

Professor OYETUNJI Olusola Jacob

Plant Physiologist and Soil Biologist

Head of Department of Botany

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Academic and Professional Qualifications (With Dates)

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| i). Certificate in Molecular Biology | 2006 |
| ii). Doctor of Philosophy (PhD. Plant Physiology & Biochemistry) | 2001 |
| iii). Master of Science (M.Sc. Plant Physiology & Biochemistry) | 1991 |
| iv). Bachelor of Science (B.Sc. Hons., Botany. Second Class Lower) | 1988 |

Research and Publications Completed

(a) Intercropping Studies.

The physiological parameters and yield performance of cassava when intercropped with maize and groundnut were evaluated. It was established that intercropping with groundnut was beneficial to its physiology and yield and that it was economical to intercrop cassava with groundnut especially where agricultural land is scarce.

The effect of intercropping dates between yam and maize in sub-tropics was also studied. The study revealed that each yam variety requires different dates of intercropping with maize for maximum yield. It was concluded that early intercropping of the two crops is beneficial to all the three yam varieties (*Dioscorea rotundata*, *D. cayensis* and *D. alata*). August date of intercropping has serious adverse effect on *D. cayensis* and *D. alata* but not on *D. rotundata*. It was concluded that yam can be effectively intercropped with maize if the time of intercropping is carefully chosen.

(b) Agroforestry systems and Arbuscular Mycorrhizal (AM) Inoculation

The trials studied both physiological and yield responses of maize, yam, and cassava under agroforestry systems and mycorrhizal inoculations. The research confirmed that sustainable production of maize, cassava and yam might not be complete without the integration of biological-based (alley cropping) system. Agroforestry, using legumes, with mycorrhizal integration is a promising form of biological based farming system which enhanced the yield of these three crops. It was then concluded that novel approaches are needed to encourage the use of AM in the input package used by sub-Saharan Africa farmers in order to sustain soil fertility under intensive cropping system. Agroforestry recycles nutrient and provides organic matter for incorporation into the soil while mycorrhizae act as agents of nutrient transportation between plant and soil. This practice should be encouraged. The recorded yields of the three crops under the trials were well above African averages.

(c) **Arbuscular Mycorrhizal (AM) and Rhizobium Interaction on Soybean**

The use of AM fungi and Rhizobium interactions on the growth of Soybean (*Glyxine max* L.) were investigated. The crop is of great importance to West African populace and its yield is decreasing which can seriously affect the food balance of the region. The study therefore tried to improve its yield with application of these two symbionts which improved the nitrogen and phosphorus uptakes of the crop. The yield of soybean was consequently improved.

(d) **Agroforestry systems, Mycorrhizal Inoculation and Plant Physiology**

Physiological responses of maize, cassava, and yam to agroforestry systems and mycorrhizal inoculations were extensively studied. Arbuscular Mycorrhizal Fungi (AMF) are implicated as phyto-stimulators of various physiological processes of its associated plants. The influences of AMF, agroforestry systems and water deficit on plant nutrient uptake, water relations, chlorophyll production and quantum yield of photochemistry (Fv/Fm) of photosystem of plants (maize, cassava, and yam) were investigated. The research showed that agroforestry had adverse effect on some physiology of these crops. But the effects were ameliorated with the introduction of AMF into the cropping systems. The introduced AMF species were found to enhance nutrient uptake, water relations, chlorophyll productions and photochemistry quantum yield of the crops. It was therefore concluded that AMF can be useful for crop production in tropical agriculture where rainfall is erratic giving rise to drought-prone water deficit-stress condition. The mutuality of symbiosis stimulated the production of more leaf chlorophyll and more nutrient uptakes.

(i) **In progress:**

(a) **Phytoremediation of oil polluted site:** Oil pollution is a menace in Nigeria. Many agricultural lands have been rendered useless because of oil pollution particularly in Niger Delta region and in our big cities. Effective use of plants and microbes to remediate the site is a function of adequate knowledge of these organisms and their responses to oil pollution. The work was aimed at the effective use of plants and microbes to ameliorate the oil polluted sites for productive agricultural practices.

(b) **Waste to Wealth:** This is a project embarked upon by physiology unit in the Department. Agricultural wastes such as spent mushroom compost, poultry waste, animal dung, sawdust etc, are being used to improve crops' growth and yield.

