ASSOCIATION OF RETIRED INDIAN COUNCIL OF AGRICULTURAL RESEARCH EMPLOYEES (ARICARE)
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ARICARE news

A view of the Meeting of ARICARE held at ICAR - NINFET

20 % OF OUR POPULATION TO BE ELDERLY BY 2050 =HELP AGE INDIA REPORT

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From the President's Desk

Water plays a critical role in supporting the livelihood of millions of rural households. Increasing demand for water to cater the need of various purposes , pose serious challenges. The likely impact of climate change on water resources adds to our challenges. In 2010, United Nations recognized the right to safe and clean drinking water and sanitation as human right. The gap between water demand and fresh water availability is emerging in many developing economies. . During 2011 census, India has entered the league of water deficient nations. A nation is considered water deficient if the per capita availability falls below 1700 m^3 per person. Competing demands for water resources for water uses makes integrated water resource management essential to water security for all. Indian agriculture is crucially dependent on local climate. Favorable southwest monsoon is essential in securing water for irrigating crops. Unexpected weather conditions with change in weather variables have been noticed all over the world in the last few years. The latest findings suggest that while there have been alternate dry & wet spells over past three decades, the frequency of occurrence of droughts has been significantly increased in India. These events have upset the calculations of farmers thus affecting the normal sowing and harvesting cycle of crops leading to lower yields.

Of all the water uses, agriculture can be one of the most inefficient and wasteful practices . Food production which is the largest user of water globally , is responsible for 80-90% of consumptive water use from surface as well as ground water. Water used for irrigation is removed from aquifers, streams and rivers and is not returned to those sources and only small fraction of water for irrigation is actually taken up by crops. The scope of sustainable management of water resources in agriculture concerns the responsibility of water managers and users to ensure that water resources are allocated efficiently and equitably to achieve socially, environmentally and economically beneficial outcomes. It includes: smooth water supply for irrigation across production seasons; water management in rainfed agriculture; management of floods, droughts and drainage and associated cultural practices. Agricultural water resource

management covers a wide range of agricultural systems and climatic conditions drawing on varying water resources including: surface water; ground water; rain water harvesting; recycled waste; desalinated water. It is therefore absolutely essential for creating awareness and triggering a dialogue among scientists, academics researchers and activists on the emerging challenges related to water resources.

From Secretary's Desk

The newly formed sub-committee on **'e-Journal'**of 2019-20 has made a very sincere effort in bringing out this issue of *ARICARE news***.** The *ARICARE news* was started its journey in 2017 as a bi-yearly e-newsletter with initiative of **'e-journal'**sub-committee. ARICARE has already published five issues of *ARICARE news* which had been widely circulated and were highly appreciated by all.

The other sub-committee of ARICARE are also functioning very well. The **Tour** sub-committee has already completed one domestic tour to Ranchi-Netarhat-Purulia during July 2019 and another one is under process for visiting Amritswar-Chandigarh-Dharmasala- Dalhousie during November, 2019. Due to constant efforts of '**Pension, administration and medical'** sub-committee Medical ID cards have been issued to the pensioners of CRIJAF and NINFET for cashless indoor treatments in a number of reputed private hospitals. I congratulate the Administrations of CRIJAF and NINFET for their very positive views and bold steps in this regard. CIFRI, Barrackpore is lagging behind in this regard. I appeal to the pensioners of CIFRI, Barrackpore to take up the matter with the Institute Administration and ARICRE will always be with them. The Picnic and get-together sub-committee is going to organise an 'ILLISH UTSAB'during September 2019.

As the past employees of ICAR, we cannot forget our deep concern about Indian Agriculture which is presently at a very crucial stage. The country is now on the brink of severe water scarcity. It is predicted that 40% of the population will have "no access to drinking **water**" by 2030.On the other hand, Indian Agriculture is very much dependent on water resources and there is a profuse wastage of water due to non-scientific irrigation methods. Agriculture is the single largest drain on India's

watersupplies, using more than 80% of the wate**r.** The climate change is also gradually deepening its claw on Indian Agriculture. According to CRISIL India's Kharif food grain production is set to decline by about 1.5- 3% in 2019 after three consecutive years of record high production. Kharif food grain production was a record 170.7 million tonnes in marketing year (January to December) 2018, up by 2% over previous year. Monsoon rainfall was delayed in 2019 and there exist high regional variances with many parts of the country receiving excess rainfall in a short span of time while high shortfall in other parts both in terms of spatial distribution and timeliness. These are expected to affect Kharif production in 2019.While, the data of IMD shows normal rainfall at a pan India level as of today. Thus, there are many burning issues before ICAR for continuing the progress of Indian agriculture.

Editorial

It gives us immense contentment that the officials who had gone on superannuation after completion of service as rendered to various ICAR Institutions of our country, have come under the umbrella of an Association whose objectives are to provide a common platform for ICAR pensioners as well as family pensioners to interact amongst themselves and to project their problems to the concerned agencies/authorities for their overall welfare. In addition to redress the official problems as encountered , programmes of socializing and recreation of the pensioners, family pensioners and their families and functions / seminars thereof are being arranged in regular interval. The activities undertaken by ARICARE , Kolkata are published twice in an year in order to make all of us aware of the presence and functioning of such a vibrant association with a gaze that the population of older Persons is on increase globally and this ever increasing segment of society has to play more active role in the Society in future times. We wish to place our appreciation on record on successful operation of our Association to resolve the pensioners' cases in a reasonable time frame and of late we have noticed very good efficiency in its functions, though many other relevant concerns not yet resolved, are to be addressed by the Association for the wellbeing of the Pensioners. The ardent co-operation and suggestion as extended by

all Pensioners for publication of this July , 2019 issue of e- Journal is put under a deep sense of appreciation.

