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International Conference on
**Environmental, Agriculture
and Rural Development**

(EARD-2020)

October 17-18, 2020

Souvenir

International Research
and Development Center
for Publication (IRDCP)

www.irdcp.org

978-81-948987-3-3

International Conference on Environmental, Agriculture and Rural Development (EARD-2020) Oct 17-18, 2020

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DOI: [10.22161/conf.eard.oct.2020](https://doi.org/10.22161/conf.eard.oct.2020)

ISBN: 978-81-948987-3-3

Publisher

IRDCP

Email: irdcp.publication@gmail.com / conference.irdcp@gmail.com

Web: <https://irdcp.org/>

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About Conference

International Conference on Environmental, Agriculture and Rural Development (EARD-2020)

During the worldwide lockdown due to COVID 19 pandemic, a lot of important activities have come to a halt. However, when we look at the brighter side, all of us have more time for adding to our knowledge and insights.

With this aim, to keep contributing to learning and motivation International research and development Center for publication is going to organize a two-day International Conference with the title " **International Conference on Environmental, Agriculture and Rural Development (EARD-2020)**" on Oct 17-18, 2020 through online mode.

We hope, this online mode of the conference in COVID-19 pandemic will be an appreciable step in promoting the research activities and new information between researchers, developers, students, academicians and practitioners working in and around the world by keeping the social distance in view to stop the spread of COVID-19 disease. This conference aims is to present the current researches being carried out in the field of social science and education development around the globe.

Prospective authors from academia as well as industry are invited to submit their abstracts that illustrate original/unpublished works and industrial applications describing advances and significant innovations in the field.

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Message

I am extremely pleased to share that International Research and Development Center for Publication (IRDCP) is organizing a two days **International Conference on Environmental, Agriculture and Rural Development (EARD-2020)** on Oct 17-18, 2020.

I am sure the state of art lectures from the invited experts and the research findings of researchers, academicians, utility engineers will enrich the knowledge of all the participants. It will provide an excellent opportunity for students to learn new ideas.

I offer my best wishes to the whole team of the organizing committee, the participants, and volunteers for the grand success of the conference.

Dr. Kiran
Convenor EARD-2020

Message

I am happy to know that International Research and Development Center for Publication (IRDCP) is organizing a two days **International Conference on Environmental, Agriculture and Rural Development (EARD-2020)** on Oct 17-18, 2020. I am sure that, this conference would provide an ideal platform for the academicians, scholars and experts to present and exchange their research findings and Ideas.

I wish the conference a great success.

Dr. Praveen Kumar Jain

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Abstract of EARD-2020

On farm and on station performance of Binadhan-17 under varied planting time

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Abstract— Binadhan-17 is a high yielding variety of aman rice (mainly grown by rainfed). Due to its extensive popularity; rice growers are cultivating it in boro season (in winter through irrigation) also. Considering the above circumstance, an on farm and on station research trial was conducted at BINA sub-station, Magura and farmer's field of Sattyapur Sadar, Magura during November 2019 to May 2020 to observe the effect of variety, planting dates and their interaction. Factorial RCBD was applied for experimentation. Two varieties viz. Binadhan-17 (V_1), BRRI dhan58 (V_2) and three sowing time viz. 30th November (T_1), 10th December (T_2), 20th December (T_3) were applied as treatments. Seedlings were transplanted at 35 DAS. Phenological, yield and maturity related data were statistically analyzed by Statistix 10. Interaction effect of the above factors at on farm indicated that, significantly longest plant height (94.33 cm) was observed at $T_3 \times V_2$ and shortest (80.60 cm) with $T_2 \times V_1$ combination. Highest panicle length (23.87 cm) was recorded at $T_2 \times V_2$ and lowest (21.80 cm) by treatment combination $T_1 \times V_2$. Total number of filled grains/panicle was most (162.87) in $T_1 \times V_1$ whereas, least (107.00) was found in $T_3 \times V_2$.

