

CURRICULUM VITAE

Name: Kambal, Ali Elkhidir
Date of Birth: January 4, 1934
Nationality: Sudanese
Address: House N0 36, Block 13, Alriyad, Khartoum, Sudan.
e-mail: alikambalk@gmail.com
Mobile 00-249-12566119

Qualifications:

- Cambridge School Certificate (Grade 1)1952.
- B.Sc. Agric. (London) 1958.
- Ph.D. Agronomy (Nebraska, USA) 1962.

Employment Record:

- Member of Teaching Staff, Faculty of Agriculture, University of Khartoum, 1958-80.
- FAO Agronomist (Sorghum, Maize and Millet), Yemen, 1980-1986.
- FAO Sorghum Improvement Adviser, Pakistan, 1986-1988.
- Project Manger, UNDP/FAO Research Project in Somalia, 1988-1991.
- Consultant Agronomist, 1991-2000 .
- Professor of Plant Breeding Faculty of Agriculture, University of Khartoum, 2000-2010.
- Consultant Agronomist, 2010 – Present.

Experience in Teaching and Research:

- Teaching: about 30 years teaching experience at University level.
- Research: about 40 years research experience in crop improvement leading to release of some improved cultivars.

Experience in Administration:

- Dean, Faculty of Agriculture, University of Khartoum. 1971 - 1974
- Project Manager, UNDP/FAO Research Project in Somalia. 1988 - 1991
- Chairman, Board of Directors, Agricultural Bank of Sudan. 1996 - 1998
- Member, Board of Directors, the Agricultural Research Corporation. 1996-1999
- Member, Variety Release Committee, Ministry of Agriculture, Sudan 1998-preset
- Member , Sorghum and Millet Genetic Resources Committee of the International Board for Plant Genetic Resources (IBPGR), FAO, Rome for 2 years
- Chairman of the Agricultural Studies Committee, National Council for Higher Education 2006-2009
- Chairman, Cereal Crops Council, Agricultural Revival Progrmme

- Member, National Seed Council, Ministry of Agriculture, Sudan, 2013-Preset
- **Participation as Consultant Agronomist in Several Studies including:**
 - i) **FAO:** Agricultural Sector Review , Yemen , 1992.
 - ii) **FAO:** National Programme for the Development of Agriculture, Livestock and Irrigation Sectors in the Sudan, 1997.
 - iii) **UNDP:** Mid-Term Evaluation of UNDP/FAO Project "On-Farm Research Traditional Rainfed Areas in the Sudan" , 1994.
 - iv) **UNDP:** Thematic Review of UNDP Regional Agricultural Projects in the Arab States.
 - v) **IFAD:** Evaluation of IFAD-finsnced Research and Extension Projects in Yemen, 1992.
 - vi) **AOAD:** "Study of the Technical, Economic and Social Aspects of the Gash Scheme" , 1974.
 - vii) **AOAD:** "Study of Appropriate Technologies for Improvement of the Productivity of Rainfed Agriculture in the Arab Region and the Proposed Projects for Development " , 1997.
 - viii) **AAAIID:** Feasibility Study for Establishing a Company for Production, Processing and Distribution of Improved Seeds, 1995.
 - ix) **SUDEXAM:** Study of the Economic Feasibility of Wheat Production in the Nile and Northern States.
 - x) **SUDEXAM:** Rainfed Agriculture in the Atbara River Unit of PLAN SUDAN
 - xi) **IBPGR:** Sorghum and Millet germplasm collectin missions fielded by IBPGR in Sudan 1978.
 - xii) **IDRC:** IDRC project for control of Striga in the Sudan, 1978.