Meetings and Events

Annual Picnic

Fruitful annual Picnic was held at CRIJAF, Barrackpore on 20th January, 2019 with enormous enthusiasm and cheerfulness among the participating pensioners and their family members .Thirty one(31) participants including some family members had attended the picnic. Musical Chair race for Lady Participants and throwing the Cricket ball to the wicket for Gent participants were also conducted. Prizes of Ist ,2nd and 3rd position for each events were given by the President of the Association.

Extended Governing Body Meeting

Governing Body meeting was held on 23rd March, 2019 where 35 persons attended the

Meeting and had discussed various issues to carry forward the activities of ARICARE in significantly vibrant way.

Annual General Meeting

Annual General Meeting of ARICARE was held on 12th June, 2019 at ICAR-NINFET,, Tollygunge, Kolkata where 49 persons attended the meeting. Governing Body for 2019-20 with 6 (six) office bearers and an executive committee consisting of 15 members had been formed . Various sub committee , viz., e- journal , Tour , Pension, administration and medical, . Picnics, Get-togethers and Cultural , WhatsApp and Facebook had also been constituted.

Domestic Tour

A tour to Ranchi and Purulia for a period of 8 days from 12th to 19th July , 2019 had been organized and photographs are depicted herein.

Life Member

The following persons retired from ICAR have taken Life Membership during the period from January to July , 2019.

01	Mrs. Sandhya Sen, ICAR - NINFET
02	Mrs. Dipika Som, ICAR-NINFET (Family Pensioner)
03	Dr. Subhas Chandra Saha , ICAR -NINFET
04	Dr. Mrinmoy Datta, ICAR Res. Complex for NEH Region , Tripura
05	Mrs. Chayanika Mazumdar, ICAR- NINFET (Family Pensioner)
06	Dr. Dulal Chandra Nayak, ICAR – NBSS & LUP
07	Mr. Swapan Kumar Batabyal ,ICAR-NINFET
08	Mrs. Reba Datta , ICAR-NINFET (Family Pensioner)
09	Mrs. Jayasree Chatterjee , ICAR- NINFET (Family Pensioner)
10	Dr. Subrata Biswas, ICAR - CRIJAF

11	Dr. Kamal Krishna Datta ,ICAR-NDRI
12	Dr. Rajat Kanti Tarat, ICAR Res. Complex for NEH Region , Meghalaya
13	Dr.Monoranjan Saha, ICAR-IARI
14	Dr. Sujit Kumar Ghosh. ICAR-NINFET
15	Mr.Nemai Paik. ICAR-NINFET

Medical ID Cards

Indian Council of Agricultural Research (ICAR) have approved Medical treatments of the staff , Pensioners and their dependents for availing medical facility in the CGHS list of approved hospitals in terms of Department of Health , Ministry of Health and Family Welfare , Govt. of India , OM No FNS – 14025/ 72000 – MS dated 28.03.2000/ West Bengal Health for All Employees and Pensioners on Cashless Medical Treatment Scheme , 2014 , as indicated against each. ICAR Pensioners as well as their dependents have also received Medical ID Cards being issued from ICAR Institutes to have Medical treatment(IPD) in the empanelled Hospitals as stated below.

ICAR-CRIJAF Empanelled Hospitals

- Narayana Multispeciality Hospital , Barasat and Kolkata
- Amri Hospitals , Saltlake , Kolkata
- Peerless Hospitex Hospital and Research Centre , Kolkata
- Nehru Memrial Techno Global Hospital , Barrackpur , West Bengal
- Disha Eye Hospitals , Kolkata
- B. P. Podder Hospital and Medical Research , New Alipur , Kolkata
- Hayat Hospital , Guwahati
- Suraksha Diagnostic Private Limited , Saltlake , Kolkata
- Serum Analysis Centre , Kolkata
- R.B. Diagnostic Private Ltd , Kolkata

ICAR – NINFET Empanelled Hospitals

- Disha Eye Hospitals Private Ltd , Kolkata

- Peerless Hospitex Hospital and Research Centre , Kolkata
- R.G. Stone Urology and Laparoscopy Hospital , Kolkata
- Sursut Eye Hospital and Research Centre , Kolkaya
- Institute of Child Health , Kolkata
- BM Birla Heart Research Centre , Kolkata

Know Your Pension

A Government servant retiring in accordance with the rules, after completing qualifying service of not less than 10 years, is entitled to a pension @ 50% of his last pay or 50% of average emoluments for the last 10 months, whichever is more beneficial to him/her.In case of Family Pension the widow is eligible to receive family pension on death of her spouse after completion of one year of continuous service or even before completion of one year if the Government servant had been examined by the appropriate Medical Authority and declared fit for Government service.W.e.f 1.1.2006, Pension is calculated with reference to emoluments (i.e.last basic pay) or average emoluments (i.e. average of the basic pay drawn during the last 10 months of the service) whichever is more beneficial. The amount of pension is 50% of the emoluments or average emoluments whichever is beneficial.

Commutation of Pension

Central Government servant has an option to commute a portion of pension, not exceeding 40% of it, into a lump sum payment. No medical examination is required if the option is exercised within one year of retirement. If the option is exercised after expiry of one year, he/she will have to under-go medical examination by the specified competentauthority.Lump sum payable is calculated with reference to the Commutation Table. The monthly pension will stand reduced by the portion commuted and the commuted portion will be restored on the expiry of 15 years from the date of receipt of the commuted value of pension. Dearness Relief, however, will continue to be calculated on the basis of the original pension (i.e. without reduction of commuted portion).

The formula for arriving for commuted value of Pension (CVP) is CVP = 40 % (X) Commutation factor*(X)12

* The commutation factor will be with reference to age next birthday on the date on which commutation becomes absolute as per the New Table annexed to the CCS (Commutation of Pension) Rules, 1981.