Greater number (36.00) of sterile grains/panicle was noticed on $T_3 \times V_1$; contrary, lesser sterile grains (13.73) were found with $T_2 \times V_2$. Thousand grain weight was more (24.91 g) in $T_1 \times V_1$ and less (23.20 g) in $T_2 \times V_2$. Treatment aggregate $T_1 \times V_1$ had a lengthy life cycle (159.33 days to maturity) but, relatively short life cycle (149.97 days) was seen with $T_3 \times V_2$. Maximum grain yield (7.70 t/ha) was produced by $T_2 \times V_1$ and minimum (5.74 t/ha) by $T_1 \times V_1$ treatment combination. Findings of on station revealed that, longest plant height (98.33 cm) was seen in treatment combination $T_3 \times V_2$ and shortest (78.86 cm) with $T_1 \times V_1$; which was statistically significant. Larger and smaller panicle length was observed in $T_3 \times V_2$ (24.43 cm) and $T_1 \times V_2$ (21.33 cm) respectively. Filled number of total spikelets/panicle were more at $T_3 \times V_1$ (158.13) and less in $T_1 \times V_1$ (120.87). Number of unfilled spikelets/panicle were greater with $T_2 \times V_1$ (53.53) and lesser with $T_1 \times V_2$ (21.80). Heaviest and lightest 1000 seed weight was obtained from $T_1 \times V_1$ (24.69 g) and $T_2 \times V_2$ (23.33 g). Treatment aggregate $T_1 \times V_1$ (158.00 days) required longer days to mature; contrary, statistically identical duration was noticed with $T_2 \times V_2$ (147.20 days) and $T_3 \times V_2$ (145.43 days) which matured much shorter. Maximal grain yield was generated by $T_2 \times V_1$ (7.41 t/ha) and $T_1 \times V_2$ yielded 5.94 t/ha which was significantly minimal among the treatment combinations. From the above on farm and on station investigation it can be concluded that, sowing of Binadhan-17 at 10th December (T_2) may give optimum yield which might be economically viable in the context of Magura region.

Keywords— Binadhan-17, Magura, Sowing time, Yield.

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Food from By Product: Development and Quality Evaluation of Ready to Eat Cooked Turkey Meat Rolls Incorporated with Turkey Gizzards

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Abstract— Turkeys (*Meleagris gallopavo*) occupies an important position next to chicken, ducks, guinea fowls and quails. Turkeys are reared and slaughtered mainly for meat, the by-products that are emanated from slaughtered turkey birds are also of good value. Gizzard is one of the principal edible by - product and the texture of gizzard is tough and rubbery due to their characteristic muscular construction. Gizzards usually less preferred by the consumer due to its peculiar flavor and texture. In this perspective, it is necessary to evolve appropriate technologies to convert the tough, less palatable and more perishable gizzards in to convenience, attractive and more acceptable novel ready to eat cooked meat products. Hence, a study was conducted to focus on greater value addition to turkey gizzards through preparation of ready to eat cooked turkey meat rolls from combination of turkey meat with 25% and 50% turkey gizzards. The turkey meat rolls prepared from 100% turkey meat was used as control. Significantly ($P<0.05$) higher pH, product yield, moisture retention, moisture, protein and fat contents and significantly ($P<0.05$) lower diameter shrinkage, shear force and drip loss values were observed in 25% turkey gizzard incorporated ready to eat cooked turkey meat rolls then 50% turkey gizzards incorporated ready to eat cooked turkey meat rolls. The sensory attributes scores for appearance and colour, flavour, juiciness, texture, binding and overall acceptability were significantly ($P<0.05$) higher for 25% turkey gizzard incorporated ready to eat cooked turkey meat rolls as compared to 50% turkey gizzards incorporated ready to eat cooked turkey meat rolls. All physico

- chemical parameters and sensory evaluation scores of 25% turkey gizzards incorporated ready to eat cooked turkey meat rolls were comparable with control. The ready to eat turkey meat rolls prepared by using 25% turkey gizzards had significantly superior physico - chemical characteristics and higher sensory acceptability as compared to 50% turkey gizzards incorporated ready to eat turkey meat rolls. Therefore, turkey gizzards can be successfully used at 25% level for preparation of acceptable quality of comminuted ready to eat cooked turkey meat rolls.