(c) **Improvement of crop production in saline environment:**

The research is investigating the physiology of crops in saline environment so as to improve production of some common vegetables in such environment. This project was as a result the effect of irrigation practices on Nigeria soils. The demand of these vegetables cannot be met under normal weather conditions.

(d) **Allelopathic effects of *Tithonia diversifolia* on plants:** This plant is a common weed in many countries of the world and is the most underestimated problems in agriculture. It

suppresses practically almost all the grasses and herbaceous plants it comes across. The objective of this work is to find out the mechanism of suppression adopted by this weed against other plants.

(e) Production of mini-tubers from vine cuttings of *Dioscorea rotundata*

Trials were conducted in conjunction with IITA (International Institute of Tropical Agriculture, Ibadan) on how to produce seed yam from vine cuttings of white yams. This research is of great importance to local farmers who rely on whole yams for planting materials in every subsequent year.

Thesis:

Ph.D. Thesis: The Role of Vesicular-arbuscular Mycorrhizae and Woody Legumes on Sustainable Cassava (*Manihot esculenta* Crantz) and maize (*Zea mays* L.) production in a Derived Savanna Ecosystem. University of Ibadan, Ibadan (2001).

List of Publications

Books

1. Practical Biology for NCE and Degree Students (2012). Vol 1. Eds. Oyetunji, O.J., Popoola K.O.K., and Amusat M.A. Jimsalaam Press, Lagos.
2. Practical Biology for NCE and Degree Students (2012). Vol 2. Eds. Oyetunji, O.J., Popoola K.O.K., and Amusat M.A. Jimsalaam Press, Lagos.

Journal Articles

3. Etaware, P. M., and Oyetunji, O. J. (2019). Endemic disease of cultivated tomato and microbial screening for infectious agents in Ibadan, *Journal of Agriculture and Allied Sciences*. Vol 8 (Issue 1):44-54.
4. Etaware, P. M., Etaware, E. U., Olaoluwa, O. O., Oyetunji, O. J., Aiyelaagbe, O. O., and Odebode, A.C. (2019). Crude plant extract: A cure for fungal diseases affecting tomato and a supplement for nutrient deficiency. *Plant Pathology and Microbiology*. Vol 10 (issue4), No. 481:1-11.
5. Etaware, P. M., Etaware, E. U., Olaoluwa, O. O., Oyetunji, O. J., Aiyelaagbe, O. O., and Odebode, A.C. (2019). The impact crude plant extracts: As potential Biofertilizers and treatment against tomato plant infection. *Plant Pathology and Microbiology*. Vol 10 (issue4), No. 481:1-11.
6. Edagbo, D.E. and Oyetunji, O.J. (2019). A Comparative study of secondary metabolites, amino acids and protein profiles of host-parasite plants in the relationship between the African mistletoe, *Tapinatus bangwensis* [Engl. And K. Krause] Danser and two of its host species. *Greener Journal of Biochemistry and Biotechnology*. Vol 6. 1-11.
7. Ajomgbolo, F.B. Oyetunji, O.J., Jamaledine Z.O. and Adedeji, A. A. (2018). Breaking of seed dormancy in *Morinda lucida* Benth. *Greener Journal of Biochemistry and Biotechnology* Vol. 5(1): 1-8.