Age next birthday	Commutation value expressed as number of year's purchase	Age next birthday	Commutation value expressed as number of year's purchase	Age next birthday	Commutation value expressed as number of year's purchase
29	9.176	43	9.040	57	8.512
30	9.173	44	9.019	58	8.446
31	9.169	45	8.996	59	8.371
32	9.164	46	8.971	60	8.287
33	9.159	47	8.943	61	8.194
34	9.152	48	8.913	62	8.093
35	9.145	49	8.881	63	7.982
36	9.136	50	8.846	64	7.862
37	9.126	51	8.808	65	7.731
38	9.116	52	8.768	66	7.591
39	9.103	53	8.724	67	7.431
40	9.090	54	8.678	68	7.262
41	9.075	55	8.627	69	7.083
42	9.059	56	8.572	70	6.897

Retirement Gratuity

Retirement Gratuity is payable to the retiring Government servant. A minimum of 5 years' qualifying service and eligibility to receive service gratuity/pension is essential to get this one time lump sum benefit. Retirement gratuity is calculated @ 1/4th of a

month's Basic Pay plus Dearness Allowance drawn on the date of retirement for each completed six monthly period of qualifying service. There is no minimum limit for the amount of gratuity. The retirement gratuity payable for qualifying service of 33 years or more is 16.5 times the Basic Pay plus DA, subject to a maximum of Rs. 20 lakhs.

Death Gratuity

Death Gratuity is a one-time lump sum benefit payable to the nominee or family member of a Government servant dying in harness. There is no stipulation in regard to any minimum length of service rendered by the deceased employee. Entitlement of death gratuity is regulated as under:

Qualifying Service	Rate
Less than one year	2 times of basic pay
One year or more but less than 5 years	6 times of basic pay
5 years or more but less than 11 years	12 times of basic pay
11 years or more but less than 20 years	20 times of basic pay
20 years or more	Half of emoluments for every completed 6 monthly period of qualifying service subject to a maximum of 33 times of emoluments.

Maximum amount of Death Gratuity admissible is Rs. 20 lakhs w.e.f. 1.1.2016

Service Gratuity

A retiring Government servant will be entitled to receive service gratuity (and not pension) if total qualifying service is less than 10 years. Admissible amount is half month's basic pay last drawn plus DA for each completed 6 monthly period of qualifying service. This one time lump sum payment is distinct from retirement gratuity and is paid over and above the retirement gratuity.

Issue of No Demand Certificate .Dues owed by the retiring employees on account of Licence Fee for Government accommodation, advances, over payment of pay and allowances are required to be assessed by the Head of Office and intimated to the Accounts Officer two months in advance of the date of retirement so that these are recovered from retirement gratuity before payment. For this purpose the Licence Fee for those in occupation of Government accommodation is taken into account up to the end of the permissible period for which accommodation can be retained after retirement under the Rules on normal rent. The recovery of Licence Fee beyond that period is the responsibility of the Directorate of Estates. If, for any reason final dues cannot be assessed on time, then 10% of gratuity is withheld from gratuity on the basis of a commutation from the Directorate of Estates in this regard.

Leave Encashment

Encashment of leave is a benefit granted under the CCS (Leave) Rules and is not a pensionary benefit. Encashment of Earned Leave/Half Pay Leave standing at the credit of the retiring Government servant is admissible on the date of retirement subject to a maximum of 300 days.

Central Government Employees Group Insurance Scheme

A portion of monthly contributions paid while in service is credited in a Saving Fund, on which interest accrues. A Government servant while entering service has to apply in Form No. 4 of the above Scheme to the Head of Office, who shall issue a sanction for the payment of subscriber's accumulation in the Savings Fund segment together with interest and arrange for its disbursement, soon after retirement. Payments under this Scheme are made in accordance with the Table of Benefit (as issued by Department of Expenditure) which takes in to account interest up to the date of cessation of service. Insurance cover benefit under this Scheme is available to the family in the event of death of the subscriber.

Higher Quantum Pension

In accordance with recommendations for paying higher quantum of pension to very old pensioners, quantum of family pension payable to similarly old family pensioners would also need to be increased. Quantum of pension available to the family pensioners should also be increased on par with that recommended for pensioners as under:-

On attaining age of	Additional quantum of pension
80 years	20% of basic family pension
85 years	30% of basic family pension
90 years	40% of basic family pension
95 years	50% of basic family pension
100 years	100% of basic family pension

Family Pension

On death of a Central Government pensioner, the family is entitled to a family pension the amount of which is 50% of the last pay for a period of seven years, or for a period up to the date on which the retired deceased Government servant would have attained the age of 67 years had he/she survived, whichever is earlier. Thereafter, the amount of family pension is 30% of his last pay. The amount of family pension is also increased by 20% to 100% after the family pensioner attains the age of 80 years and above.

* The family of a Government servant, who dies while in service after having rendered not less than seven years' continuous service, is entitled to a family pension 50% of the last pay for a period of ten years. Thereafter, the amount of family pension is 30% of his/her last pay.

The new entrants to the central government service on or after 01.01.2004 are covered under the National Pension System (NPS).

News/Technology Summary

India *sets record farm output target for 2018-19*

The Government has set a target of producing a record 285.2 million tonnes of food grains in crop year 2018-19 beginning July, despite monsoon rainfall has been 9% below normal so far this year. The target is 0.53% higher than the initial forecast made in April, as said by the Agriculture Ministry . India harvested a record 284.8 million tonnes of food grains in 2017-18. For the current crop year, the Government targets higher production of rice, wheat, oilseeds and cotton, while production of pulses, coarse cereals and sugarcane is expected to be lower than last year. Kharif production this year is expected to be better to last year's owing to excellent crop condition, Ministry officials said. They, however, did not explain the reasons for buoyant forecast for a year when rainfall has been below average and some parts of the country have been ravaged by floods . It is said that rains have been less than normal in some parts of the country, and more than normal in some places. The Agriculture Ministry has set kharif production target at 141.20 million tonnes, which is 0.71% higher than the target set in April. The Ministry also said it expects rabi planting — which begins by mid-October — to be higher than last year since there were good soil moisture and higher water levels in reservoirs.The food grain target for 2018-19 — announced by Agriculture Ministry during a two-day national conference on planting strategy for the upcoming rabi (winter) season — is 0.14 % higher than the fourth advance estimate for 2017-18 production at 285.2 million tonnes. Moreover, it said that various schemes of the Government such as Pradhan Mantri Krishi Sinchai Yojana, Pradhan Mantri Fasal Bima Yojana, Soil Health Card scheme, and e-NAM are expected to increase farm output and farmers' income. "So far, crop conditions are excellent and we expect a good production in kharif," For 2018-19, the Agriculture Ministry has fixed the production target for rice at 113 million tonnes, against 112.9 million tonne last year. Wheat production target