Keywords— Acceptability, Gizzard, Meat, Ready to eat, Rolls, Quality

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Quality and Acceptability of Emulsion and Ground Batter Meat Patties from Turkey (*Meleagris gallopavo*) Meat

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Abstract— Commercial turkey (*Meleagris gallopavo*) farming is becoming popular in India and farmers started to show interest in rearing turkey birds. Popularization of turkey meat and meat products through efficient utilization process is necessary to upgrade this back yard activity in to a commercial business. Development of value added products from the turkey meat would be the most profitable way of utilization turkey meat. In this perspective, a study was conducted to develop and assess the quality and acceptability of meat patties from turkey meat. Significantly ($P < 0.05$) higher pH, moisture retention, product yield, water holding capacity and moisture contents were observed in turkey meat emulsion based meat patties as compared to turkey meat ground batter based meat patties. The dimensional parameters viz. decrease in diameter and percent shrinkage values were significantly ($P < 0.05$) higher in turkey ground batter meat patties as compared to turkey meat emulsion patties whereas percent gain in height value was significantly ($P < 0.05$) higher in turkey meat emulsion patties. Protein and fat contents of turkey meat emulsion based meat patties and turkey meat ground batter based meat patties did not differ sufficiently. Turkey meat emulsion based meat patties had significantly ($P < 0.05$) higher sensory scores than ground batter based turkey meat patties. The meat patties prepared by using turkey meat emulsion were rated highly acceptable as compared to ground turkey meat patties.

Keywords— Acceptability, Batter, Emulsion, Meat, Turkey, Quality, Patties.

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Development and Quality Evaluation of Meat Based Seasoning Fryums (Meat Vadam) Incorporated with Goat Meat Emulsion and Ground Goat Meat

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Abstract— Left over rice vathals or vadams is a sun dried product which can be stored for over a year. Vadam is traditionally made using left over rice. Most of the vadam available in the market are mainly based of cereals which are high in calorie and low in protein contents. Incorporation of animal proteins in such snack type food products can improve the nutritional quality especially with respect to amino acid composition, flavor and taste. In this perspective, a study was conducted for the preparation of ready to fry meat based seasoning fryums (meat vadam) from combination of goat meat (50%) and rice flour (50%). Two types of ready to fry meat based seasoning fryums (meat vadam) were developed viz. ground goat meat based ready to fry seasoning fryums (meat vadam) and goat meat emulsion based ready to seasoning fryums (meat vadam) and their quality and acceptability were evaluated. Control ready to fry seasoning fryums contained 100% rice flour without goat meat. Other ingredients used in the formulation viz. common salt (2.5%), green chili paste (1.0%), onion paste (20.0%), cumin powder (0.5%), spice mix (1.5%), asafetida powder (0.5%) and curd (25.0%) were added over and above rice flour and goat meat combination. Significantly ($P<0.05$) increased values were observed in goat meat emulsion incorporated seasoning fryums for pH, product yield, bulk density, moisture, protein and fat contents. Significantly ($P<0.05$) reverse trends were observed for hydratability, water absorption index and water solubility index in ground goat meat based ready to fry seasoning fryums. Results of sensory evaluation on 9 - point hedonic scale showed appearance

and colour, flavour, texture, crispness, after taste, meat flavour intensity and overall palatability were higher for goat meat emulsion incorporated seasoning fryums than ground goat meat based ready to fry seasoning fryums. Sensory evaluation results indicated that goat meat emulsion incorporated seasoning fryums were rated “very palatable” as compared to ground goat meat based ready to fry seasoning fryums. Thus, it can be concluded that, 50% goat meat emulsion and 50% rice flour can be successfully used for preparation of meat based seasoning fryums (meat vadam) of acceptable quality.

Keywords— Goat, Fryums, Meat, Ready to fry, Seasoning, Quality

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Bio-pesticides--a new era for control of Mealy bug (*Maconellicoccus hirsutus* Green) on som plant (*Machilus bombycina* King) and environmental sustainability

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Abstract— Som plant (*Machilus bombycina* King) is an important plant in agroforestry system. Rural developments through localized cottage industries are involved with this plant like sericulture industry (muga silk worm cultivation). Leaves of som plants are major food of muga silk worm (*Antherea assama*). A field experiment was conducted under Uttar Banga Krishi Viswavidyalaya (State Agricultural University) at Pundibari, Coochbehar, West Bengal, India to study seasonal occurrence of mealy bug (*Maconellicoccus hirsutus* Green) on som plant (*Machilus bombycina* King) and its management using bio-pesticides. The mealy bug was active throughout the year. The peak population of mealy bug (above 18 mealy bugs/3 leaves) was recorded on 10th standard meteorological week *i.e.* on 2nd week of March. Correlation coefficient (r) study between pest population with environmental parameter showed that there was significant positive(+)correlation with temperature difference and significant negative(-)correlation with temperature (minimum and average) and relative humidity (maximum, minimum and average). On the other hand non-significant negative(-)correlation found between mealy bug population and maximum temperature. Bio-efficacy of different treatments against mealy bug showed that Imidacloprid (confidor 17.8 SL) 1 ml/ 5L was found superior for management of mealy bug (about 77.00 % reduction of mealy bug population) followed by Azadiractin (nimarin 1500 ppm) 2.5 ml/L (about 57.00 % reduction of mealy bug population). However among the botanical extract Tobacco was found best (more than 50.00 % reduction of mealy bug population) closely followed by Garlic (above 48.00 % reduction) and Spilanthes