Puplicatins:

A. Research Paper

- (1) Kambal, A.E. and Webster O.J. (1965). Estimates of general and specific combining ability in grain sorghum. *Sorghum vulgare* Pers. *Crop Science* 5, 521- 523.
- (2) Kambal, A.E. and Webster O.J. (1966). Manifestations of hybrid vigour in grain sorghum and the relations among the components of yield, weight per bushel and height *Corp Science* 6, 513-515.
- (3) Kambal, A.E. (1968). A study of the agronomic characters of some varieties *Vicia faba* L. *Sudan Agricultural Journal* 3, 1-11.
- (4) Kambal, A.E. (1968). Some expressions of hybrid vigour in Castor, *Ricinus communes* L. *Sudan Agricultural Journal* 3, 35-40.
- (5) Kambal, A.E. (1968). Performance of some wheat varieties at Shambat . *Agricultural Magazine* 8, 16-19.
- (6) Kambal, A.E. (1969). Blossom drop and fruit set in field beans, *Vicia faba* L. *Journal of Agricultural Science, Cambridge* 72, 131-138.
- (7) Kambal, A.E. (1969). Components of yield in field beans, *Vicia faba* L. *Journal of Agricultural Science, Cambridge* 72, 359-363.
- (8) Kambal, A.E. (1972). Performance of some local and introduced varieties of forage sorghum at Shambat. *Sudan Agricultural Journal* 7, 12-16.
- (9) Kambal, A.E. (1974). Sorghum breeding at the Faculty of Agriculture, Shambat: 1.
Breeding of sorghum varieties for resistance to *Striga*.
Proceedings of 11th Agricultural Research Colloquium on Cereal Crops in the sudan.Wad Medani, Sudan.
- (10) Kambal, A.E. (1974). Sorghum breeding at the Faculty of Agriculture, Shambat: 2. Utilization of hybrid vigour. *Proceedings of 11th Agricultural Research Colloquium on Cereal Crops in the sudan* .Wad Medani, Sudan.
- (11) Kambal, A.E. (1974). Comparative performance of some varieties of sorghum, maize and pearl millet for forage production in different seasons. *Sudan Agricultural Journal* 10, 46-62.
- (12) Kambal, A.E. (1974). Occurrence and inheritance of a yellow wing spot in *Vicia faba* L. *Sudan Agricultural Journal* 10, 61-63.
- (13) Kambal, A.E. (1974). Occurrence and inheritance of resistance to the powdery mildew disease in *Vicia faba* L. *Sudan Agricultural Journal* 10, ----
- (14) Kambal, A.E. and Abu-El Gasim, E.H. (1975). A case for an accelerated hybrid sorghum project in the Sudan. *Sudan Notes and Records* 57, 107-114.
- (15) Kambal, A.E. and Abu-El Gasim, E.H. (1976). Manifestations of heterosis in grain Sorghum . *Experimental Agriculture* 12,33-42 .