has been set at 100 million tonnes against 99.7 million tonnes last year. The target for pulses has been kept at 25 million tonnes, slightly less than last year's 25.2 million tonnes. In case of coarse cereals, too, the target has been lowered slightly to 46.7 million tonnes against 46.9 million tonnes in 2017-18. Target of oilseed production for 2018-19 has been fixed at 36 million tonnes, up from 31.2 million tonnes last year, while cotton output is targeted to be raised to 35.5 million bales of 170 kg each from 34.89 million bales. Sugarcane production target for 2018-19 is fixed at 355 million tonnes, down from 376.91 million tonnes last year. Officials said the agriculture ministry is confident that the new procurement policy announced by the Government last week will ensure farmers get remunerative prices.

"States and private players have an important role to play in the new scheme while the FCI and cooperative NAFED would continue to procure food grains," as said. Niti Aayog was also working with states on the modalities of having private players in procurement of food grains, he said. States should ensure that farmers take insurance covers for all natural calamity under the Pradhan Mantri Fasal Bima Yojana to protect the crops grown by their farmers, as said .
(Source : https://economictimes.indiatimes.com/articleshow/65858058.cms)

Pulses Revolution from food to nutritional security - A giant leap in production

In India ,during 2017-18, pulses were cultivated over > 29 million ha (Mha) of area and recorded the highest ever production of 25.23 million tonnes (Mt) at a productivity level of 841 kg/ha. The exponential growth rate in production of pulses during last year was > 9 per cent. · Twelve states were the major producers contributing > 90 per cent pulses. These were Madhya Pradesh (> 8 Mt), Rajasthan (>3 Mt), Maharashtra (>3 Mt) Uttar Pradesh (>2 Mt) Karnataka (2 Mt) and Andhra Pradesh (>1 Mt) followed by Gujarat, Jharkhand, Tamil Nadu, and Chhattisgarh producing 90 per cent in gram production have been Madhya Pradesh (4.60 Mt), Maharashtra (1.78 Mt), Rajasthan (1.67 Mt), Karnataka (0.72 Mt), Andhra Pradesh (0.59 Mt), Uttar Pradesh (0.58 Mt) and

Gujarat (0.37 Mt). · Tur (Arhar) remained at 2nd position in total pulse production with 4.25 Mt of production in an area of 4.43 Mha at a productivity level of 960 kg/ha, the ever highest yield. Major states to record the success have been Maharashtra (1.07 Mt), Madhya Pradesh (0. 84 Mt), Karnataka (0.77 Mt), Gujarat (0.34 Mt), Uttar Pradesh (0.33 Mt), Telangana (0.26 Mt) and Jharkhand (0.22 Mt). · Urad (Blackgram), the 3rd important crop group, was cultivated over an area of 5.44 Mha (kharif + rabi) and recorded a production of 3.56 Mt at a productivity level of 655 kg/ha. This was the highest ever area, production and productivity in this crop. Major contributing states have been MP, Rajasthan, AP, UP, Tamil Nadu, Maharashtra, Jharkhand and Gujarat. · Similarly, Mung (Greengram) was sown over an area of 4.26 Mha in (kharif + rabi) and recorded a production of 2.01 Mt at and yield level of 472 kg/ha. Rajasthan, MP, Maharashtra, Karnataka, Bihar, AP, Odisha, Tamil Nadu, Gujarat and Telangana have been the major states. · Lentil also recorded an ever highest production of 1.61 Mt from area of 1.55 Mha at a productivity level of 1034 kg/ha, the ever highest yield level. Leading six lentil producing states have been Madhya Pradesh (0.68 Mt), Uttar Pradesh (0.50 Mt), West Bengal (0.15 Mt), Bihar (0.14 Mt), Jharkhand (0.06 Mt) and Rajasthan (0.03 Mt)

(Source : Min. of Agri. & FW (DAC&FW), GOI)

Agriculture , Food Industry and Exports

India's agrarian culture and varied regional climate have significantly contributed to the global food basket. Indian curries, mangoes, snacks and spices are known for their excellent quality across the globe. Globally, India leads the following food segments:

- India stands first in the production of bananas , papayas and mangoes. During 2018-19 (1st Advance Estimates), 30.00 million tonnes of banana, 5.83 million tonnes of papaya and 22.35 million tonnes of mango was produced in the country.
- During 2017-18, Guavas production amounted to 4.054 million tonnes.
- India is the largest milk producer in the world (176.3 million tonnes)

- India has the largest buffalo population (108.7 million)
- India is the largest pulses producer in the world (24.51 million tonnes) (3rd AE 2017-18)
- Among vegetables, India ranks second in world (182.034 million tonnes), and first in the production of Okra (6.073 million tonnes)

In FY19, exports of agricultural and processed food products totalled US$ 38.49 billion. During the period, top five exported commodities were marine products (US$ 6.80 billion), basmati rice (US$ 4.71 billion), buffalo meat (US$ 3.59 billion), spices (US$ 3.31 billion) and non-basmati rice (US$ 3.00 billion).Indian agricultural/horticultural and processed foods are exported to more than 100 countries/regions; chief among them are the Middle East, Southeast Asia, SAARC countries, the EU and the US.Ministry of Commerce & Industry is planning to introduce an "Agriculture Export Policy" which will aim at doubling the agricultural exports from the country and integrating Indian farmers and agricultural products to the global value chain. As of November 2018, the draft of the policy has been prepared.The Agricultural and Processed Food Products Export Development Authority (APEDA) plays a significant role in tapping India's agricultural strengths and works towards expanding the export potential of Indian agricultural and food products.

