

SUBJECT INDEX 2020

δ Scuti

Determination of oscillation frequencies and stellar properties of three Delta Scuti variable stars using Kepler data (Adassuriya J, Jayaratne KPSC & Cooray PTLV & Attygalle MLC) **48**: 367-378 (2020)

Acceleration mean square value

Comfort evaluation of bridge based on stochastic process theory (Tan Y, Qin S, Zhang Z, Wang H & Wang Q) **48**: 239-249 (2020)

Accuracy assessment

Google Earth imagery coupled with on-screen digitisation for urban land-use mapping: case study of Hambantota, Sri Lanka (Madarasinghe SK, Yapa KKAS & Jayatissa LP) **48**: 357-366 (2020)

Ae. cogilli

First record of the presence of *Aedes* (Phagomyia) *cogilli* (Edwards, 1922) in Sri Lanka (Jayadas TTP, Thiruchenthooran V, Tharsan A, Sivabalakrishnan K, Santhirasekaram S & Surendran SN) **48**: 327-331 (2020)

Aedes aegypti

The scope of Rp EPIC markers in population genetic studies: a preliminary study with dengue vectors (Nirmani MD, Perera NS & Galhena GH) **48**: 275-288 (2020)

Aedes albopictus

The scope of Rp EPIC markers in population genetic studies: a preliminary study with dengue vectors (Nirmani MD, Perera NS & Galhena GH) **48**: 275-288 (2020)

Age hardening

Effect of precipitate size distribution on hardness of aluminium 6063 alloy (Dilrukshi LWUR & De Silva GIP) **48**: 305-313 (2020)

Agronomic effectiveness

Use of single superphosphate fertiliser produced using Eppawala rock phosphate as a source of phosphorous for rice cultivation (Udawatte CP, Panagoda PVA, Wickramasinghe WMADB, Wijewardena JDH, Sirisena DN, Emitiyagoda S & Bandara HRUD) **48**: 131-142 (2020)

Air voids

Effect of air voids on permeability and durability of hot mix asphalt (Ahmad N, Haroon W & Abid MM) **48**: 463-474 (2020)

Al 6063 alloy

Effect of precipitate size distribution on hardness of aluminium 6063 alloy (Dilrukshi LWUR & De Silva GIP) **48**: 305-313 (2020)

Altitude

Relative production efficiency of maize-legume intercroppings at different altitudes (Arshad M, Nawa R, Ahmad S, Razaq A, Ranamukhaarachchi S & Rahman Sur) **48**: 409-420 (2020)

Altitudinal preferences

Species diversity and altitudinal preferences of lichens on selected substrata in Ritigala Strict Natural Reserve (Gunawardene KW & Wijeyaratne SC) **48**: 49-56 (2020)

Anacardiaceae

Molecular phylogeny and chromosomal evolution of endemic species of Sri Lankan Anacardiaceae (Ariyaratne M, Yakandawala D, Barfuss M, Heckenhauer J & Samue R) **48**: 289-303 (2020)

Antifungal

In vitro antifungal efficacy of selected essential oils in controlling fungi associated with the stem-end rot disease of mango (cv. Karutha Colomban) fruits and characterisation of antifungal components (Kodituwakku TD, Ekanayake GCM, Abeywickrama KP & Jayakody R) **48**: 101-111 (2020)

Anti-leptospiral antibodies

A novel approach for qualitative biosensing of anti-leptospiral IgG antibodies in human sera using functionalised silver nanoparticles (Madushani V, Dahanayake H, Gamage CD, Sirimuthu NMS & Jayasundera ACA) **48**: 437-447 (2020)

Aspergillus aculeatus

Decolourisation and detoxification of CI Direct Blue 201 textile dye by two fungal strains of genus *Aspergillus* (Ekanayake EMMS & Manage PM) **48**: 69-80 (2020)

Aspergillus nomius

Decolourisation and detoxification of CI Direct Blue 201 textile dye by two fungal strains of genus *Aspergillus* (Ekanayake EMMS & Manage PM) **48**: 69-80 (2020)

Bay of Bengal

A mini-warm pool during spring in the Bay of Bengal (Pathirana G & Priyadarshani K) **48**: 345-355 (2020)

Begomovirus

Transmission and host range of *Horsegram yellow mosaic virus* (HgYMV) causing common bean (*Phaseolus vulgaris L.*) yellowing disease in Sri Lanka (Rienzie R, De Costa MD & Wickramaarachchi WART) **48**: 81-92 (2020)

Bemisia tabaci Genn

Transmission and host range of *Horsegram yellow mosaic virus* (HgYMV) causing common bean (*Phaseolus vulgaris L.*) yellowing disease in Sri Lanka (Rienzie R, De Costa MD & Wickramaarachchi WART) **48**: 81-92 (2020)

Bias

A new improved difference-cum-exponential ratio type estimator in systematic sampling using two auxiliary variables (Shabbir J, Masood S & Gupta S) **48**: 27-36 (2020)

Biodiversity

New additions to leafy liverwort flora (Marchantiophyta, Jungermanniopsida) of Sri Lanka (Bandaranayake BMSK, Ruklani NCS & Rubasinghe SCK) **48**: 187-198 (2020)

Biomarker

Use of liver histological alterations and erythrocytic nuclear abnormalities of two native fish species in Kelani River, Sri Lanka as biomarkers for pollution impact assessments (Ruvinda KMS & Pathiratne A) **48**: 15-26 (2020)

Bioremediation

Decolourisation and detoxification of CI Direct Blue 201 textile dye by two fungal strains of genus *Aspergillus* (Ekanayake EMMS & Manage PM) **48**: 69-80 (2020)

Bivariate distributions

Bivariate Gompertz generator of distributions: statistical properties and estimation with application to model football data (Eliwa MS, Alhussain ZA, Ahmed EA, Salah MM, Ahmed HH & El-Morshedy M) **48**: 149-162 (2020)