- (16) Abu-El Gasim, E.H. and Kambal, A.E. (1976). Variability and interrelations among characters in indigenous grain sorghums of the Sudan. *East African Agriculture & Forestry Journal* -----
- (17) Kambal, A.E., Bond, D.A. and Toynbee Clarke, Jillian (1976). A study on the pollination mechanism in field beans (*Vicia faba* L.) *Journal of Agricultural Science*, Cambridge 87, 519-526.
- (18) Kambal, A.E. and Mahmoud, M.A. (1976). Variety X environment interactions in grain sorghum variety trials in the Sudan. *Experimental Agriculture* 14, 41-48.
- (19) Kambal, A.E., and Bate-Smith, E.C. (1976). A genetic and biochemical analysis of pericarp pigments in a cross between two varieties of grain sorghum. *Heredity*, 37, 413-416.
- (20) Kambal, A.E. (1980). Proposal for the Release of the Maize Variety Khumaltar. Proposal submitted to the first meeting of the Variety Release Committee held in Sanaa in May 1980.
- (21) Kambal, A.E., and Saeed, M.A. and Shrestha, P.C. (1981). *Studies on the Agronomy of Sorghum, Maize and Millet during 1980*. Technical Report, Taiz 1981.
- (22) Kambal, A.E., and Saeed, M.A. and Shrestha, P.C. (1982). *Studies on the Agronomy of Sorghum, Maize and Millet during 1981*. Technical Report, Taiz 1981.
- (23) Kambal, A.E. (1982). *Proposal for the Release of the Sorghum Varieties Dabar and Kadasi*. Presented to the second meeting of the variety Release Committee held in Sanaa in February 1982.
- (24) Kambal, A.E., Saeed, M.A., Abdul Gabbar, H. and Abdalla H.A. (1983). *Studies on the Agronomy of Sorghum, Maize and Millet during 1982*. Technical Report, Taiz, 1983.
- (25) Kambal, A.E., Saeed, M.A., Abdul Gabbar, H. and Abdalla H.A. and Shrestha P.C. (1983). *Studies on the Agronomy of Sorghum, Maize, Millet during the period 1980-1983*. Final Technical Report, Taiz, 1983.
- (26) Kambal, A.E. (1988). *Improvement of Sorghum, Maize, Millet and some Grain Legumes in Yemen Arab Republic (1980-86)*. Terminal Report.
- (27) Kambal, A.E. (1988). *Sorghum Improvement in Pakistan*. End of Assignment Report of FAO Sorghum Advisor to Project UTF/PAK/072/Pakistan.
- (28) Kambal, A.E. (1991). *Terminal Report the UNDP/FAO/Agricultural Research Project on Somalia*, Rome 1991.
- (29) Kambal, A.E. (2003). Naming of Abu Sabein Sorghums. *University of Khartoum Journal of Agricultural Sciences* 11, 449-452.
- (30) Ahmed, M.I. and Kambal, A.E. (2005). Heterosis and inbreeding depression in faba bean (*Vicia faba* L.). *University of Khartoum Journal of Agricultural Sciences* 13, 224-232.
- (31) El Sanousi, R.S., Kambal, A.E., Ali, A.M., Kamal, N.M. and Mohamed, S.S. (2009). Molecular characterization of some sorghum (*Sorghum bicolor* (L.)

- Moench) access from Sudan in relation to racial classification. *University of Khartoum Journal of Agricultural Sciences* 17, 308-318.
- (32)

B. Review Articles

- (33) Kambal, A.E. (1965). *A Background Note on Agricultural Education in the Sudan* Proceedings 13th conference of the Philosophical Society of Sudan on Agricultural Development in the Sudan. (J.P. Shaw. ed)., ppD 37-39.
- (34) Kambal, A.E. (1967). *Improvement of Sorghum Production in the Sudan*. Proceedings of 2th Erkowit Conference on Sudan Path to Self-sufficiency. Pp 96- 102.
- (35) Khidir, M.O. and Kambal, A.E. (1972). Crop Improvement in the Sudan. Presented to the UNESCO Post Graduate Course in Tropical Agronomy, Faculty of Agriculture, University of Khartoum, 3-18th January, 1972.
- (36) Kambal, A.E. (1973). Breeding Sorghum Varieties for Higher Productivity. Presented to the First FAO/SIDA Seminar on Improvement and Production of Field Crops for Plant Scientists from Africa and the Near East, Cairo September, 1973.
- (37) Kambal, A.E. (1993). *Improvement of Farming Systems for Production of Cereal Crops in the Sudan*. Paper presented to the Pan-Arab Conference on Development of Cereal Crops in the Arab Countries, Cairo 19-23 December 1993.
- (38) Kambal, A.E. (1996). *Development of Farming Systems for Crop Production under Rainfed Conditions*. Paper presented to the Pan-Arab Conference on Development of Dry Farming in the Arab States, Algiers, October 1996.
- (39) Kambal, A.E. *Maize Breeding and Production in the Sudan*. Paper presented in the FAO Workshop on Seed Need for small Farmers, Khartoum, Sudan.
- (40) Kambal, A.E. (2002). *Breeding Strategies and Procedures for Forage Crops*. Lecture presented in the Training Course on Forages and Pastures Seed Production organized by the Seed Administration., Ministry of Agriculture, in collaboration with ICARDA. Khartoum, 6-13 Jan., 2002.
- (41) Kambal, A.E. and Abdalla, A.A. (2008). *Role of Arab Faculties of Agriculture, in Food Security in the Arab World*. Presented in the conference on food security in the Arab World Khartoum.
- (42) Kambal, A.E. (2009). *Role of Faculties of Agriculture in Agricultural Revival Programme*. A paper presented to the workshop organized by the Sudanese Agricultural Council. Khartoum, April 2009.