(Source : www.ibef.org.in)

West Bengal finds ways to increase organic farming

State Agriculture Department of West Bengal is geared up to increase organic farming in the state. As part of its drive to increase organic farming, the state is focusing on increasing production of some of the aromatic rice varieties like Radhatilak, Dudhsar, Kalabhat, Kalonuniya. As of now, 17,807 hectares of land are used for organic farming. The department is planning to bring another 10,000 hectares under organic farming. Apart from paddy, tea, flowers and fruits are cultivated using organic farming methods. For cultivating aromatic rice, organic fertilisers are necessary, as usage of chemical fertilisers will lead to loss of the aroma.

As per the agriculture department, in 2016-17, usage of chemical fertilizers plummeted

significantly in the state. In the past, 190 kg of fertilisers were used per hectare. The amount has come down to 187 kg. Use of organic manures has increased from 1.5 metric tonnes per per hectare to 1.88 metric tonnes per hectare. Use of organic manures will only facilitate the cultivation of aromatic rice, as said by the state Agriculture Department . Govt. of West Bengal
(Source : Economic Times , Agriculture)

Rice Based Health Care Products

Rice Pain Relieving Gel is a highly product effective for minor aches and pains of muscles and joints associated with simple strains, bruises and sprains. The major ingredients of the product are as follows.

- Camphor,
- Menthol,
- Methyl salicylate,
- Eucalyptus oil,
- Rice bran oil

The product is a herbal formulation containing rice bran oil as a carrier. Rice bran oil used in this formulation serves as an excellent base for dissolving natural pain relieving ingredients. Rice bran oil absorbs well in the skin, thereby active ingredients get absorbed fast and provide quick relief.Rice bran oil which has a lot of skin beneficial properties, absorbs very well into the skin. So the ingredients dissolved in the medium, absorb very well and provide quick relief. Products of this category available in the markets have synthetic base and /or synthetic analgesic ingredients. The production cost of the product at laboratory level is Rs. 20/- per 25 g. Small scale entrepreneurs can start production. With the investment of Rs. five lakhs, one can produce 50 kg of the product daily.

Rice Riche Face Scrub is an exfoliation product which has been designed specifically for use on the face. It removes dead skin cells to give a more polished

and healthy look by making skin softer and brighter.Main ingredients of the product are as follows .

- Rice bran oil,
- Rice flour from broken rice, humectant.
- Gamma oryzanol, tocopherols, tocotrienols used as potent antioxidants,

It keeps skin smooth and glowing by removing dead skin, and exposing a layer of younger, healthier skin. Although the product is oil based, it can easily be washed off with water leaving behind the skin smooth, soft and moist. It protects from the problem of blemishes and dark spots, and flakes around nose and chin area. Most of the facial scrubs available in the market contain sharp and hard abrasive particles which are extremely harsh for skin. And after use, application of skin moisturizer becomes essential. In our product, rice grain flour is used as exfoliant which is mild and soft towards the skin. It can be used regularly. After rinsing off, the skin becomes smooth, soft and moist and does not require application of another moisturizing cream.Cost of production at laboratory scale is Rs. 18/ per 100 g.

Iron rich Rice - Anemia caused by iron deficiency is a major public health issue affecting infants, young children and pregnant women. It is linked with an increased risk of maternal mortality, as well as an increased risk of pre-term delivery, retarded foetal growth, etc. This problem can be overcome if the rice which is the staple food of majority of the Indian population, is fortified with iron. Keeping this view in mind, a protocol for production of iron fortified rice was developed with proven results.The produced is highly effective in alleviating iron deficiency condition. Hemoglobin level measured in moderately persons increased from 9.25 to 10.83 g/dl while in persons with severe anemia increased from 6.77 to 10.36 g/dl. This product is indistinguishable from unfortified rice. The developed protocol is cheaper and highly cost effective. There is no considerable loss of iron on washing with water or when cooked with excess of water. Chance of free radical formation is little as fortificant is

uniformly absorbed inside the grain. Iron of fortified rice produced by conventional methods like dusting and coating, gets washed away when rinsed or cooked with access of water. Present Protocol involves uniform absorption of iron into grain and thus there is no considerable loss of iron when rinsed or cooked in excess of water. Developed fortification protocol involves parboiling process. At laboratory scale, additional cost for iron fortification of one kg paddy will be about Rs. 5/-. The production cost will be reduced if fortification is done at commercial scale.

This is a **rice bran oil based low fat (35%) spread** which can be used as substitute of butter and margarine containing more than 80% fat. Further the fats of butter and margarine contain unhealthy saturated fats and trans fats while the Rice bran oil has high concentration of health promoting compounds and balance fatty acid composition as stated below .

- Contains rice bran oil having low fat/oil content (>35%).
- Balance fatty acid composition containing saturated, mono unsaturated, polyunsaturated acids.

Commercially available product contains high proportion of saturated fats and trans fats which are considered as bad cholesterol enhancing fats. The product is made of rice bran oil which is considered as healthy oil. Because of rice bran oil, the product contains health promoting components oryzanol, tocopherol etc. At laboratory scale the cost of RBO Spread is equal to the cost of rice bran oil

Rice Moisturizing Lotion is a skin care product. Its regular application makes skin smooth, soft and supple. The antioxidants of the product fight with free radicals and slow down the effect of aging. The major ingredients of the product are as follows .