Bryophytes

New additions to leafy liverwort flora (Marchantiophyta, Jungermanniopsida) of Sri Lanka (Bandaranayake BMSK, Ruklani NCS & Rubasinghe SCK) **48**: 187-198 (2020)

Campanosperma zeylanica

Molecular phylogeny and chromosomal evolution of endemic species of Sri Lankan Anacardiaceae (Ariyaratne M., Yakandawala D., Barfuss M., Heckenhauer J, & Samue R.) **48**: 289-303 (2020)

Characterisation

Topp-Leone moment exponential distribution: properties and applications (Abbas S, Jahngeer A, Shahbaz SH, Afify AZ & Shahbaz MQ) **48**: 265-274 (2020)

Chen distribution

The odd Chen generator of distributions: properties and estimation methods with applications in medicine and engineering (El-Morshedy M, Eliwa MS & Afify AZ) **48**: 113-130 (2020)

Chromosome counts

Molecular phylogeny and chromosomal evolution of endemic species of Sri Lankan Anacardiaceae (Ariyaratne M, Yakandawala D, Barfuss M, Heckenhauer J, & Samue R) **48**: 289-303 (2020)

Chronic kidney disease

Cadmium and arsenic levels in edible fishes, *Oreochromis niloticus* (Nile Tilapia) and *Ompok bimaculatus* (Butter catfish) from Padaviya Reservoir, Sri Lanka and human health risk assessment associated with their dietary exposure (Weerasekara KAWS, Pathiratne A & Kithsiri HMP) **48**: 335-344 (2020)

CI Direct Blue 201 textile dye

Decolourisation and detoxification of CI Direct Blue 201 textile dye by two fungal strains of genus *Aspergillus* (Ekanayake EMMS & Manage PM) **48**: 69-80 (2020)

Coefficient of permeability

Effect of air voids on permeability and durability of hot mix asphalt (Ahmad N, Haroon W & Abid MM) **48**: 463-474 (2020)

COI

First record of the presence of *Aedes* (Phagomyia) *cogilli* (Edwards, 1922) in Sri Lanka (Jayadas TTP, Thiruchenthooran V, Tharsan A, Sivabalakrishnan K, Santhirasekaram S & Surendran SN) **48**: 327-331 (2020)

Comfort

Comfort evaluation of bridge based on stochastic process theory (Tan Y, Qin S, Zhang Z, Wang H & Wang Q) **48**: 239-249 (2020)

Common bean Yellowing disease

Transmission and host range of *Horsegram yellow mosaic virus* (HgYMV) causing common bean (*Phaseolus vulgaris L.*) yellowing disease in Sri Lanka (Rienzie R, De Costa MD & Wickramaarachchi WART) **48**: 81-92 (2020)

Cryo injuries

Recovery, histological observations and genetic integrity in coconut (*Cocos nucifera* L.) embryogenic calli cryopreserved using encapsulation-dehydration procedure (Welewanni I, Perera C, Jayasekera A & Bandupriya D) **48**: 175-186 (2020)

Daldinia eschscholzii

A secondary metabolite with in vitro radical scavenging activity from endolichenic fungus *Daldinia eschscholzii* found in lichen, *Parmotrema* sp. in Sri Lanka (Manthirirathna MATP, Kandiah R, Gunasekera DS, Samanthi KAU, Welideniya DT, Maduranga HAK & Paranagama PA) **48**: 143-148 (2020)

Dawkinsia singhala

Use of liver histological alterations and erythrocytic nuclear abnormalities of two native fish species in Kelani River, Sri Lanka as biomarkers for pollution impact assessments (Ruvinda KMS & Pathiratne A) **48**: 15-26 (2020)

Decolourisation

Decolourisation and detoxification of CI Direct Blue 201 textile dye by two fungal strains of genus *Aspergillus* (Ekanayake EMMS & Manage PM) **48**: 69-80 (2020)

Diversity

First record of the presence of *Aedes* (Phagomyia) *cogilli* (Edwards, 1922) in Sri Lanka (Jayadas TTP, Thiruchenthooran V, Tharsan A, Sivabalakrishnan K, Santhirasekaram S & Surendran SN) **48**: 327-331 (2020)

Durability

Effect of air voids on permeability and durability of hot mix asphalt (Ahmad N, Haroon W & Abid MM) **48**: 463-474 (2020)

Dynamic Reconfiguration

Implementation of data cache block (DCB) in shared processor using field-programmable gate array (FPGA) (Karthick R & Meenalochini P) **48**: 475-479 (2020)

Efficiency

A new improved difference-cum-exponential ratio type estimator in systematic sampling using two auxiliary variables (Shabbir J, Masood S & Gupta S) **48**: 27-36 (2020)

Endolichenic fungus

A secondary metabolite with in vitro radical scavenging activity from endolichenic fungus *Daldinia eschscholzii* found in lichen, *Parmotrema* sp. in Sri Lanka (Manthirirathna MATP, Kandiah R, Gunasekera DS, Samanthi KAU, Welideniya DT, Maduranga HAK & Paranagama PA) **48**: 143-148 (2020)

Essential amino acids

Total and free amino acid contents of popular rice varieties (*Oryza sativa* L.) consumed in the capital city of Sri Lanka (Liyanaarachchi GVV, Mahanama KRR, Somasiri HPPS, Punyasiri PAN & Kottawa-Arachchi JD) **48**: 199-211 (2020)

Essential oils

In vitro antifungal efficacy of selected essential oils in controlling fungi associated with the stem-end rot disease of mango (cv. Karutha Colomban) fruits and characterisation of antifungal components (Kodituwakku TD, Ekanayake GCM, Abeywickrama KP & Jayakody R) **48**: 101-111 (2020)

