil shows the most satisfying results, where most P nutrients are distributed towards the canopy of oil palm seedlings. Phosphorus nutrient can be given through any leaf axil and can be distributed well to the canopy of plants. ^{32}P nutrient translocation from the point of administration was influenced by the nutrient contents in the plants' organs and in the soils. This needs to be considered later in the fertilizer application of oil palm through the leaf axil.

ACKNOWLEDGMENT

The authors would like to thank Dr. Ir. Ania Citraresmini, M.P from PAIR-BATAN (Center for Application of Isotope and Radiation – National Nuclear Energy Agency) Jakarta, Indonesia, for her endless support towards the completion of this research.

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