- Rice bran Oil,
- Brown rice extract,
- Water,

- Glycerol as main key ingredients

The starch extracted from brown rice provides moisture to skin slowly but for a longer period of time. The oil and the brown rice extract contain various skin beneficial ingredients contributing to suppleness, tightening, lightening and preventing dryness of the skin.The oil and the brown rice extract contain various skin beneficial ingredients contributing to the following factors.

- Suppleness,
- Tightening,
- Lightening and preventing dryness of the skin.
- On account of oryzanol, the product has anti-aging property.

At laboratory scale, production cost of 100 g of the product is only Rs.13/-. Small scale entrepreneurs can start business. With facility costing Rs. five lakhs , one can produce 50 kg of the product every day.

Rice riche cream for cracked heel and dry skin is useful for therapeutic and cosmetic applications such as cracked heels, dry skin disorder. It softens the heel and the foot skin, preventing the feet and other parts from forming thick and hard skin.

The product comprises rice bran oil up to 60%, brown rice extract up to 40%, humectant up to 30%, sequestrant up to 1.0%, preservative, fragrance in acceptable range and sufficient quantity of water to make the formulation 100%. Gamma oryzanol, tocopherols, tocotrienols, sterols etc are other bioactive minor components present in the product.The formulation, apart from healing the cracks on heels, is useful in arresting the bleeding due to cracks and reducing the pain.The cream has the excellent effects of softening the heel and the foot skin. It enhances skin elasticity. Interestingly, compared to commercially available products, the recurrence of crack is less severe.The composition of the formulation is new, very safe, eco-friendly and does not produce any harmful effects. Cracks in heal disappeared within a week, this was

reported by the all users (100%).Majority of the respondents (82.0%) considered this product better / much better than the available products in the market.At laboratory scale, the production cost of 50 g of the product is Rs. 25.50 which can be further reduced it prepared at commercial scale.

(Source : www.icar.org.in /rkmp_root)

Superfood: Health Benefits of Quinoa

Quinoa is native to all the countries of the Andean region, from Colombia to the south of Chile. Almost all **production** in the Andean region is done by small farms and associations. **Quinoa** cultivation has spread to more than 70 countries, including Kenya, **India**, the United States, and several European countries. A supergrain , quinoa (KEEN-wah) is high in fiber and high-quality protein. In fact, it contains more protein than any other grain while also packing in iron and potassium. One half cup of quinoa has 14 grams of protein and 6 grams of fiber. This superfood is classified as a whole grain and is naturally gluten-free. Quinoa is a tiny grain that cooks up like rice and has a mild, nutty flavor and a light, fluffy texture similar to couscous. Technically, the quinoa we all know and love, is actually a seed from the *Chenopodium quinoa* plant. So no, it is not a grain. Whole grains (or cereal grains), like oats and barley, are defined as seeds extracted from grasses — not plants.But the way we eat quinoa does resemble a whole grain. Because of this, the nutrition world considers it a whole grain. Quinoa is actually quantified as a "pseudo-cereal" — a term used to describe foods that are prepared and eaten as a whole grain, but are botanical outliers from grasses.

Overall, quinoa has an incredible nutrition base. Compared with refined grains, whole grains like quinoa are considered better sources of fiber, protein, B vitamins, and iron. Aside from these key nutrients, one of the greatest nutrient profiles quinoa can offe, r is its level of protein.Because protein makes up 15 percent of the grain, quinoa is a high-protein, low-fat grain option. It's also naturally gluten free, high

in fiber, and provides many key vitamins and minerals, including vitamin B and magnesium. Because , it is so nutrient-rich, quinoa is a wonderful choice for people on a gluten-free diet or any generally healthy diet. One cup of quinoa contains 222 calories. The amount of research on quinoa has grown tremendously because of the seed's continually recognized health benefits. The nutrient-rich pseudo-cereal is proposed to reduce the risk of a number of illnesses, and provide an ideal protein-packed substitute for gluten-free diets.Whole grains like quinoa have been considered preventative for certain types of cancer due to their high levels of fiber. One study from *The Journal of Nutrition* suggests that the dietary fiber in whole grains may help lower LDL, or "bad," levels of cholesterol, boost digestive health, and potentially lower the risk for some gastrointestinal cancers, such as colon cancer. A study published in *The American Journal of Clinical Nutrition* found that consumers of magnesium-rich foods have a reduced risk of stroke. Because of its high magnesium levels (a cup of cooked quinoa contains about one-third of your daily recommended magnesium intake suggested by the USDA), eating quinoa on a regular basis has been linked to improvement in heart health. Quinoa's magnesium also makes it a healthy food for people with or at risk for type 2 diabetes -the condition is frequently linked to magnesium deficit, according to an article published in the *World Journal of Diabetes*.

Quinoa works nicely on its own, as a substitute for rice, or tossed with other ingredients. With its subtle flavor profile and fluffy texture, the whole grain is super easy to spice up with different flavors, or slip into other ingredients. Because of the mild taste, it can also be served savory or sweet.

In **India**, Andhra Pradesh and Uttarakhand are emerging as the main cultivators of**quinoa**. In 2013, Uttarakhand reportedly signed a Horticulture Research Agreement with Peru to grow **quinoa** in the state and research institutes in Andhra Pradesh have successfully developed local varieties of the crop. Unlike wheat or rice, the latter of which requires 4,000 to 6,000 litres of water to yield a kilo, **quinoa is a rain-fed crop** that only requires the top soil to be wet for the seeds to germinate.

(Source:https://www.everydayhealth.com/diet-nutrition ,
https://www.thedailypao.com/grain-shower-indian-farmers)

Aquaponics

Aquaponics (/ˈækwəˈpɒnɪks/) refers to any system that combines conventional aquaculture (raising aquatic animals such as snails, fish, crayfish or prawns in tanks) with hydroponics (cultivating plants in water) in a symbiotic environment. In normal aquaculture, excretions from the animals being raised can accumulate in the water, increasing toxicity. In an aquaponic system, water from an aquaculture system is fed to a hydroponic system where the by-products are broken down by nitrifying bacteria initially into nitrites and subsequently into nitrates that are utilized by the plants as nutrients. Then, the water is recirculated back to the aquaculture system.

