



# इंडियन कॉफ़ी IndianCoffee

The Coffee Magazine

Vol. LXXXIII No. 6-7 Jun-Jul 2019

Summer  
FANCY  
FOOD  
SHOW



**65th Summer Fancy Food Show-2019**  
**23-25 June, 2019, New York, U.S.A**



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*Beauveria bassiana*, a potential  
bio-control agent against Coffee berry borer



P - 14

Scientific workshop at Central Coffee  
Research Institute on the management of *Myrothecium*  
disease and shot-hole borer pest in coffee



स्वच्छ भारत अभियान



सुरक्षित आवास, शुद्ध वातावरण  
यही हमारा स्वच्छ भारत देश है  
हम "स्वच्छ भारत" को  
सफल बनाएं।



कॉफी बोर्ड



वाणिज्य एवं उद्योग मंत्रालय  
भारत सरकार



# इंडियन कॉफी IndianCoffee

कॉफी पत्रिका

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The views expressed in this journal are purely those of the authors and not necessarily of the Coffee Board.

कॉफी बोर्ड

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Your views, opinions & observations are welcome as long as it is in the spirit of the magazine's principles and values, and may be sent to: editor.indiancoffee1@gmail.com

The publisher reserves the right to respond/publish the same in this magazine.





**COFFEE BOARD OF INDIA**  
helping the  
Indian Coffee Industry  
combat the vagaries of  
climate and disease





## From the Secretary's desk



### Coffee Times

**B**iological control or bio-control is a method of controlling pests such as insects, weeds and plant diseases using other organisms. Now-a-days interest towards biological control has increased due to its least risk on environment and human health. *Beauveria bassiana* is proved as a potential bio-control agent against Coffee Berry Borer (CBB). Coffee Board Research Department has developed a simple method of mass culturing of *B.bassiana* using rice grains with a native virulent strain. *B. basassiana* can be produced by coffee growers with few basic infrastructure facilities available in their estates. Training on production and use of *B. basassiana* is being imparted at CCRI, Balehonnur and all the Regional Research Stations of Coffee Board. A useful article on integrated management of Coffee Berry Borer pest is presented in this issue for the benefit of coffee growers.

Central Coffee Research Institute (CCRI) has recently conducted a Scientific Workshop on the management of *Myrothecium* disease and shot-hole borer pest in coffee. The main objective of the interactive workshop was to focus on the emerging problem of *Myrothecium* disease and shot-hole borer pest in coffee and how best these problems could be addressed. Good number of coffee growers have participated in the workshop and had a fruitful discussion with scientists, extension officers. A brief report on the workshop is presented in this issue for the benefit of the coffee growers.

Climate change and agriculture are interrelated processes, both of which take place on a global scale. Climate change affects agriculture in a number of ways viz. rainfalls, pests and diseases, ground level ozone concentrations, changes in the nutritional quality of some foods and sea level. Plantation crops are not spared. It is evidenced from the fact that the coffee growing regions of India including the Western Ghats have already started experiencing the draughts, floods and heat waves. Need of the hour is to determined effort to make the coffee sector environment friendly by following sustainable cultivation methods. An article on “Climate Resilient Technologies for Sustainable Coffee Production” is presented in this issue for the benefit of coffee growers.

As a part of export promotion activity, Coffee Board has participated in the ‘World of Coffee- 2019’ event held at Berlin, Germany from 6-8 June 2019 and another event ‘65th Summer Fancy Food Show’ held at New York, USA from 23-25 June 2019. Brief reports on participation in these two events are presented in this issue for the benefit of our readers.

Apart from the above, this issue contains regular articles viz., Market Watch focusing on Coffee Market Report of ICO on global production, prices, consumption and exports of coffee as well as Indian exports and domestic prices, calendar of coffee estate operations etc.

We hope that all these articles will be of great interest to our readers. Cheers to Coffee!!

**Srivatsa Krishna**  
Secretary

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Director of Research, Central Coffee  
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Karnataka, India

Climate change is a natural phenomenon and the biological system has its inherent capacity to adjust itself to the changes happening in the external environment. But the worldwide, the concern is the pace at which the change is taking place and the threats caused to the flora and fauna diversity. If changes are taking place at the present pace, many species are likely to become extinct due to their inability to adapt to the rapidly changing environment (Anonymous, 2010). Climate variability in terms of uncertain or delayed rainfall, floods and changing temperature will have effects on crops. Studies conducted by India Meteorological Department (IMD) shows that climate change might reduce annual agricultural income in India by 15 to 18 percent on average and up to 20 to 25 percent in un-irrigated regions (Agarwal, 2009). Therefore, planning and implementing mitigation and adaptive measures in a systematic manner is important to meet future challenges.