ESSP

Use of single superphosphate fertiliser produced using Eppawala rock phosphate as a source of phosphorous for rice cultivation (Udawatte CP, Panagoda PVA, Wickramasinghe WMADB, Wijewardena JDH, Sirisena DN, Emitiyagoda S & Bandara HRUD) **48**: 131-142 (2020)

Estimation

Topp-Leone moment exponential distribution: properties and applications (Abbas S, Jahngger A, Shahbaz SH, Afify AZ & Shahbaz MQ) **48**: 265-274 (2020)

Estimation methods

The odd Chen generator of distributions: properties and estimation methods with applications in medicine and engineering (El-Morshedy M, Eliwa MS & Afify AZ) **48**: 113-130 (2020)

Etroplus Suratensis

Use of liver histological alterations and erythrocytic nuclear abnormalities of two native fish species in Kelani River, Sri Lanka as biomarkers for pollution impact assessments (Ruvinda KMS & Pathiratne A) **48**: 15-26 (2020)

Exact solution

Mathematical model of eyring fluid in a scraped surface heat exchanger (Imran A, Siddiqui AM, Numan M, Rana MA & Waheed A) **48**: 3-14 (2020)

Eyring fluid

Mathematical model of eyring fluid in a scraped surface heat exchanger (Imran A, Siddiqui AM, Numan M, Rana MA & Waheed A) **48**: 3-14 (2020)

Finite element method

MHD natural convection nanofluid flows in a wavy trapezoidal porous enclosure With differentially heated side walls (Reddy ES & Panda S) **48**: 57-68 (2020)

First record

Cicindelinae of Sri Lanka: New record of the arboreal tiger beetle *Tricondyla gounellei* Horn, 1900 (Abeywardhana DL, Dangalle CD and Mallawarachchi YW) **48**: 213-216 (2020)

Full memory method

An efficient numerical method for fractional ordinary differential equations - based on exponentially decreasing random memory on uniform meshes (Somathilake LW) **48**: 163-174 (2020)

Fractional derivatives

An efficient numerical method for fractional ordinary differential equations - based on exponentially decreasing random memory on uniform meshes (Somathilake LW) **48**: 163-174 (2020)

Fractional differential equation

An efficient numerical method for fractional ordinary differential equations - based on exponentially decreasing random memory on uniform meshes (Somathilake LW) **48**: 163-174 (2020)

Functionalisation

A novel approach for qualitative biosensing of anti-leptospiral IgG antibodies in human sera using functionalised silver nanoparticles (Madushani V, Dahanayake H, Gamage CD, Sirimuthu NMS & Jayasundera ACA) **48**: 437-447 (2020)

Future demand analysis

Optimising usage of Salinized Lands in the lower part of the river basin for the coastal community in Bentota, Sri Lanka (Ranasinghe TKGP & Piyadasa RUK) **48**: 379-396 (2020)

GABA

Total and free amino acid contents of popular rice varieties (*Oryza sativa* L.) consumed in the capital city of Sri Lanka (Liyanaarachchi GVV, Mahanama KRR, Somasiri HPPS, Punyasiri PAN & Kottawa-Arachchi JD) **48**: 199-211 (2020)

GC-MS

In vitro antifungal efficacy of selected essential oils in controlling fungi associated with the stem-end rot disease of mango (cv. Karutha Colomban) fruits and characterisation of antifungal components (Kodituwakku TD, Ekanayake GCM, Abeywickrama KP & Jayakody R) **48**: 101-111 (2020)

Genetic differentiation

The scope of Rp EPIC markers in population genetic studies: a preliminary study with dengue vectors (Nirmani MD, Perera NS & Galhena GH) **48**: 275-288 (2020)

Genetic fidelity

Recovery, histological observations and genetic integrity in coconut (*Cocos nucifera* L.) embryogenic calli cryopreserved using encapsulation-dehydration procedure (Welewanni I, Perera C, Jayasekera A & Bandupriya D) **48**: 175-186 (2020)

Geographic information system

Hotspots of land use/land cover change around Bolgoda wetland, Sri Lanka (Athapaththu AHLCM, Wickramasinghe D & Somachandra MGMC) **48**: 219-226 (2020)

Gompertz-H family of distributions

Bivariate Gompertz generator of distributions: statistical properties and estimation with application to model football data (Eliwa MS, Alhussain ZA, Ahmed EA, Salah MM, Ahmed HH & El-Morshedy M) **48**: 149-162 (2020)

Google distance matrix

Challenges faced in heterogeneous traffic data collection: a comparison of traffic data collection technologies (Jayaratne DND, Vidanapathirana CJ & Pasindu HR) **48**: 227-237 (2020)

Google earth imagery

Google Earth imagery coupled with on-screen digitisation for urban land-use mapping: case study of Hambantota, Sri Lanka (Madarasinghe SK, Yapa KKAS & Jayatissa LP) **48**: 357-366 (2020)

Hardness

Effect of precipitate size distribution on hardness of aluminium 6063 alloy (Dilrukshi LWUR & De Silva GIP) **48**: 305-313 (2020)

Hazard rate function

The odd Chen generator of distributions: properties and estimation methods with applications in medicine and engineering (El-Morshedy M, Eliwa MS & Afify AZ) **48**: 113-130 (2020)

Heavy metal

Cadmium and arsenic levels in edible fishes, *Oreochromis niloticus* (Nile Tilapia) and *Ompok bimaculatus* (Butter catfish) from Padaviya Reservoir, Sri Lanka and human health risk assessment associated with their dietary exposure (Weerasekera KAWS, Pathiratne A & Kithsiri HMP) **48**: 335-344 (2020)

Heat generation/absorption

Rheology of hydro-magnetic polymeric material with heat generation/absorption and chemical reaction (Awais M, Awan SE, Irum S, Shoaib M, Ali H & Raja MAZ) **48**: 397-407 (2020)