(above 45.00 % reduction) and Polygonum (above 40.00 % reduction). Plant extracts are biological origin having no hazardous effect to environment and so can be incorporated in Integrated Pest Management (IPM) programme against mealy bug on som plant.

Keywords— Abiotic factors, botanical extracts, mealy bug, organic cultivation, seasonal occurrence.

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Evaluation of *Puf* locus targeted PCR for easy identification of *Saprolegnia parasitica*

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Abstract— *Saprolegnia* is a genus of oomycetes under family Saprolegniaceae and order Saprolegniales. Some members of this genus are highly virulent and are considered as one of the most destructive fish pathogen causing huge loss in aquaculture. Earlier *Saprolegnia* infections were controlled by use of malachite green but its use is banned due to its harmful effects. Since then, *Saprolegnia* infections have re-emerged and particularly *S. parasitica* has become an economically important fish pathogen. Species identification by only morphology is difficult, so, the most common confirmatory method for identification of *Saprolegnia* species is sequencing of internal transcribed spacer (ITS) region. Since, sequencer is not a common facility in every laboratory and sequencing by outsourcing is again time-consuming. In this study, a PCR protocol targeting *Puf* locus in the genomic DNA was evaluated for easy identification of *S. parasitica*. The amplified product using the published primer set Puf112 and Puf310 was around 365 bp. The product was sequenced and in BLAST high similarity with *S. parasitica* hypothetical protein mRNA (XM_012354450) was observed. The sequence was submitted to NCBI GenBank (MT556640). The protocol could also detect up to few picogram genomic DNA of *S. parasitica*. When the protocol was tested with other species of *Saprolegnia*, there was no amplification enabling differentiation between *S. parasitica* and other species. Therefore, this protocol may be prove to be an easier, faster and cheaper method of molecular identification of *S. parasitica* as sequencing is not involved.

Keywords— Genomic DNA, PCR, *Puf* locus, *Saprolegnia parasitica*, species differentiation

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Control of Insect pests of Mung bean (*Vigna radiata* L. Wilczek) using Plant extracts

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Abstract— Mung bean or green gram, (*Vigna radiata* L. Wilczek) is important pulse crop. Many insect pests attack on mungbean crop and causing extremely elevated losses to the crop and its production. A field experiment was conducted during cropping season – 2019 for the determining efficiency of plant extracts against insect pests of mung bean. Plant extract obtain from neem leafs (*Azadirachta indica*), turmeric (*Curcuma longa*) and cloves (*Syzygium aromaticum*). Experimental design was in three plots. 100ml of the plant extracts were used weekly. Data were collected weekly by the counting of mean population of insect pests. The results observed that the plant extracts were effective against pests of mung bean aphid (*Aphis craccivora*), jassid (*Empoasca motti*) and white fly (*Bemisia tabaci*). The mean population of aphid, jassid and white fly in 2019 was significantly decreased in the treated plots with plant extracts as compared to controlled plot. The population of aphid was decreased from 10.2 to 6.2, jassid population was decreased from 10.1 to 7.1 and white fly population was decrease from 14.1 to 6.3. All used plant extract have insecticidal activity against insect pests of mung bean. Therefore these plant extract can be used for the control of insect pests of mung bean.

Keywords— Aphid, Insect pest, Jassid, Mung bean, Plant extract, White fly.