8. Oyetunji, O.J., and Afolayan, E.T. (2018). Influence of arbuscularmycorrhizal fungi, green manures of *Leucaenaleucocephala* and *Gliricidia sepium* on the yield of white yam (*Dioscorea rotundata*) and soil bioremediation in the abandoned quarry. *Agricultural Extension Journal*. 2(1): 51-54.
9. Afolayan, E.T., Oyetunji, O.J., Olawuyi, O.J., and Ajanlekoko, Y.E. (2017). Effect of spent engine oil on the growth and yield of different accessions of tomato (*Solanum lycopersicum* L.) as influenced by arbuscularmycorrhizal fungi and poultry manure. *Nigerian Journal of Mycology* 9: 88-94.
10. Oyetunji, O.J. and Afolayan, E.T. (2016). Physiological and yield characters of white yam (*Dioscorea rotundata* Poir) vine cuttings under arbuscularmycorrhizal fungi and other soil amendments. *Journal of Science and Information Technology* 74-84.
11. Onakpharkpote, E.E., Adenipekun, C.O., and Oyetunji, O.J. 2016}. Bioremediation of spent oil contaminated –soil by *Pleurotus ostreatus* (Jacq. Fr) P. Kumn. *Journal of Science Research* 14: 117-124.
12. Oyetunji, O.J. and Imade, F. (2015). Effect of different levels of NaCl and Na₂SO₄ salinity on dry on dry matter and ionic contents of cowpea (*Vigna unguiculata* L. Walp). *African Journal of Agricultural Research*. 10(11): 1239-1243.
13. Oyetunji, O.J. and Afolayan, T.E. (2014). Physiological and yield responses of yam (*Dioscorea rotundata*. Poir) vine cuttings to varying rooting chemicals. In: *Proceedings of the International Bioscience and the 5th Joint International PSU-UNS Bioscience Conferences*. 29-30 September 2014. Phuket Thailand.
14. Amusat, M.A., Osonubi, O. and Oyetunji, O.J. (2014). Effects of mycorrhizal inoculation and crop rotation on maize growth and biomass production. *Nigerian Journal of Soil Science*. 24(1): 183-190.
15. Oyetunji, O.J. and Afolayan, T.E. (2014). Chlorophyll, relative water content and yield assessment of yam (*Dioscorea rotundata*-Poir) vine cuttings for mini-tuber production under varying environmental conditions. *Int. J. Pure Appl. Sc. Technol*. 24(1): 10-17.
16. Oyetunji, O.J. and Imade, F. (2014). Effect of salt stress on growth, proline, glycinebetaine and photosynthetic pigments concentrations on cowpea plant. *Nature and Science* 12(12): 156-161.
17. Oyetunji, O.J., and Edagbo, D.E. (2013). Comparative Eco-physiological Study of *Tapinanthus bangwensis* (Engl. and R. Krause) Danser (African Mistletoe) on two host plants. *Journal of Chemical, Biological and Physical Science* 3(3) 193-194.
18. Adenipekun C.O., Ayanleye. O. O. and Oyetunji O.J. (2013). Bioremediation of soil contaminated by spent diesel oil using *Pleurotus pulmonarius* Fries (Quelet) and its effects on the growth of *Corchorus olitorius* (L) *Journal of Applied Biosciences* 68:5366-5373.
19. Jonathan, S.G., Oyetunji, O.J. and Uwukhor P.O. (2013). Application of *Pleurotus ostreatus* SMC as soil conditioner for the growth of soybean (*Glycine max*) *Academia Arena* 5(1): 55- 61

20. Ibiremo, O.S., Ogunlade, M.O., Oyetunji, O.J. and Adewale, B.D. (2012). Dry matter and nutrient uptake of cashew seedlings as influenced by arbuscularmycorrhizal inoculation, organic and inorganic fertilizers in two soils in Nigeria. *Journal of Agricultural and Biological Science* 7(3): 196-205.
21. Jonathan, S.G., Oyetunji, O.J. and Asemoloye, M.A. (2012). Supplementation of spent mushroom compost (SMC) of *Pleurotostreatus* (Jackuin Ex. Fr.) Kummer as a soil amendment for the growth of *Amaranthushybridus* Lin., A Nigerian green vegetable. *BioTechnology*.1-9.
22. Oyetunji, O.J., Edagbo, D.E., Lawyer, E.F. (2012). In-vitro propagation of African mistletoe (*Tapinanthusbangwensis*) and artificial infestation of the parasite on two host plants. *Nigerian Journal of Horticultural Science*. 17: 21-29.
23. Jonathan, S.G., Oyetunji, O.J., Olawuyi, O.J., Asemoloye, M.D. (2012). Growth response of *Corchorusolitorius* Lin. (jute) to the application of SMC as an organic fertilizer. *Academic Arena* 4 (9): 4856.
24. Jonathan, S.G., Oyetunji, O.J., Asemoloye, M. A. (2012).Influence of spent mushroom compost (SMC) of *Pleurotostreatus* on the yield and nutrient composition of *Telfariaoccidentalis* Hook. F.A. (pumpkin), a Nigerian leafy vegetable. *Nature and Science*. 10(10): 149-156.
25. Oyetunji, O.J and Salami, A.O. (2011). Study on the control of *Fusariumwilt* in the stems of mycorrhizal and Trichodermal inoculated pepper (*Capsicumannum* L.)*Journal of Applied Biosciences* 45: 3071-3080.
26. Oyetunji O.J. and Soyode, F.O. (2011). Variability in sprouting ability of cassava mosaic disease resistant cassava genotypes. *Journal of Science Research* 10(3): 339-349.
27. Jonathan, S.G., Lawal, M.M., and Oyetunji, O.J, (2011). Effect of spent mushroom compost of *Pleurotuspulmonarius* on growth performance of four Nigerian vegetables. *Mycobiology* 39 (3): 164-169.
28. Oyetunji, O.J., Muamba K., and Kikuno, H. (2011). Advanced techniques of mini tuber production from vines and bulbils of white yam (*Dioscorearotundata*). *Nigerian Journal of Horticultural Science*. 16: 83-94.
29. Adenipejun C.O., Oyetunji, O.J. (2010). Nutritional values of some tropical vegetables. *Journal of Applied Biosciences* 35: 2294-2300.
30. Fagbola, O, Emamnel, B., Abaidoo, R., Osonubi, O., Oyetunji, O.J. (2010). Abundance and distribution of arbuscular fungi species in long-term soil fertility management systems in Northern Nigeria. *Journal of Plant Nutrition* 33: 1264 - 1275.
31. Oyetunji, O.J. (2009). Intercropping dates and yam's performance in maize based cropping system in sub-humid tropics.*Nigerian Journal of Science* 43: 19-25.
32. Fagbola, O. Oyetunji, O.J., Olugbemi, P.W. (2009). Myco-fertigation Production of Okra (*Abelmoscusesculentus* L. Moench) under pot and field conditions. *Nigerian Journal of Horticultural Science* 14: 38-43.