Heterogeneous traffic

Challenges faced in heterogeneous traffic data collection: a comparison of traffic data collection technologies (Jayaratne DND, Vidanapathirana CJ & Pasindu HR) **48**: 227-237 (2020)

High performance liquid chromatography

Monolithic columns with incorporated titanium dioxide nanoparticles for hydrophilic interaction liquid chromatography (Ganewatta N & El Rassi Z) **48**: 315-325 (2020)

Histology

Recovery, histological observations and genetic integrity in coconut (*Cocos nucifera* L.) embryogenic calli cryopreserved using encapsulation-dehydration procedure (Welewanni I, Perera C, Jayasekera A & Bandupriya D) **48**: 175-186 (2020)

Horsegram yellow mosaic virus (HgYMV)

Transmission and host range of *Horsegram yellow mosaic virus* (HgYMV) causing common bean (*Phaseolus vulgaris* L.) yellowing disease in Sri Lanka (Rienzie R, De Costa MD & Wickramaarachchi WART) **48**: 81-92 (2020)

Host range

Transmission and host range of *Horsegram yellow mosaic virus* (HgYMV) causing common bean (*Phaseolus vulgaris* L.) yellowing disease in Sri Lanka (Rienzie R, De Costa MD & Wickramaarachchi WART) **48**: 81-92 (2020)

Hotspots

Hotspots of land use/land cover change around Bolgoda wetland, Sri Lanka (Athapaththu AHLCM, Wickramasinghe D & Somachandra MGMC) **48**: 219-226 (2020)

Hydraulic conductivity

Effect of air voids on permeability and durability of hot mix asphalt (Ahmad N, Haroon W & Abid MM) **48**: 463-474 (2020)

Hydrophilic interaction liquid chromatography

Monolithic columns with incorporated titanium dioxide nanoparticles for hydrophilic interaction liquid chromatography (Ganewatta N & El Rassi Z) **48**: 315-325 (2020)

ICP-MS

Cadmium and arsenic levels in edible fishes, *Oreochromis niloticus* (Nile Tilapia) and *Ompok bimaculatus* (Butter catfish) from Padaviya Reservoir, Sri Lanka and human health risk assessment associated with their dietary exposure (Weerasekera KAWS, Pathiratne A & Kithsiri HMP) **48**: 335-344 (2020)

Image classification

Google Earth imagery coupled with on-screen digitisation for urban land-use mapping: case study of Hambantota, Sri Lanka (Madarasinghe SK, Yapa KKAS & Jayatissa LP) **48**: 357-366 (2020)

Innovative trend analysis

Streamflow trends of Kelani River basin in Sri Lanka (1983-2013) (Jayasekera SM, Abeysingha NS & Meegastenna TJ) **48**: 449-462 (2020)

In vitro

Recovery, histological observations and genetic integrity in coconut (*Cocos nucifera* L.) embryogenic calli cryopreserved using encapsulation-dehydration procedure (Welewanni I, Perera C, Jayasekera A & Bandupriya D) **48**: 175-186 (2020)

Isolation

Isolation improvement of compact LTE MIMO terminal using combination of neutralisation line and modified ground structure (Singh HS & Shubair RM) **48**: 251-263 (2020)

Kelani River

Toxic hazards of industrial waste receiving canal system in the lower catchment of Kelani River basin, Sri Lanka (Kurupparachchi HD & Pathiratne A) **48**: 37-47 (2020)

Kelani River

Use of liver histological alterations and erythrocytic nuclear abnormalities of two native fish species in Kelani River, Sri Lanka as biomarkers for pollution impact assessments (Ruvinda KMS & Pathiratne A) **48**: 15-26 (2020)

Land use

Hotspots of land use/land cover change around Bolgoda wetland, Sri Lanka (Athapaththu AHLCM, Wickramasinghe D & Somachandra MGMC) **48**: 219-226 (2020)

Land-use classes

Google Earth imagery coupled with on-screen digitisation for urban land-use mapping: case study of Hambantota, Sri Lanka (Madarasinghe SK, Yapa KKAS & Jayatissa LP) **48**: 357-366 (2020)

Land use pattern

Optimising usage of Salinized Lands in the lower part of the river basin for the coastal community in Bentota, Sri Lanka (Ranasinghe TKGP & Piyadasa RUK) **48**: 379-396 (2020)

Landsat 8 imagery

Google Earth imagery coupled with on-screen digitisation for urban land-use mapping: case study of Hambantota, Sri Lanka (Madarasinghe SK, Yapa KKAS & Jayatissa LP) **48**: 357-366 (2020)

Leafy liverworts

New additions to leafy liverwort flora (Marchantiophyta, Jungermannioptida) of Sri Lanka (Bandaranayake BMSK, Ruklani NCS & Rubasinghe SCK) **48**: 187-198 (2020)

Leptospirosis

A novel approach for qualitative biosensing of anti-leptospiral IgG antibodies in human sera using functionalised silver nanoparticles (Madushani V, Dahanayake H, Gamage CD, Sirimuthu NMS & Jayasundera ACA) **48**: 437-447 (2020)

Lichen diversity

Species diversity and altitudinal preferences of lichens on selected substrata in Ritigala Strict Natural Reserve (Gunawardene KW & Wijeyaratne SC) **48**: 49-56 (2020)

Lie group analysis

Rheology of hydro-magnetic polymeric material with heat generation/absorption and chemical reaction (Awais M, Awan SE, Irum S, Shoaib M, Ali H & Raja MAZ) **48**: 397-407 (2020)

Linear Programming model

Optimising usage of Salinized Lands in the lower part of the river basin for the coastal community in Bentota, Sri Lanka (Ranasinghe TKGP & Piyadasa RUK) **48**: 379-396 (2020)