### Projected impacts of climate change on Agriculture

Each crop requires its ideal range of temperature, rainfall and humidity for its growth and optimum production. The climatic variations and resultant droughts and floods are likely to affect the growth of plants and increase production variability. There will be considerable effect on microbes, pathogens and insects. Crop yields are projected to decrease in the tropics/sub-tropics, but increase at high latitude. Studies indicate that there will be imbalance in food trade due to positive impacts on Europe and N. America, and negative impacts on countries like India and there will be a loss of 10-40% in crop production globally by 2100 (IPCC, 2006, 2007). In India, the productivity of cereals would decrease due to increase in temperature and decrease in water availability, especially in Indo-Gangetic plains. Every 1°C rise in temperature reduces wheat production by 4-5

## Climate Resilient Technologies for Sustainable Coffee Production

million tons. Increasing temperature would increase fertilizer requirement for the same production targets, which will result in higher emissions. Increasing sea and river water temperatures are likely to affect fish breeding, migration, and harvests and coral reefs may start declining from 2030. Milk production will be adversely affected due to increased water, shelter, and energy requirement for livestock. Whereas the frequency of frost damage will be reduced so that there will be less damage to potato, peas and mustard.

### Coffee growing conditions in different parts of the world

In many coffee producing countries like Brazil and Vietnam coffee is grown under open condition, without any shade coupled with intensive cultivation practices aiming at higher productivity. The terrain of coffee areas in these countries is highly amenable for mechanization of farm operations which bring in efficiency. While in India Coffee has been grown under two tier shade in a more sustainable way for centuries. Coffee is cultivated in undulating terrains of varying gradations, which gives less chance for mechanization. Thus, indirectly coffee provides daily employment to the native inhabitants of hilly region.

Coffee has been introduced to India during 1600 AD and remained as a garden plant for nearly two centuries and later during 18<sup>th</sup> century commercial plantations were established. The plantations were raised in virgin jungles of the Western Ghats after selectively felling the undesirable trees by retaining desired number of jungle trees. Even when the Robusta, low land coffee was introduced into the country from Java during 19<sup>th</sup> century, the importance of providing the natural shaded condition was taken care. Thus a strong foundation was laid for sustainability of coffee industry and subsequently, India became the one of the few countries in the world to grow all of its coffee under natural shade canopy.



The shaded coffee plantations in the Western and Eastern Ghats of India are the hotspots of biodiversity in the world (Mayrs et.al. 2000). The shaded coffee plantations in India are categorized as agri-silvicultural systems having diverse plant genetic resources. They are reported to help in conservation of tropical biodiversity by reducing the pressure on remaining forests for timber and non-timber forest products and other ecosystem services, by providing suitable habitat for wide variety of flora and fauna and by creating a biodiversity friendly matrix to facilitate movements among existing patches of natural habitat. In an interesting study on shade tree diversity in Coorg district of Karnataka, the leading coffee producing district in India, Dr. Claire Elouard (2000) recorded 129 different species of trees in 12 coffee plantations of which half of them were native to the district. The Simpson index of diversity for trees varied from 0.79 to 0.96 in coffee plantations compared with 0.95 in evergreen forests. In another study on biodiversity in Western Ghats of India, Shonil A. Bhagwat (2002) documented that Shannon's diversity index of bird species in the coffee plantations was comparable with that of semi-evergreen, moist deciduous, dry deciduous forests and sacred groves.

In recent years there is a trend of cultivating coffee, especially Robusta, under mono-shade of Silver oak (*Grevillea robusta*) as Silver oak is the fast growing tree and most suitable standard for pepper. In some of the plantations these Silver oak trees are heavily pruned to allow more sunlight on to the coffee plants to enhance the productivity of coffee and pepper. Cultivating coffee under mono-shade or completely under open condition is not advisable under Indian conditions due to prolonged dry spell and hot summer.