- (43) Kambal, A.E. (2009). *Production of Cereal Crops in the Sudan.*, Paper presented to the Workshop on Cereals Production and Processing organized by the Sudanese Standards and Measures Organization. Khartoum, 2009.
- (44) Kambal, A.E. (2010). *Studies on Production of Bio-ethanol from Sweet Sorghum at the Faculty of Agriculture, University of Khartoum.* A paper presented to the conference on graduate Studies and Research, University of Khartoum, 27 Feb- 3Mar., 2010.
- (45) Kambal, A.E. (2014) *Seed Policy for the Sudan and Experience of other Courtiers* (in Arabic).A paper presented to the National Seed Policy Workshop. Khartoum Sudan January 20-21, 2014.
- (46) Kambal, A.E. (2014). Biotechnology:An Oveview.A paper Presented to the Biotechnology Awareness Creation Workshop. Khartoum, Sudan, September 23, 2014.

CURRICULUM VITAE

Name: HAMED AHMD DIRAR

Nationality: Sudanese

Marital Status: Married; four children

Education:

- B.Sc. (1965) Agriculture, University of Khartoum.
- M.Sc. (1967) Food Science, University of California, Davis.
- Ph.D. (1972) Microbiology, University of California, Davis.
- Title of M.Sc. thesis: Use of hydrogen peroxide in controlling *Pseudomonas fragi* in pasteurized milk and half-and-half.
- Title of Ph.D. thesis: Carbohydrates and citrate metabolism by homofermentative lactobacilli.

Certificates:

- Certificate on Biochemical and Microbiological Technology University of Lagos, Nigeria, 1978.
- Certificate on Applied Microbiology and Waste Recycling Egyptian Society of Applied Microbiology, Cairo, Egypt, 1982.
- Certificate on computer-aided monitoring and control of fermentations. Kuwait institute for scientific research.

Training Courses Attended:

- Training course on basic techniques in industrial and environmental microbiology. UNEP/UNESCO/ICRO, Nairobi, Kenya, 1977.
- Training course on biochemical and microbiological technology. UNESCO/ICRO/IOBB, Lagos, Nigeria, 1978.
- Training course on prospectives of applied microbiology and waste recycling. UNESCO/UNEP/ICRO, Cairo, Egypt, 1982.
- Training course on computer-aided control of fermentations. UNESCO/KISR/Arab bureau of education for the gulf States, Kuwait, 1986.
- Training course on applications of genetic engineering to plant molecular biology. IFSTAD (Islamic foundation for science, technology and development) Lahore, Pakistan, 1987.

Working Experience:

- Teaching assistant at Faculty of Agric. Univ. of Khartoum, 1965-1972.
- Associate professor at same University, 1972-1983.
- Associate professor at same University, 1983-1988.
- Full professor at same University, 1988.

- Head Department of Botany and Agricultural Biotechnology at same University, 1981-1984.
- Dean, Faculty of Agriculture, Univ. of Khartoum, 2000-2002.
- Professor of Microbiology, University of Omar Mukhtar, Libya, 1994-1996.