Localised surface plasmon resonance

A novel approach for qualitative biosensing of anti-leptospiral IgG antibodies in human sera using functionalised silver nanoparticles (Madushani V, Dahanayake H, Gamage CD, Sirimuthu NMS & Jayasundera ACA) **48**: 437-447 (2020)

LTE

Isolation improvement of compact LTE MIMO terminal using combination of neutralisation line and modified ground structure (Singh HS & Shubair RM) **48**: 251-263 (2020)

Lubrication approximation theory

Mathematical model of Eyring fluid in a scraped surface heat exchanger (Imran A, Siddiqui AM, Numan M, Rana MA & Waheed A) **48**: 3-14 (2020)

Magnetic field effects

Rheology of hydro-magnetic polymeric material with heat generation/absorption and chemical reaction (Awais M, Awan SE, Irum S, Shoaib M, Ali H & Raja MAZ) **48**: 397-407 (2020)

Mango

In vitro antifungal efficacy of selected essential oils in controlling fungi associated with the stem-end rot disease of mango (cv. Karutha Colomban) fruits and characterisation of antifungal components (Kodituwakku TD, Ekanayake GCM, Abeywickrama KP & Jayakody R) **48**: 101-111 (2020)

Mann-Kendall test

Streamflow trends of Kelani River basin in Sri Lanka (1983-2013) (Jayasekara SM, Abeysingha NS & Meegastenna TJ) **48**: 449-462 (2020)

Marker assisted breeding

Assessment on variation of performance indicators under phosphorus-starved conditions in a core-set of rice cultivars and their diversity in *pup1*-linked DNA marker-haplotypes (Jayarathne HSM, Rathnayake PGRG, Ranaweera LT, Nizam R, Rathnayake RMSK, Kannangara SK, Udawela UAKS, Weebadde CK & Sooriyapathirana SDSS) **48**: 421-435 (2020)

Marshall-Olkin shock model

Bivariate Gompertz generator of distributions: statistical properties and estimation with application to model football data (Eliwa MS, Alhussain ZA, Ahmed EA, Salah MM, Ahmed HH & El-Morshedy M) **48**: 149-162 (2020)

Maximum likelihood estimators

The odd Chen generator of distributions: properties and estimation methods with applications in medicine and engineering (El-Morshedy M, Eliwa MS & Afify AZ) **48**: 113-130 (2020)

Maximum likelihood method

Bivariate Gompertz generator of distributions: statistical properties and estimation with application to model football data (Eliwa MS, Alhussain ZA, Ahmed EA, Salah MM, Ahmed HH & El-Morshedy M) **48**: 149-162 (2020)

Maximum likelihood method

Google Earth imagery coupled with on-screen digitisation for urban land-use mapping: case study of Hambantota, Sri Lanka (Madarasinghe SK, Yapa KKAS & Jayatissa LP) **48**: 357-366 (2020)

MHD

Rheology of hydro-magnetic polymeric material with heat generation/absorption and chemical reaction (Awais M, Awan SE, Irum S, Shoaib M, Ali H & Raja MAZ) **48**: 397-407 (2020)

MHD nanofluid flow

MHD natural convection nanofluid flows in a wavy trapezoidal porous enclosure with differentially heated side walls (Reddy ES & Panda S) **48**: 57-68 (2020)

Microsatellites

The scope of Rp EPIC markers in population genetic studies: a preliminary study with dengue vectors (Nirman MD, Perera NS & Galhena GH) **48**: 275-288 (2020)

MIMO antenna

Isolation improvement of compact LTE MIMO terminal using combination of neutralisation line and modified ground structure (Singh HS & Shubair RM) **48**: 251-263 (2020)

Mini-warm pool

A mini-warm pool during spring in the Bay of Bengal (Pathirana G & Priyadarshani K) **48**: 345-355 (2020)

Molecular phylogeny

Molecular phylogeny and chromosomal evolution of endemic species of Sri Lankan Anacardiaceae (Ariyaratne M, Yakandawala D, Barfuss M, Heckenhauer J, & Samue R) **48**: 289-303 (2020)

Moment exponential

Topp-Leone moment exponential distribution: properties and applications (Abbas S, Jahngger A, Shahbaz SH, Afify AZ & Shahbaz MQ) **48**: 265-274 (2020)

MPSoC

Implementation of data cache block (DCB) in shared processor using field-programmable gate array (FPGA) (Karthick R & Meenalochini P) **48**: 475-479 (2020)

MSE

A new improved difference-cum-exponential ratio type estimator in systematic sampling using two auxiliary variables (Shabbir J, Masood S & Gupta S) **48**: 27-36 (2020)

Mungbean

Relative production efficiency of maize-legume intercroppings at different altitudes (Arshad M, Nawa R, Ahmad S, Razaq A, Ranamukhaarachchi S & Rahman Sur) **48**: 409-420 (2020)

Multiprocessor

Implementation of data cache block (DCB) in shared processor using field-programmable gate array (FPGA) (Karthick R & Meenalochini P) **48**: 475-479 (2020)

Nanoparticles

A novel approach for qualitative biosensing of anti-leptospiral IgG antibodies in human sera using functionalised silver nanoparticles (Madushani V, Dahanayake H, Gamage CD, Sirimuthu NMS & Jayasundera ACA) **48**: 437-447 (2020)

Natural convection

MHD natural convection nanofluid flows in a wavy trapezoidal porous enclosure with differentially heated side walls (Reddy ES & Panda S) **48**: 57-68 (2020)

Neutralisation line

Isolation improvement of compact LTE MIMO terminal using combination of neutralisation line and modified ground structure (Singh HS & Shubair RM) **48**: 251-263 (2020)

New records

New additions to leafy liverwort flora (Marchantiophyta, Jungermanniopsida) of Sri Lanka (Bandaranayake BMSK, Ruklani NCS & Rubasinghe SCK) **48**: 187-198 (2020)