### How does the climate change is affect coffee

Climate disturbances have led to fluctuations in yields in almost all the coffee growing countries. Global warming is expected to result in the actual shifts on where and how coffee would be produced. Dr. Peter Baker of CAB International ([www.cabi.org](http://www.cabi.org)) is of the opinion that if there is a 3°C increase in temperature by the end of this century, the lower altitude limit for growing good quality Arabica coffee may go up by 15

feet per year. This may affect millions of producers as well as the all participants in the value chain of industry the end user, the coffee consumer. It is predicted that both Arabica and Robusta coffee growers would be affected. Rising temperature is expected to make some areas less suitable or completely unsuitable for coffee cultivation, incidences of pest and disease may increase and quality may suffer. Growers may have to depend more on irrigation, putting pressure on water resources. Overall, the production cost is expected to increase. Increase in temperature will force coffee to ripen faster than normal, impacting the inherent quality. Low grown Arabica from tropical areas with higher temperatures mostly shows less 'quality' in the cup compared to the same coffee grown at higher altitudes. The beans are softer and may well be larger but, lack that 'quality' ([www.thecoffeeguide.org](http://www.thecoffeeguide.org)). Increase in temperature coupled with low rain fall or erratic distribution will affect flowering and fruit set. The International Coffee Organization consider that it would be the most important; particularly considering the large number of small holder coffee farms whose capacity to implement means and methods to mitigate climate change effect may be low ([www.ico.org](http://www.ico.org), 2017).

In Brazil, coffee cultivation is becoming viable in areas which were prone to frosts previously. But high temperatures will also lead to reduction of overall acreage with suitable climatic conditions. In Colombia, the cost of production is likely to increase due to increased incidence of pest and diseases and water requirement may increase forcing growers to depend more on irrigation. In Costa Rica the coffee area may be pushed upwards to as high as 2000 meters. Nicaragua is already facing extreme variation in coffee production due to the El Nino and La Nina cycles. In Guatemala, Honduras and Mexico, temperature has risen between 0.2 to 1°C and in some cases rainfall has fallen by up to 15% (Castellanos *et al.*, 2003).

In Kenya, the area under coffee is expected to remain unchanged but coffee is expected to migrate upwards. Increase in temperature is expected to influence pest and disease spread and affect the quality. In Mexico, temperature rise is causing proliferation of pests - coffee trees growing at 1200 meters altitude,

previously considered to be out of risk, are now being affected by coffee berry borer. Crop appears to ripen earlier in Peru, and growers are reporting that high altitude coffee plants are maturing earlier. Erratic rainfall distribution is having a negative influence on the coffee farm. An Oxfam report suggests that if temperature rises by 2°C or more, most of Uganda is likely to become unsuitable for growing coffee ([www.thecoffeeguide.org](http://www.thecoffeeguide.org)).

Jaramillo *et al.*, 2009 determined the thermal tolerance of coffee berry borer, *Hypothenemus hampei*, under eight temperature regimes. According to them, egg to adult development occurred between 20-30 °C and the lower and upper thresholds for development were 14.9 and 32 °C. Analysis of 32 years climate data in Jimma, Ethiopia revealed that prior to 1984 it was too cold for *H. hampeito* complete one generation per year, but thereafter 1-2 generation could be completed. The authors also developed a model which indicates that for every 1 °C rise in the thermal optimum, the maximum intrinsic rate of increase will increase by 8.5%. The implications of the study are that the berry borer can easily adapt to temperature variations in coffee growing areas. It may change its distribution pattern, thereby becoming a menace in the sup-tropical coffee growing areas.

Rising temperatures will increase population leading to more damage to the crop. Recent data from Uganda and Indonesia show that the coffee berry borer has already expanded its altitudinal distribution ranges and it now attacking coffee plantations at sites as high as 1864 meters.

India is facing the problem of erratic rainfall distribution in the last few years. Rainfall in some areas is changing the growing conditions. Erratic rainfall distribution and increase in temperature are favouring proliferation of coffee berry borer, coffee white stem borer and coffee leaf rust.

### Climate change in coffee growing regions of India

An analysis of major weather parameters prevailing at Central Coffee Research Institute, Balehonnur for the past four decades has clearly established the changes in critical parameters especially the maximum and minimum temperatures.

*Maximum Temperature:* The decadal average maximum temperature recorded at CCRI during the past four decades is given in the Table 1.