Courses taught (Mostly designed and introduced for the first time):

- Introduction to microbiology, food microbiology, industrial microbiology, microbial physiology, microbial metabolism, nutrition and food hygiene (M.Sc. Human Nutrition), traditional foods of the Sudan, introduction to biotechnology, biotechnology and society, food plant sanitation, Dairy microbiology, microbiology and preservation (M.Sc. Biochemistry & Food Science).

Sabbatics:

- Universite des sciences et techniques, lille, France, 1980.
- The queens university of Belfast, northern Ireland, 1984.
- Cornell university, Ithaca, New York, USA, 1992.

Books Authored or Edited:

- Dirar, H.A. 1986. Microbe. Khartoum University press. Khartoum, Sudan, popular science. (Arabic), 232 pp.
- Dirar, H.A. 1993. The indigenous fermented foods of the Sudan, C.A.B international, Wallingford, UK. 552 pp.
- Dirar, H.A.(editor) 1997. Food processing technologies for Africa. United Nations Industrial development organization (UNIDO), Vienna, 196 pp.
- Dirar, H.A. (member of study team). 2003. Assessment of national capacity building needs related to managing access to genetic resources and benefit sharing, higher council for environment and natural resources (HCENR), Sudan. 53 pp.
- Dirar, H.A. (Co-editor) promoting Arab cooperation in research in the area of biotechnology in improving plant production, Arab organization for agricultural development, Khartoum, Sudan. (Arabic). 2001.
- Dirar, H.A. 2004. The amulet of Feki Umhummad Wad Beshir. Memoirs of a Sudanese nomad boy who went to school, 505 pp.
- Dirar, H.A. 2012. Biotechnology and society. Khartoum University press. Khartoum, Sudan, popular science. (Arabic), 405 pp.
- Dirar, H.A. 2013. Biology of microorganisms. Khartoum University press. Khartoum, Sudan, popular science. (Arabic), 567 pp.

- Dirar, H.A. 2013. Miroorganisms and foods (Food Microbiology). Khartoum University press. Khartoum, Sudan, popular science. (Arabic), 421 pp.

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National, Regional and International Contributions:

- Representative of Sudan, league of Arab states symposium on biotechnology, 1985. Rabat, Morocco.
- Representative of Sudan, Arab conference on biotechnology, 1989. amman, Jordan.
- Representative of Sudan, to the talks on biosafety protocol on genetically modified organisms (GMOs)at:
 Nairobi, Nov. 1998, Jan. 1999, Aug. 1999, Feb. 2001, Sept. 2001.
 Vienna, Sept. 1999
 Montpellier, Dec. 2002
 Addis Ababa, Mar. 2002
 Windhoek, Nov. 2002 (member of team).
 Dar ES Salam, Mar. 2004 (member of team).
- Consultant to UNIDO on fermented foods 1991, Ibadan, Nigeria.
- Consultant to UNIDO on fermented foods 1993, Dakar, Senegal. (Afristech conference).
- Organized UNESCO training course on the fermented foods of the Arab World, Khartoum, Sudan. 1987.
- Organized a workshop for UNIFEM and ITDG (UK) on Women's role in food processing in Africa, Khartoum, Sudan. 1991.
- Chairperson, committee to prepare curricula for the new college of natural resources, and environmental studies, University of Kordofan, 1990.
- Chairperson, committee to prepare a note on the cartagena protocol on biosafety for the council of ministers, Sudan, 2003.
- Chairperson, of the national committee for establishing Sudan's microbiological specifications of foods, 2001-2005.
- Invited speaker on foods of Sudan, U.N. Radio, New York, 1992.
- Invited speaker on foods of Sudan, University of Maryland, college park, U.S.A., 1992.

Tokens of Recognition:

- Medal and sash of enrichment of knowledge, Khartoum University press, 1990.
- Top prize, netherland's international contest on rural peopl's biotechnology, 1993.

Boards and Committees:

- Member of the board of directors of the national council for research (Sudan), 1987-1989.
- Member of the board of directors and of the editorial board of Khartoum University press, 1985-1989.
- Member of the national committee for genetic engineering and biotechnology (Sudan), 1985-1989.
- Member of the senate of the University of Khartoum.
- Member of the national coordinating committee (NCC) for establishing Sudan's national biosafety frameworks, 2003-2005.