Nitrogen

Relative production efficiency of maize-legume intercroppings at different altitudes (Arshad M, Nawa R, Ahmad S, Razaq A, Ranamukhaarachchi S & Rahman Sur) **48**: 409-420 (2020)

North Central Province

Cadmium and arsenic levels in edible fishes, *Oreochromis niloticus* (Nile Tilapia) and *Ompok bimaculatus* (Butter catfish) from Padaviya Reservoir, Sri Lanka and human health risk assessment associated with their dietary exposure (Weerasekera KAWS, Pathiratne A & Kithsiri HMP) **48**: 335-344 (2020)

Optimising salinized lands

Optimising usage of Salinized Lands in the lower part of the river basin for the coastal community in Bentota, Sri Lanka (Ranasinghe TKGP & Piyadasa RUK) **48**: 379-396 (2020)

Organic polymer based monolith

Monolithic columns with incorporated titanium dioxide nanoparticles for hydrophilic interaction liquid chromatography (Ganewatta N & El Rassi Z) **48**: 315-325 (2020)

Oscillation modes

Determination of oscillation frequencies and stellar properties of three Delta Scuti variable stars using Kepler data (Adassuriya J, Jayaratne KPSC & Cooray PTLV & Attygalle MLC) **48**: 367-378 (2020)

Padaviya reservoir fish

Cadmium and arsenic levels in edible fishes, *Oreochromis niloticus* (Nile Tilapia) and *Ompok bimaculatus* (Butter catfish) from Padaviya Reservoir, Sri Lanka and human health risk assessment associated with their dietary exposure (Weerasekara KAWS, Pathiratne A & Kithsiri HMP) **48**: 335-344 (2020)

Pedestrian bridge

Comfort evaluation of bridge based on stochastic process theory (Tan Y, Qin S, Zhang Z, Wang H & Wang Q) **48**: 239-249 (2020)

Phosphorus efficient rice

Assessment on variation of performance indicators under phosphorus-starved conditions in a core-set of rice cultivars and their diversity in pup1-linked DNA marker-haplotypes (Jayarathne HSM, Rathnayake PGRG, Ranaweera LT, Nizam R, Rathnayake RMSK, Kannangara SK, Udawela UAKS, Weebadde CK & Sooriyapathirana SDSS) **48**: 421-435 (2020)

Phosphorus fertiliser crisis

Assessment on variation of performance indicators under phosphorus-starved conditions in a core-set of rice cultivars and their diversity in pup1-linked DNA marker-haplotypes (Jayarathne HSM, Rathnayake PGRG, Ranaweera LT, Nizam R, Rathnayake RMSK, Kannangara SK, Udawela UAKS, Weebadde CK & Sooriyapathirana SDSS) **48**: 421-435 (2020)

Photometry

Determination of oscillation frequencies and stellar properties of three Delta Scuti variable stars using Kepler data (Adassuriya J, Jayaratne KPSC & Cooray PTLV & Attygalle MLC) **48**: 367-378 (2020)

Pollution impact assessment

Use of liver histological alterations and erythrocytic nuclear abnormalities of two native fish species in Kelani River, Sri Lanka as biomarkers for pollution impact assessments (Ruvinda KMS & Pathiratne A) **48**: 15-26 (2020)

Population forecasting

Optimising usage of Salinized Lands in the lower part of the river basin for the coastal community in Bentota, Sri Lanka (Ranasinghe TKGP & Piyadasa RUK) **48**: 379-396 (2020)

Population genetics

The scope of Rp EPIC markers in population genetic studies: a preliminary study with dengue vectors (Nirmani MD, Perera NS & Galhena GH) **48**: 275-288 (2020)

Porous medium

MHD natural convection nanofluid flows in a wavy trapezoidal porous enclosure with differentially heated side walls (Reddy ES & Panda S) **48**: 57-68 (2020)

Polymeric liquid

Rheology of hydro-magnetic polymeric material with heat generation/absorption and chemical reaction (Awais M, Awan S E, Irum S, Shoaib M, Ali H & Raja MAZ) **48**: 397-407 (2020)

Precipitate size distribution

Effect of precipitate size distribution on hardness of aluminium 6063 alloy (Dilrukshi LWUR & De Silva GIP) **48**: 305-313 (2020)

Principal component analysis

Toxic hazards of industrial waste receiving canal system in the lower catchment of Kelani River basin, Sri Lanka (Kuruppuarachchi HD & Pathiratne A) **48**: 37-47 (2020)

Pup1 qtl

Assessment on variation of performance indicators under phosphorus-starved conditions in a core-set of rice cultivars and their diversity in pup1-linked DNA marker-haplotypes (Jayarathne HSM, Rathnayake PGRG, Ranaweera LT, Nizam R, Rathnayake RMSK, Kannangara SK, Udawela UAKS, Weebadde CK & Sooriyapathirana SDSS) **48**: 421-435 (2020)

Radical scavenging activity

A secondary metabolite with in vitro radical scavenging activity from endolichenic fungus *Daldinia eschscholzii* found in lichen, *Parmotrema* sp. in Sri Lanka (Manthirathna MATP, Kandiah R, Gunasekera DS, Samanthi KAU, Welideniya DT, Maduranga HAK & Paranagama PA) **48**: 143-148 (2020)

Rainfall

Streamflow trends of Kelani River basin in Sri Lanka (1983-2013) (Jayasekara SM, Abeysingha NS & Meegastenna TJ) **48**: 449-462 (2020)

Random vibration

Comfort evaluation of bridge based on stochastic process theory (Tan Y, Qin S, Zhang Z, Wang H & Wang Q) **48**: 239-249 (2020)

Relative yield

Relative production efficiency of maize-legume intercroppings at different altitudes (Arshad M., Nawa R., Ahmad S., A Razaq A., Ranamukhaarachchi S. & Rahman Sur) **48**: 409-420 (2020)