33. Soyode, F.O. and Oyetunji, O.J. (2009). Use of morphological characters to identify cassava mosaic disease and cassava bacterial blight resistance. *African Crop Science Journal* 17 (1): 119-131.
34. Oyetunji, O.J., Fagbola, O. and Afolayan, E.T. (2009). Effects of arbuscular mycorrhizae and soil amendments on nutrient accumulation, water status and chlorophyll production of yam. *Nigerian Journal of Mycology* 2: 199-209.
35. Oyetunji, O.J. (2009). *Dioscorea rotundata* (Poir): Production and future prospect. In: *Underutilized and underexploited horticultural crops*. Vol.5. (eds. K.V. Peter).
36. Adenipekun, C.O, Oyetunji, O.J, and Kassim, L.S. (2009). Screening of *Abelmoschus esculentus* L. Moench for spent engine oil tolerance. *Journal of Applied Biosciences* 20: 1131 -1137.
37. Amusat, A.M, Oyetunji, O.J and Osonubi, O. (2008). Effects of arbuscular mycorrhizal fungus (AMF)-rhizobium interaction on soybean (*Glycine max*) nodulation and biomass production in a controlled environment. *Nigerian Journal of Mycology* 1: 102-110.
38. Adenipekun, C.O, Oyetunji, O.J, and Kassim, L.S. (2008). Effect of spent engine oil on growth parameters and chlorophyll contents of *Corchorus olitorius* Linn. *The Environmentalist* 28: 446-450.
39. Oyetunji, O. J, and Osonubi, O. (2008). The roles of improved cropping systems and an arbuscular mycorrhizal fungus on yam productivity in degraded soil. *Crop Research* 35(3): 245-254.
40. Oyetunji, O. J, Fagbola, O, and Osonubi, O. (2008). Evaluation of contribution of *Glomus* species to uptake of micronutrient and its partitioning by cassava in sub-humid tropics. *Crop Research* 35(3): 237-244.
41. Oyetunji, O.J, Muamba, K, and Shiwachi, H (2007). Production of mini-tubers from vine cuttings of *Dioscorea rotundata* (white yam) *Journal of Applied Horticulture* 9(2): 167 - 173.
42. Oyetunji, O.J, Ekanayake, I.J, and Osonubi, O. (2007). Chlorophyll fluorescence analysis for assessing water deficit and arbuscular mycorrhizal fungi inoculation in cassava (*Manihot esculenta* Crantz). *Advances in Biological Research* 1(3&4): 108-117.
43. Oyetunji, O.J, and Fagbola O. (2007). Screening of improved cassava cultivars for intercropping compatibility with maize and groundnut. *Nigerian Journal of Science* 41:
44. Oyetunji, O.J, and Osonubi, O. (2007). Assessment of influence of alley cropping systems and arbuscular mycorrhizal (AM) fungi on cassava productivity in derived savanna zone in Nigeria. *World Journal of Agricultural Sciences* 3(4): 489 – 497.
45. Oyetunji, O.J, and Afolayan, E.T. (2007). The relationships between relative water content, chlorophyll synthesis and yield performance of yam (*Dioscorea rotundata*) as affected by soil amendments and mycorrhizal inoculation. *Archives of Agronomy and Soil Science* 53 (3): 335-344.