Membership of Societies:

- Member of the Agricultural society of Sudan, 1972-present.
- Member of the Sudanese microbiological society, 1987-present.
- Member of the Sudanese society for food science and technology, 1978-present.
- Member of the Sudanese society for the protection of the environment, 1979-present.
- Member of the Sudanese writers union, 1985-1989.
- Member of the Sudanese society for human rights 1985-1989.

Languages:

- Arabic : Very good
- English : Very good
- French : Fair

Graduate Student Training (List-attached):

- Total 53 students (including 9 currently registered, 2008).
- Of these, 21 are Ph.D. students.

Publications in:

J. Dairy Science; J. General Microbiology; J. Food Science; J. Science of Food and Agriculture; Applied and Environmental Microbiology; Economic Botany; Environment International; World J. of Microbiology and Biotechnology; International J. of Food Microbiology; Ecology of Food and Nutrition others.

**SUPERVISED
POST- GRADUATE STUDENT RESEARCH**

1. Muna Ahmed Agab (Ms). M.Sc. 1978. Isolation of yeast strains suitable for ethanol and single cell protein production from sugar cane molasses.
2. Zohour Hamid Hammad (Ms). M.Sc. 1978. Microbiological examination of "sebeel " water.
3. Mohamed Zein Ali M.Sc. 1980. Biochemical and Microbiological studies on fermentation of dates.
4. Awatif Muddathir Ahmed (Ms). M.Sc. 1980. Microbiology of spoiled canned foods collected from Khartoum market.
5. Ahmed El Awad El Faki M.Sc. 1980. Studies on the methylene blue reduction test of milk.
6. Hassan Bashir El Amin M.Sc. 1983. Biogas production from water hyacinth (*Eichhornia crassipes*).
7. Deena Mirghani Mahgoub (Ms). M.Sc. 1984. Coliform bacteria in the Nile at Khartoum.
8. Fathi Nour El Din Ayoub M.Sc. 1985. Digestion of cotton lint cellulose by acid and fungal enzymes.
9. Mohamed Abbas El Radi M.Sc. 1985. A Study on biogas production from Khartoum sewage.
10. Isam Awad Mohamed Ali (Ms). M.Sc. Ethanol production from molasses by yeast fermentation.
11. Omaina Abdalla Marhoum (Ms). M.Sc. 1987. Biochemistry and microbiology of hulu-mur fermentation.
12. Abdalla Mohamed El Tom M.Sc. 1989. Microbiology and biochemistry of fessiekh fermentation.
13. Nagat Ahmed El Rofaei (Ms). M.Sc. 1990. Coliform bacteria in fresh milk in Khartoum area.
14. Ibtisam Ismail Mekki (Ms). M.Sc. 1990. Biogas production from cowdung.
15. Ahmed El Awad El Faki Ph.D. 1992. The microbiology and biochemistry of sigda fermentation.