**Table 1. Average Maximum Temperature (°C) recorded at CCRI over the decades**

Months	Average Maximum Temperature (°C)			Average max temperature 1975-2004	Average max temperature 2005-2014	Difference in max temperature 1975-2004 to 2005-14
	1975-1984	1985-1994	1995-2004			
Jan	30.3	26.7	28.9	28.6	26.8	-1.8
Feb	31.6	27.7	30.8	30.0	29.6	-0.4
Mar	34.0	31.2	33.4	32.9	30.8	-2.1
Apr	34.2	30.4	32.1	32.2	31.0	-1.2
May	32.6	30.3	30.7	31.2	30.1	-1.1
Jun	27.0	25.8	26.8	26.5	26.4	-0.1
Jul	24.4	24.0	24.4	24.3	24.1	-0.2
Aug	23.9	24.3	24.4	24.2	24.1	-0.1
Sep	26.3	26.3	26.0	26.2	25.1	-1.1
Oct	28.4	27.2	26.8	27.5	26.2	-1.3
Nov	28.1	26.9	27.2	27.4	25.8	-1.6
Dec	29.5	27.2	28.0	28.2	25.4	-2.8

As may be seen from the table 1 above, there has been a decline in decadal average maximum temperature

during all the months during the decade 2005-14 when compared to the preceding there decade.

*Minimum Temperature:* The decadal average minimum temperature recorded at CCRI during the past four decades is given in the Table 2.

**Table 2. Average Minimum Temperature recorded at CCRI over the decades**

Months	Average Minimum Temperature (°C)			Average min temperature 1975-2004	Average min temperature 2005-2014	Difference in min temperature 1975-2004 to 2005-14
	1975-1984	1985-1994	1995-2004			
Jan	12.9	13.8	13.9	13.5	15.0	+1.5
Feb	14.5	14.2	15.1	14.6	15.5	+0.9
Mar	16.6	16.5	17.1	16.7	17.9	+1.2
Apr	17.2	17.9	18.3	17.8	19.8	+2.0
May	16.6	18.7	19.4	18.2	19.3	+1.1
Jun	16.5	18.6	19.7	18.3	19.1	+0.8
Jul	16.7	18.3	18.7	17.9	18.9	+1.0
Aug	16.5	18.1	18.7	17.8	19.1	+1.3
Sep	18.2	17.4	18.0	17.9	19.2	+1.3
Oct	15.8	17.8	18.1	17.2	18.9	+1.7
Nov	14.9	15.8	16.4	15.7	17.6	+1.9
Dec	13.2	13.6	14.7	13.8	15.6	+1.8

The decadal average of the last forty years indicate that there is a decrease in maximum temperatures during the months from February to May months, while the average minimum temperature has increased during the entire year but more pronouncedly during October to January period.

Contrary to the common belief that climate change is resulting in increase in temperatures, we observed a clear trend in the variations between day (maximum) and night (minimum) temperatures. While the day temperatures have tended to decline, the night temperatures have increased.

### Climate Change Mitigation strategies for coffee

Arabica coffee is indigenous to cool shady rainy forest of Ethiopia with an average annual temperature of somewhere between 18-25 °C. Rainfall requirements are between 1500 and 2000 mm per annum. Robusta coffee evolved across lowland Equatorial Africa, particularly in the forests of the Congo River Basin. It grows best in areas with abundant rainfall of around 2,000 mm per annum, at altitudes ranging from sea level to about 800 metres. Rainfall must be well

distributed throughout most of the year because the Robusta tree has a relatively shallow root system. The optimum temperature ranges from 23° to 30°C and the species is less tolerant of very high as well as very low temperatures than is Arabica. Much higher temperatures tend to impact negatively on both yield and quality of both these species. (Mitchell, 1988).

Several adaptation and mitigation strategies for coffee producers have been put forward in response to the challenges faced by the growers in the wake of climate change. Short-term adaptation strategies include improved farming practices and better post-harvest processing. Longer-term strategies include improved monitoring of climate data, enhancing soil fertility, introducing or preserving different production models, developing drought and disease-resistant varieties and capacity-building. Mitigation strategies include calculating and reducing greenhouse gas emissions on the farm, and facilitating the creation of carbon sinks ([www.ico.org](http://www.ico.org), 2007).

It is utmost importance that, in order to reduce impacts of climate change we should adopt sustainable technologies to reduce the emissions and efficiently utilize the technologies and keep the farm in healthy condition and maintain the yield at optimum levels. Cultivating the locally adaptable and drought



tolerant varieties, adopting right land use systems, good agricultural practices, resource conservation technologies and pest surveillance and disease management methods are most practical ways to achieve this.