Aquaponics consists of two main parts, with the aquaculture part for raising aquatic animals and the hydroponics part for growing plants. Aquatic effluents, resulting from uneaten feed or raising animals like fish, accumulate in water due to the closed-system recirculation of most aquaculture systems. The effluent-rich water becomes toxic to the aquatic animal in high concentrations but this contains nutrients essential for plant growth. Although consisting primarily of these two parts, aquaponics systems are usually grouped into several components or subsystems responsible for the effective removal of solid wastes, for adding bases to neutralize acids, or for maintaining water oxygenation. Typical components include:

- *Rearing tank*: the tanks for raising and feeding the fish;
- *Settling basin*: a unit for catching uneaten food and detached biofilms, and for settling out fine particulates;
- *Biofilter*: a place where the nitrification bacteria can grow and convert ammonia into nitrates, which are usable by the plants;[15]

- *Hydroponics subsystem*: the portion of the system where plants are grown by absorbing excess nutrients from the water;
- *Sump*: the lowest point in the system where the water flows to and from which it is pumped back to the rearing tanks.

Depending on the sophistication and cost of the aquaponics system, the units for solids removal, biofiltration, and/or the hydroponics subsystem may be combined into one unit or subsystem, which prevents the water from flowing directly from the aquaculture part of the system to the hydroponics part. By utilizing gravel or sand as plant supporting medium, solids are captured and the medium has enough surface area for fixed-film nitrification. The ability to combine biofiltration and hydroponics allows for aquaponic system to in many cases eliminate the need for an expensive, separate biofilter. Some profitable plants for aquaponic systems include chinese cabbage, lettuce, basil, roses, tomatoes, okra, cantaloupe and bell peppers. Freshwater fish are the most common aquatic animal raised using aquaponics due to their ability to tolerate crowding, although freshwater crayfish and prawns are also sometimes used. In practice, tilapia are the most popular fish for home and commercial projects that are intended to raise edible fish because it is a warmwater fish species that can tolerate crowding and changing water conditions. Barramundi, silver perch, eel-tailed catfish or tandanus catfish, jade perch and Murray cod are also used. **Cherai** , a small coastal village near Kochi in Kerala has the unique distinction of being the 1st Aquaponics village in India.

(Source https://en.wikipedia.org/wiki/Aquaponics ,www. thebetterindia.com/167334/kerala-farmers-aquaponics)

Live Fish Carrier System

The ICAR-Central Institute on Post harvest Engineering and Technology, Ludhiana has developed a system for transporting live fish to help the farmers to sell their produce in live condition and earn more income. The system - "Live Fish Carrier System (LFCS)" runs solely by DC power drawn from four lead acid batteries that is

non-polluting. By one time charging, it can run about 80 km with a total carrying capacity of 500 kg. It has all facilities including aeration, filtration and ammonia removal to keep fish alive during transportation. The fish mortality is less than 1% per trip of 40 km with carps of 0.5-1.5 kg individual weight. The vehicle is useful for both freshwater and saltwater fishes. The capacity of the present system is 100 kg live fish per trip, however this capacity can be increased by enhancing the carrying capacity of the vehicle. LFCS can be utilized in live table fish transportation from culture pond to retail market, live fingerlings transportation for aquaculture, live brood fish transportation for breeding purposes, ornamental fish transportation for commercial purpose, transportation of live fish for research purpose and transportation of live fish for conservation purposes, such as, river ranching. The LFCS can also be used as mobile fish selling shop by fish retailers.

The ICAR-CIPHET (Ludhiana) has licensed this technology to E-Magic Electric, Jalandhar through Agrinnovate India Ltd., New Delhi. A patent application for LFCS has been filed to Indian Patent Office. This technology has also been accepted by International Fund for Agricultural Development (IFAD) for further promotion.

The cost of present vehicle is approx Rs 2.0 lakh for the complete system. The payback period is only 0.21 years (2.5 months), whereas, Discounted Payback Period is 0.3 years (3.59 months), the Internal Rate of Return (IRR) of LFCS is 354.5% indicating highly profitable venture.

Features and advantages:

1. The LFCS has automatic aeration, filtration and evaporative cooling system ensuring continuous availability of good quality water and less fish mortality (<1%).
2. Its water requirement is less than 50% as compared to the traditional systems.
3. LFCS requires only 1 (one) worker which is otherwise 4-5 workers in case of traditional system, thus reducing cost of labour.
4. It ensures supply of freshest quality of fish to the consumers.

5. It is a zero polluting system with less running cost for marginal farmers/ entrepreneurs.
6. The system is woman-friendly and can be operated by one or two women.

(Source: ICAR-Central Institute on Post harvest Engineering and Technology, Ludhiana)

Seed Potato Industry

Availability of quality planting material has always been a limitation in vegetatively propagated crops. Potato, largely being a vegetatively propagated crop, is subjected to large number of seed-borne diseases responsible for yield degeneration. Hence, it is imperative to use good quality healthy seed for sustainable and economic production of potato. The conventional seed production technology based on "seed plot technique" is successfully being used in India since last five decades for quality potato seed production. It comprises of tuber indexing for all major viruses and clonal multiplication of virus free mother tubers in four cycles for breeder seed production. The breeder seed produced by ICAR-CPRI is supplied to various State Government Organizations for further multiplication in three more cycles, viz. Foundation Seed 1 (FS-1), Foundation Seed 2 (FS-2) and Certified Seed (CS) under strict health standards. However, the current status of breeder seed multiplication by the State Governments is not as per the desired seed multiplication chain and breeder seed supplied by ICAR-CPRI is often being multiplied only up to FS-1 stage. As a consequence there is a huge shortage of certified seed in the country. Incorporation of hi-tech seed production system coupled with advance virus detection techniques is the only way out in fulfilling the huge demand of quality seed potatoes in the country.