Reliability

Topp-Leone moment exponential distribution: properties and applications (Abbas S, Jahngeer A, Shahbaz SH, Afify AZ & Shahbaz MQ) **48**: 265-274 (2020)

Remote sensing

Hotspots of land use/land cover change around Bolgoda wetland, Sri Lanka (Athapaththu AHLCM, Wickramasinghe D & Somachandra MGMC) **48**: 219-226 (2020)

Rice

Total and free amino acid contents of popular rice varieties (*Oryza sativa* L.) consumed in the capital city of Sri Lanka (Liyanarachchi GVV, Mahanama KRR, Somasiri HPPS, Punyasiri PAN & Kottawa-Arachchi JD) **48**: 199-211 (2020)

Rice

Use of single superphosphate fertiliser produced using Eppawala rock phosphate as a source of phosphorous for rice cultivation Udawatte CP, Panagoda PVA, Wickramasinghe WMADB, Wijewardena JDH, Sirisena DN, Emitiyagoda S & Bandara HRUD) **48**: 131-142 (2020)

Rice landraces

Assessment on variation of performance indicators under phosphorus-starved conditions in a core-set of rice cultivars and their diversity in pup1-linked DNA marker-haplotypes (Jayarathne HSM, Rathnayake PGRG, Ranaweera LT, Nizam R, Rathnayake RMSK, Kannangara SK, Udawela UAKS, Weebadde CK & Sooriyapathirana SDSS) **48**: 421-435 (2020)

Risk assessment

Cadmium and arsenic levels in edible fishes, *Oreochromis niloticus* (Nile Tilapia) and *Ompok bimaculatus* (Butter catfish) from Padaviya Reservoir, Sri Lanka and human health risk assessment associated with their dietary exposure (Weerasekera KAWS, Pathiratne A & Kithsiri HMP) **48**: 335-344 (2020)

Ritigala strict natural reserve

Species diversity and altitudinal preferences of lichens on selected substrata in Ritigala Strict Natural Reserve (Gunawardene KW & Wijeyaratne SC) **48**: 49-56 (2020)

Row pattern

Relative production efficiency of maize-legume intercroppings at different altitudes (Arshad M, Nawa R, Ahmad S, Razaq A, Ranamukhaarachchi S & Rahman Sur) **48**: 409-420 (2020)

SAR

Isolation improvement of compact LTE MIMO terminal using combination of neutralisation line and modified ground structure (Singh HS & Shubair RM) **48**: 251-263 (2020)

Seawater intrusion

Optimising usage of Salinized Lands in the lower part of the river basin for the coastal community in Bentota, Sri Lanka (Ranasinghe TKGP & Piyadasa RUK) **48**: 379-396 (2020)

Secondary metabolites

A secondary metabolite with in vitro radical scavenging activity from endolichenic fungus *Daldinia eschscholzii* found in lichen, *Parmotrema* sp. in Sri Lanka (Manthirathna MATP, Kandiah R, Gunasekera DS, Samanthi KAU, Welideniya DT, Maduranga HAK & Paranagama PA) **48**: 143-148 (2020)

Security touchpoints

A security specific knowledge modelling approach for secure software engineering (Abeyrathna A, Samarage C, Dahanayake B, Wijesiriwardana C & Wimalaratne P) **48**: 93-98 (2020)

Semecarpus species

Molecular phylogeny and chromosomal evolution of endemic species of Sri Lankan Anacardiaceae (Ariyaratne M, Yakandawala D, Barfuss M, Heckenhauer J, & Samue R) **48**: 289-303 (2020)

Short memory principle

An efficient numerical method for fractional ordinary differential equations - based on exponentially decreasing random memory on uniform meshes (Somathilake LW) **48**: 163-174 (2020)

Simple sequence repeats

Recovery, histological observations and genetic integrity in coconut (*Cocos nucifera* L.) embryogenic calli cryopreserved using encapsulation-dehydration procedure (Welewanni I, Perera C, Jayasekera A & Bandupriya D) **48**: 175-186 (2020)

Simulation

The odd Chen generator of distributions: properties and estimation methods with applications in medicine and engineering (El-Morshedy M, Eliwa MS & Afify AZ) **48**: 113-130 (2020)

Simultaneous sowing

Relative production efficiency of maize-legume intercroppings at different altitudes (Arshad M, Nawa R, Ahmad S, A Razaq A, Ranamukhaarachchi S & Rahman Sur) **48**: 409-420 (2020)

Size homoplasy

The scope of Rp EPIC markers in population genetic studies: a preliminary study with dengue vectors (Nirman MD, Perera NS & Galhena GH) **48**: 275-288 (2020)

Software security

A security specific knowledge modelling approach for secure software engineering (Abeyrathna A, Samarage C, Dahanayake B, Wijesiriwardana C & Wimalaratne P) **48**: 93-98 (2020)

Spring inter-monsoon

A mini-warm pool during spring in the Bay of Bengal (Pathirana G & Priyadarshani K) **48**: 345-355 (2020)

Sri Lanka

Cicindelinae of Sri Lanka: New record of the arboreal tiger beetle *Tricondyla gounellei* Horn, 1900 (Abeywardhana DL, Dangalle CD and Mallawarachchi YW) **48**: 213-216 (2020)

Sri Lanka

First record of the presence of *Aedes* (*Phagomyia*) *cogilli* (Edwards, 1922) in Sri Lanka (Jayadas TTP, Thiruchenthooran V, Tharsan A, Sivabalakrishnan K, Santhirasekaram S & Surendran SN) **48**: 327-331 (2020)

Sri Lanka

Total and free amino acid contents of popular rice varieties (*Oryza sativa* L.) consumed in the capital city of Sri Lanka (Liyanaarachchi GVV, Mahanama KRR, Somasiri HPPS, Punyasiri PAN & Kottawa-Arachchi JD) **48**: 199-211 (2020)