16. Kauther Hueeein El Sharif (Ms), M.Sc. 1993. Microbiology and biochemistry of abreh fermentation.
17. Ahmed Ali Mirghani M.Sc. 1994. Microbiology and biochemical properties of the fermented camel milk: gariss.
18. Hamid Mohmed Ibrahim El Faki M.Sc. 1994. Incidence of *Yersinia enterocolitica* in locally-produced and imported foods in United Arab Emirates.
19. Hassan Beshir El Amin Ph.D. Production of fuel ethanol by yeast fermentation of sorghum grain treated with plant and microbial enzymes. (Supervised to the stage of writing the thesis, 1994).
20. Fathi Nour El Din Ayoub Ph.D. 1994. Upgrading of the nutritive value of sorghum straw by solid-substrate fermentation. (Supervised to the stage of writing the thesis, 1994).
21. Ibtisam Ismail Mekki (Ms). Ph.D. Biogas sludge as soil conditioner. (Supervised to the stage of writing the thesis, 1994).
22. Ibrahim El Zein Abdel-Rahman M.Sc. 2000. Microbiological and biochemical changes during fermentation of sorghum.
23. Huda Hassan Ali Ibrahim (Ms). Ph.D. 2000. Biochemical and microbiological studies on millet and khemiss-tweira, a fermented food from millet.
24. Nahid Abdel Nabi Mohamed (Ms), M.Sc. 2000. Screening for osmotolerant yeasts for ethanol production.
25. Tag El Sir Khidir Ahmed Ph.D. 2000. Standardization of traditional "Rob" production procedure.
26. Huda Abdu Hassan Osman (Ms). M.Sc. 2001. Screening of yeasts associated with the traditional sorghum fermentation.
27. Abdel Moneim El Hadi Suleiman Ahmed Ph.D. 2001. Chemical biochemical and micrioniological studies on the Sudanese traditionally fermented milk (Rob).
28. Elham Salih Obeid (Ms). M.Sc. 2002. Microbiological evaluation of processed gum Arabic production.
29. Abdalla Mohamed El Tayeb M.Sc. 2002. Utilization of Kenana final molasses for ethanol production.
30. Mawahib El Amin Mohamed (Ms). Ph.D. 1997. Microbiological and biochemical studies on hussuwa: a traditional Sudanese fermented food.
31. Nagwa Babiker El hag Khalifa (Ms). M.Sc. 2002. Microbiological and biochemical evaluation of dried beef "Sermoud".
32. Huda Mubarak Salman (Ms). M.Sc. 2003. Microbiological and biochemical studies on terkin: a fermented fish product.

33. Nuha Mohamed El Khatim (Ms). Ph.D. 2003. Molecular typing of lactic acid bacteria associated with hussuwa, a Sudanese fermented food.
34. Fatima Sir El Khatim Ahmed Sir El Khatim (Ms). Ph.D. 2003. Thanol production from sweet sorghum by yeast fermentation.
35. Selma El Siddig Ahmed (Ms). M.Sc. 2003. Biochemical and microbial changes during fermentation of tea fungus (Kombucha).
36. Abdel Wahab Ali Ahmed Ph.D. 2004. Isolation and identification of *Bacillus thuringiensis* from Sudanese soils.
37. Zeinab Abu baker Mohammed Elgadi (Ms). M.Sc. 2003. Isolation and identification of lactic acid bacteria and yeasts from raw milk.
38. Namya Mohamed Abdel Rahim (Ms). M.SC. 2003. Biochemical and microbial changes during fermentation of "Gurrassa Murra".
39. Ibrahim Fatah Al Rahman Ahmed Ph.D. 2004. Microbiological quality of water in food factories storage cisterns in Khartoum North industrial area.
40. Nada Hassan Mohamed El Mahdi Doleib (Ms). Ph.D. Microbiology of duma: a fermented honey beverage. (On-going research, 2007).
41. Ibrahim El Zein Abdel-Rahman Ph.D. 2007. Fermentation of camel milk using pure starter bacteria.
42. Nada Mohammed Elkheir Mohammed (Ms). Ph.D. 2007. Isolation and characterization of bacteria capable of degrading petroleum crude oil.
43. Abdel-Rahman Ahmed Mohammed Mahmoud M.Sc. 2004. The microflora of gum Arabic (*Acacia Senegal* gum) from the tree to the store.
44. Iman Mohammed Ali El Imam (Ms). Ph.D. Biochemical and microbiological studies on damirga, a fermented millet food. (On-going research, 2007).
45. Samah Mahmoud Ahmed Wagi Alla (Ms). M.Sc. 2006. Prevalence of endospore-forming bacteria in market vegetables in Khartoum state.
46. Mai Mohammed Osman Ahmed (Ms). M.SC. Microbiological examination of animal offal from market places (On-going research, 2007).
47. Safa Abbas Mohammed Abdel Rahman (Ms). Ph.D. 2006. Studies on *Escherichia coli* isolates from Khartoum.
48. Arafat Mohammed Goja M.Sc. 2004. Prevalence of *Staphylococcus* spp. N fresh meat in Khartoum state.
49. Naiema Eltayeb Gorashi Ph.D. (Ms). 2009. Isolation and characterization of entomopathogenic *Bacillus thuringiensis* strains.