Keeping that in view, ICAR-CPRI, Shimla has standardized a number of high-tech seed production systems based on tissue culture and micropropagation technologies. Adoption of those systems of seed production will improve the quality of breeder seed, enhance seed multiplication rate and reduce field exposure of seed crop by at least 2 years. The systems were thoroughly tested at seed production farm of

ICAR-CPRI before passing them on to farmers and other stakeholders. Adoption of high-tech seed production systems developed by the institute has led to opening of more than 20 tissue culture production units throughout the country. Several Government/Private seed producing organizations procure virus-free *in vitro* mother cultures of important notified and released potato varieties every year from ICAR-CPRI, Shimla for further multiplication in their high-tech seed production programmes.

The latest hi-tech seed production system standardized by the institute is based on the concept of soil-less, aeroponic technology. The aeroponic system of seed production has the potential to once again revolutionize potato seed sector after about 50 years of introduction of "seed plot technique" by the institute. The aeroponic system has been perfected in the year 2011 and so far it has been commercialized to 14 firms from different states like Uttar Pradesh, West Bengal, Punjab and Haryana. Each firm is licensed to produce 10 lakh minitubers by aeroponic system. Even if each firm is operating at half of its potential, about 6.5 million minitubers are currently being produced by those firms. ICAR-CPRI produces ~ 3,187 metric tonnes of nucleus and breeder seed of 25 popular potato varieties; out of which 70% is through conventional system whereas, 30% through high-tech systems. As there is limited scope to increase quantity of breeder seed production at ICAR-CPRI farms due to limitation of farm land, possibilities are being explored with the help of SAUs/KVKs/Pvt. farmers to identify the new areas of seed production, multiplication of breeder seed into FS-I, FS-II and Certified Seed under MoU and to produce seed through hi-tech systems with the help of entrepreneurs/private companies.

(Source: ICAR-Central Potato Research Institute, Shimla)

Organic Dairy Farming

Organic milk refers to a number of **milk** products from livestock raised according to **organic** farming methods The **health benefits of organic milk** include having higher levels of omega 3 fatty acids and CLA, more antioxidants, and more vitamins than

regular **milk**. **Milk** is one of the most important components of our diet as its consumption ensures **healthy**growth and development. Dairy farming has the potential for providing additional income to the farmers along with achieving major goal of organic farming i.e. diversified production and supporting biological cycle within farming system. India presently is the largest producer of milk in world supported by an astonishing growth rate in dairy sector. Apart from this due to increasing consumer awareness there has been an increased concern voiced over quality of milk and milk products including contamination, pollutant and the residual effect of various chemicals. Interest in organic dairy farming is increasing at rapid pace worldwide as an alternative solution. Recent years have seen a sharp rise in demand of organic milk and milk products. Under Indian condition, rapid spread of organic dairy farming is possible because of some key geographical, cultural and economic advantages like traditional nature of farming and indigenous technical knowledge and practices followed by Indian farmers etc. But prevalence of small and marginal dairy farmers also poses many challenges for faster proliferation of organic dairy farming along with some other shortcomings. Present article provide some insight on strengths, weaknesses, opportunities and threats of organic dairy farming in the country along with some potential ways to overcome these weaknesses and threats.

Dairy farming systems are now expected to meet a number of objectives viz. to produce milk, to minimize environmental damage and to improve animal welfare, biodiversity and environmental goods. Given rich indigenous knowledge of livestock farming, rich biodiversity, availability of cheap labour, lower cost of production of organic dairy farming and with still unexplored vast domestic market conversion to organic production looks like a lucrative option for Indian dairy farmers. But given its stringent standard requirement it's hard to be adopted on a mass scale in short time. Indian farmers need to use the strengths and opportunities they have to overcome the weaknesses and potential threats. If supported by successive capacity and knowledge building and the establishment of certifying organizations and promotion of organic dairy products to increase consumers awareness of organic products, its nature of being environmental friendly and capacity to maintain quality of natural resources, it will help

farmers to engage in organic production and will contribute to the wellbeing of the environment, the livestock species, the human being in general. It requires strong policy initiatives by government for organic farming by coming out from past dilemma and heart and soul implementation of those policies by all stakeholders.

There are many reports about the way milk is produced nowadays (by injecting cows with harmful chemicals and hormones). Getting chemical-free, organic fresh cow milk can be a headache in this city. You will be happy to know that you can now get not just milk, but also ghee, honey and eggs (duck and hen), dal and rice fresh from **Sundarini, an organic farm cooperative in the Sunderbans**. All their products are organic with no chemicals. The cows are not injected with antibiotics or hormones and are fed corn, *sargam, ajola* and *barshim* grass. The milk is ever stored in harmful plastic, but in steel containers. You can source them from all State Animal Husbandry's outlets in Kolkata. What is great is that the money from sales is being directly deposited into the account of the women who are running the cooperatives.
(Source www.arcjournal.com , https://lbb.in/kolkata/get-organic-milk)

Obituary

- Rabindra Nath Das retired from ICAR -NINFET expired on 19.03.2019 after severe heart attack.

Deep sense of condolences was expressed to the bereaved family in the Pensioners Meeting held on 23rd March , 19 with 2 (two) minutes silence for rest in peace of the departed soul.

- Geeta Bandyopadhyay , wife of Dr A. Bandyopadhyay (ICAR – NAIP) , left for her heavenly abode on the 28th June , 2019.

I LIVE IN THAT SOLITUDE WHICH IS PAINFUL IN YOUTH BUT DELICIOUS IN THE YEARS OF MATURITY ≈ ALBERT EINSTEIN

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