Staggered sowing

Relative production efficiency of maize-legume intercroppings at different altitudes (Arshad M, Nawa R, Ahmad S, A Razaq A, Ranamukhaarachchi S & Rahman Sur) **48**: 409-420 (2020)

Static code analysis

A security specific knowledge modelling approach for secure software engineering (Abeyrathna A, Samarage C, Dahanayake B, Wijesiriwardana C & Wimalaratne P) **48**: 93-98 (2020)

Stellar pulsations

Determination of oscillation frequencies and stellar properties of three Delta Scuti variable stars using Kepler data (Adassuriya J, Jayaratne KPSC & Cooray PTLV & Attygalle MLC) **48**: 367-378 (2020)

Stem-end rot

In vitro antifungal efficacy of selected essential oils in controlling fungi associated with the stem-end rot disease of mango (cv. Karutha Colomban) fruits and characterisation of antifungal components (Kodituwakku TD, Ekanayake GCM, Abeywickrama KP & Jayakody R) **48**: 101-111 (2020)

Streamflow

Streamflow trends of Kelani River basin in Sri Lanka (1983-2013) (Jayasekara SM, Abeysingha NS & Meegastenna TJ) **48**: 449-462 (2020)

Systematic sampling

A new improved difference-cum-exponential ratio type estimator in systematic sampling using two auxiliary variables (Shabbir J, Masood S & Gupta S) **48**: 27-36 (2020)

Taxonomy

New additions to leafy liverwort flora (Marchantiophyta, Jungermanniopsida) of Sri Lanka (Bandaranayake BMSK, Ruklani NCS & Rubasinghe SCK) **48**: 187-198 (2020)

Threat modelling

A security specific knowledge modelling approach for secure software engineering (Abeyrathna A, Samarage C, Dahanayake B, Wijesiriwardana C & Wimalaratne P) **48**: 93-98 (2020)

TIRTL

Challenges faced in heterogeneous traffic data collection: a comparison of traffic data collection technologies (Jayaratne DND, Vidanapathirana CJ & Pasindu HR) **48**: 227-237 (2020)

Titanium dioxide nanoparticles

Monolithic columns with incorporated titanium dioxide nanoparticles for hydrophilic interaction liquid chromatography (Ganewatta N & El Rassi Z) **48**: 315-325 (2020)

Topp-Leone-G family

Topp-Leone moment exponential distribution: properties and applications (Abbas S, Jahngeer A, Shahbaz SH, Afify AZ & Shahbaz MQ) **48**: 265-274 (2020)

Total amino acids

Total and free amino acid contents of popular rice varieties (*Oryza sativa* L.) consumed in the capital city of Sri Lanka (Liyanarachchi GVV, Mahanama KRR, Somasiri HPPS, Punyasiri PAN & Kottawa-Arachchi JD) **48**: 199-211 (2020)

Toxic hazard

Toxic hazards of industrial waste receiving canal system in the lower catchment of Kelani River basin, Sri Lanka (Kurupparachchi HD & Pathiratne A) **48**: 37-47 (2020)

Trapezoidal wavy enclosure

MHD natural convection nanofluid flows in a wavy trapezoidal porous enclosure with differentially heated side walls (Reddy ES & Panda S) **48**: 57-68 (2020)

Traffic data collection

Challenges faced in heterogeneous traffic data collection: a comparison of traffic data collection technologies (Jayaratne DND, Vidanapathirana CJ & Pasindu HR) **48**: 227-237 (2020)

TRAZER

Challenges faced in heterogeneous traffic data collection: a comparison of traffic data collection technologies (Jayaratne DND, Vidanapathirana CJ & Pasindu HR) **48**: 227-237 (2020)

Tricondyla gounellei

Cicindelinae of Sri Lanka: New record of the arboreal tiger beetle *Tricondyla gounellei* Horn, 1900 (Abeywardhana DL, Dangalle CD and Mallawarachchi YW) **48**: 213-216 (2020)

TSP

Use of single superphosphate fertiliser produced using Eppawala rock phosphate as a source of phosphorous for rice cultivation Udawatte CP, Panagoda PVA, Wickramasinghe WMADB, Wijewardena JDH, Sirisena DN, Emitiyagoda S & Bandara HRUD) **48**: 131-142 (2020)

Urban development

Google Earth imagery coupled with on-screen digitisation for urban land-use mapping: case study of Hambantota, Sri Lanka (Madarasinghe SK, Yapa KKAS & Jayatissa LP) **48**: 357-366 (2020)

UV-visible spectroscopy

A novel approach for qualitative biosensing of anti-leptospirosis IgG antibodies in human sera using functionalised silver nanoparticles (Madushani V, Dahanayake H, Gamage CD, Sirimuthu NMS & Jayasundera AA) **48**: 437-447 (2020)

Virus transmission

Transmission and host range of Horsegram yellow mosaic virus (HgYMV) causing common bean (*Phaseolus vulgaris* L.) yellowing disease in Sri Lanka (Rienzie R, Costa DMD & Wickramaarachchi WART) **48**: 81-92 (2020)

Viscous and joule dissipation

MHD natural convection nanofluid flows in a wavy trapezoidal porous enclosure with differentially heated side walls (Reddy ES & Panda S) **48**: 57-68 (2020)

Water pollution

Toxic hazards of industrial waste receiving canal system in the lower catchment of Kelani River basin, Sri Lanka (Kurupparachchi HD & Pathiratne A) **48**: 37-47 (2020)

Weighted least squares estimators

The odd Chen generator of distributions: properties and estimation methods with applications in medicine and engineering (El-Morshedy M, Eliwa MS & Afify AZ) **48**: 113-130 (2020)

Wetlands

Hotspots of land use/land cover change around Bolgoda wetland, Sri Lanka (Athapaththu AHLICM, Wickramasinghe D & Somachandra MGMC) **48**: 219-226 (2020)