46. Oyetunji O. J, Osonubi, O, and Ekanayake, I. J. (2006). Assessment of arbuscularmycorrhizal fungi (AMF) species and water stress on the growth and yield of two cassava cultivars in steam soil. *Nigerian Journal of Science* 40: 128 – 136.
47. Oyetunji, O. J, Osonubi O, and Ekanayake, I. J. (2006). Evaluation of Contribution of an AM fungus and alley cropping system to cassava macronutrient content in derived savanna zone of Nigeria. *Nigerian Journal of Science* 40: 114 - 127.
48. Oyetunji, O.J, and Osonubi, O. (2005): The influence of arbuscularmycorrhizae on the performance of Chilli (Bell) pepper (*Capsicum annum*) *Journal of Applied Horticulture* 7(2): 133-136.
49. Salami, A.O, Oyetunji, O.J, and Igwe, N.J. (2005). An investigation of the impact of *Glomus clarum* (mycorrhiza) on the growth of tomato (*Lycopersicon esculentum* Mill.) on both sterilized and non-sterilized soils. *Archives of Agronomy and Soil Science* 51 (6): 579-588.
50. Fagbola, O, Oyetunji, O.J, Osonubi, O, and Mulongoy, K. (2005). Greenhouse evaluation of two woody hedgerows as affected by arbuscularmycorrhizal fungus (AMF), soil quality and moisture. *Archives of Agronomy and Soil Science* 51(3): 335-349.
51. Ekanayake, I.J, Oyetunji, O.J, Osonubi, O, and Lyasse, O. (2004). The effects of arbuscularmycorrhizal fungi and water stress on leaf chlorophyll production of cassava (*Manihot esculenta* Crantz). *Journal of Food, Agriculture and Environment* 2 (2): 190-196.
52. Oyetunji, O.J, Ekanayake, I.J, and Osonubi, O. (2003). The Influence of arbuscularmycorrhizal fungus, mulch and fertilizer application on the yield of yams in an agroforestry system in southwest Nigeria. *MUARIK Bulletin* 6: 75-82.
53. Oyetunji, O. J, Osonubi, O, and Ekanayake, I.J. (2003). Contribution of an Alley cropping system and arbuscularmycorrhizal fungi to maize productivity under cassava intercrop in derived savannah zone. *Journal of Agricultural Science* 140: 311-316.
54. Oyetunji, O.J, Osonubi, O, and Ekanayake I.J. (2003). The vegetative growth and yield response of two cassava clones to *Glomus fasciculatum* inoculation in semi-controlled conditions. *African Journal of Root and Tuber Crops* 5(2): 52-55.
55. Oyetunji, O.J, Ekanayake, I.J, and Osonubi, O. (2003). The role of vesicular arbuscularmycorrhizal (VAM) fungi on cassava productivity in alley cropping systems with two tree species. *Proceeding of the Eighth Triennial Symposium of the International Society for Tropical Root Crops-Africa Branch (ISTRAC-AB)*. Ibadan, Nigeria. 12-16th November 2001. pp. 324-329.
56. Oyetunji, O.J, Ekanayake, I.J, Osonubi, O, and Lyasse, O. (2003). Cassava macro- and micronutrient uptake and partitioning in alley cropping system as influenced by *Glomus spp.* in sub-humid tropics and its impact on productivity. url: <<http://www.ciat.cgiar.org/biotechnology/cbn/sixth>> international meeting/poster.

57. Oyetunji, O.J, Ekanayake, I.J, and Osonubi, O. (2001). Influence of VAM fungi on cassava-maize intercrop in an alley cropping system. *African Crop Science Conference 5*. 1079-1083.
58. Akparobi, S.O., Tobih, F.O., Togun, A.O., Ekanayake,.I.J., and Oyetunji, O. J. (2001). Cassava growth and development in two contrasting environments of Ibadan and Jos. *Journal of Tropical Agriculture, Food, Environment and Extension*2: 67-75.