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Rice yield and soil fertility status at harvest as influenced by integrated nitrogen management

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Abstract— A field investigation was carried out during Kharif-2017 at the instructional farm of ICAR-Krishi Vigyan Kendra (KVK), Mangaluru, Karnataka state, to study the effect of integration of organic and inorganic source of nitrogen on soil fertility status at harvest and yield of rice. There were eleven treatments comprising of vermicompost (VC), poultry manure (PM) and fish manure (FM) as nitrogen source of organic manure integrated with fertilizer nitrogen source of urea in proportion of 25 percent and 50 percent along with one control and treatment comprising application of recommended package of practices. The experiment was laid out in randomized block design with three replications. The results indicated that plant height, productive tillers hill⁻¹, grain yield and straw yield were significantly influenced by integration of nitrogen management in rice. The treatment receiving 50 per cent VC integrated with 50 percent recommended dose of nitrogen (RDN) recorded significantly higher plant height (92.27 cm), higher number of productive tillers hill⁻¹(16.85), higher grain yield (5434 kg ha⁻¹) and straw yield (6817 kg ha⁻¹) compared to control. Soil samples collected at harvest were analyzed for soil fertility parameters. The results indicated that soil pH and Electrical Conductivity (EC) were not significantly influenced by integration of organic and inorganic sources of nitrogen. However, the major nutrients were significantly influenced by integrated nitrogen management. The available nitrogen was significantly higher in the treatment of receiving 50 per cent VC integrated with 50 per cent RDN (382.36 kg ha⁻¹) compared to control (294.05 kg ha⁻¹). The available soil phosphorus was significantly higher in treatment receiving 50 per cent PM integrated with 50 per cent RDN (78.83 kg ha⁻¹) compared to control (43.93 kg ha⁻¹). The

available potassium was significantly higher in the treatment receiving 50 per cent VC integrated with 50 per cent RDN (143.7 kg ha^{-1}) compared to control (92.31 kg ha^{-1}).

Keywords— Fish manure, Poultry manure, Rice, Soil fertility, Vermicompost.

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Chemical composition of essential oils of *Rhus tripartita* in Algeria

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Abstract— The aim of this work is the study of the chemical composition of the populations of *Rhus tripartita* in Algeria. The aerial parts of *R. tripartita* were collected in the flowering stage from seven localities in East Algeria and subjected to hydro-distillation to extract the essential oils. The chemical composition of the oils was determined by Gas chromatography/ mass spectrometry (GC / MS) analysis. The yield of *R. tripartita* essential oils was low with an average of 0.16 ± 0.017 . The α -pinene ($58.72 \pm 14.45\%$), Δ^3 -carene ($5.21 \pm 6.89\%$), caryophyllene-Z ($4.55 \pm 4.68\%$) and β -pinene ($3.07 \pm 1.85\%$) are the major components of the oils. The results reveal a notable difference between the chemical composition of essential oils from male and female populations. The Statistical analyzes using principal component analysis and UPGMA have allowed to identify four chemotypes in *R. tripartita* essential oils: the Δ^3 -carene- α -pinene-limonene chemotype characterizes the male populations of Tamnrasset and Boussaada. The α -pinene- Δ^3 -carene-caryophyllene-Z chemotype characterizes the populations of M'sila and Mergueb male. The female M'sila population is characterized by the α -pinene- Δ^3 -carene- Δ -cadinene chemotype. The remaining populations show the α -pinene- β -pinene-caryophyllene-Z chemotype.

Keywords— *Rhus tripartita*, essential oils, chemotypes, Algeria.

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Biomonitoring of metal trace elements by epiphytic lichen *Xanthoria parietina* in Bejaia area (Northern Algeria)

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Abstract— The metallic air pollution in the Bejaia region (northern Algeria) were examined, using the lichen *Xanthoria parietina* as a bio-monitoring organism. The biological material from 42 stations were sampled and analyzed by flame atomic absorption spectrophotometry (AASF). In order to determine the relationship between the potential sources of contaminants in the study area and the degree of deposition of metals in the air, five heavy metals (Cd, Cu, Pb, Mn, and Ag) were analyzed. The results show that the metal contents recorded in the various sampled stations are fluctuating and lead to the following decreasing series: Pb> Mn> Cu> Ag> Cd. The air quality in the town of Amizour is considerably poor compared to the rest of the studied stations. The Pb and Mn levels are very high in all stations with an average of $(134.62 \pm 148.53 \text{ mg/kg})$ and $(290.88 \pm 175.13 \text{ mg/kg})$ respectively. The highest concentrations of heavy metals were observed around the municipalities of Bejaia, Akbou and Tichy. The current situation suggests an obvious need to mitigate atmospheric pollution by MTE and to control the emissions of toxic metals, in particular Pb from agricultural activities, industrial sources and road traffic in large cities.

Keywords— Biomonitoring, Bioaccumulation, heavy metals, *Xanthoria parietina*, Bejaia, Algeria.

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