50. Ahmed Mahgoub Hamad Abu Alhassan Ph.D. 2010. Evaluation of E.coli, enterococci and clostridia as indicators of fecal contamination of water in Sudan.
51. Mufeeda Saeed Mukhtar (Ms). Ph.D. The fermentation (Beirta a meat food product of the Auba). (On-going research, 2006).
52. Hamad Mohammed Ibrahim Elfaki Ph.D.2010 Incidence of *Enterobacter sakazaki* infection and powdered milk formulas.
53. Amal Babiker Mohammed El Hassan Abd-Enabi (Ms). M.Sc. 2010. The Microbiology and biochemistry of doddery fermentation.
54. Arafat Mohammed Goja. Ph.D. 2010. Fecal contamination of the Nile water at Khartoum .

PUBLICATIONS

1. Collins, E.B. and H.A. Dirar 1969. Effect of hydrogen peroxide on growth of *pseudomonas fragi* and shelf life of pasteurized half-and-half. J.Dairy Science (USA) 52:69-73.
2. Dirar, H.A. and E.B. Collins 1973. End products, fermentation balances and molar growth yields of homofermentative lactobacilli. J. Gen. Microbial. (UK) 73:233-238.
3. Dirar, H.A. and E.B. Collins Aerobic utilization of low concentrations of galactose by *Lactobacillus Plantarum*. J. Gen microbial. (UK) 73:233-238.
4. Dirar, H.A. 1974. Microbial spoilage of food (a review). Sudan J. Food Sci. Technol. 6:61-65.
5. Dirar, H.A. 1975. Studies on hydrogen peroxide preservation of raw milk. Sudan J. Food Sci. Technol. 7:66-74.
6. Dirar, H.A. 1976. Optimum incubation temperature for the plate count of milk. Sudan J. Food Sci. Technol. 8:55-60.
7. Dirar, H.A. 1976. The art and science of merissa fermentation Sudan Notes and Records 57:115-129.
8. Dirar, H.A. and A.M. A/Gadir 1977. Use of hydrogen peroxide in collecting raw milk from nomadic tribes. Sudan J. Food Sci. Technol. 9:15-23.
9. Dirar, H.A. 1978. A microbiological study of Sudabese merissa brewing J. Food Sci. (USA) 43:1683-1686.
10. Jahn, S.A. and H.A. Dirar 1979. Studies on natural water coagulants in the Sudan, with special reference to *Moringa Oleifera* seeds. Water S.A. 5:90-97.
11. Agab, M.A. and H.A. Dirar 1980. Local yeast strains suitable for protein and ethanol production from sugar cane molasses. Sudan J. Food Sci. Technol. 12:57-63.
12. Hammad, Z.H. and H.A. Dirar 1982. Microbiological examination of "sebeel" water Appl. Environ. Microbial. (USA) 43:1238-1243.
13. Hammad, Z.H. and H.A. Dirar 1982. Streptococci versus coliforms as indicators of faecal contamination in "sebeel" water. Sudan Notes and Records, 59:166-175.
14. Ali, M.Z. and H.A. Dirar 1984. A Microbiological study of Sudanese date wines. J. Food Sci. (USA) 49:459-460, 467.
15. Dirar, H.A. 1984. Kawal, meat substitute from fermented *Cassia Obtusifolia* leaves. Economic Botany. (USA) 38:342-349.
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