**i) Shading of coffee plantations:**

The high diurnal variations in temperature, high light intensities and pronounced dry and wet spells, characteristic to coffee growing areas in South India make it mandatory to grow coffee under shade. It is recommended to provide a two tier mixed shade canopy comprising of lower tier temporary shade trees and top tier comprising of permanent shade trees of native species. Besides growing suitable intercrops like pepper, orange banana etc., would also contribute to the shade, soil fertility and improved microclimate in coffee plantations. Shade also acts as a sort of insurance against vagaries of weather and market fluctuations.

Considering the significance of shade in coffee plantations, the CAFNET team in India has studied how the change in tree cover from predominantly native tree species to exotic species (mainly silver oak) is affecting the water dynamics in the coffee agroforestry systems in the Cauvery watershed of Kodagu district, the most important coffee district of the region.

During 2 years (2008-2010), six sites were selected in terms of rainfall regime along the West-East transect (Deciduous Eastern zone: 40-70 inch/year; Central zone: 70-110 inch/year; Evergreen Western zone:110-200 inch/year) in the Cauvery watershed, the central watershed of the Kodagu district. In each site, 2 adjacent plots (less than 200 m apart) were selected, one predominantly composed of native tree species and one predominantly composed of silver oak, the main exotic species.

**Table 3. Infiltration in to soil in blocks with exotic native tree species**

Site/ Plot	Total Rainfall mm	Throughfall %	Coffee Stem Flow	Tree Stem Flow	Interception		Run Off
					System	Trees	
Western zone	3529	71%	0.3%	5.0%	25%	3%	4.0%
- Exotic		81%	0.3%	2.9%	20%	4%	5.0%
Central zone	2012	87%	0.4%	2.9%	18%	5%	5.2%
- Exotic		91%	0.5%	2.0%	15%	6%	5.7%
Eastern zone	1024	78%	0.6%	3.1%	22%	1%	3.8%
- Exotic		81%	1.0%	1.7%	19%	4%	3.4%

Study indicated that the amount of rain infiltrating into the soil is greater in plots having native species of shade trees than in plots having exotic shade trees especially in the Western and Central zones where there is a lot of rainfall. Results also showed that Coffee under shade of native trees transpires more than coffee under shade of exotic tree (mainly silver oak) during all the seasons but particularly more during the dry season, because the coffee plants under native shade trees are less water stressed, especially during the middle and end of dry season than the

coffee under shade of Silver oak (Kushalappa and Raghuramulu, 2005).

**ii) Soil moisture conservation measures**

The undulating terrain and heavy monsoon rains in coffee areas make it mandatory to adopt soil erosion prevention measures. Of course the two-tier shade canopy is the first component of soil conservation measures. Shade trees reduce the force of rain drops and help in percolation of rain water into deeper

layers. Contour planting, terracing and staggered planting/ trenching across the slope are the other practices to be adopted in coffee plantations.

Although the coffee tracts receive heavy rainfall of 2500 to 3000mm inches per annum, the areas experience a dry period of 3-6 months from November to March/April. Thus, lack of adequate moisture in soil becomes a limiting factor for growth of coffee during dry periods, which makes it mandatory to conserve the soil moisture *in situ*. A number of soil conservation measures like post monsoon scuffling, mulching young coffee plants, staggered trenching/ pitting across the slopes in established holdings are commonly recommended. These trenches act as mini compost pit inside the plantation.

### iii) Soil enrichment

Coffee soils are well drained and are usually subjected to leaching of readily mobile nutrient elements like nitrogen and potassium. On the other hand due to acidic nature of the soils, most of applied phosphorus is rendered immobile because of fixation. Availability of large quantities of organic matter in the form of leaf litter contributes in better retention of major and micronutrients in coffee soils. Although shade trees contribute a lot of leaf mulch and there by the organic matter, it is now well established that the organic matter content of soils could be improved by growing green manure crops cow pea and horse gram, especially during early stages of establishment of plantations. These green manures being leguminous, fix the atmospheric nitrogen and enrich the soil when they are incorporated into the soil. Apart from biomass contribution these green manure crops also suppress the weed growth effectively.

In addition, preparation of compost using on farm wastes and its application could be one of the important measures for enriching the soil organic matter. Application of compost has several advantages such as improvement in soil texture and structure; minimizing soil erosion by binding soil particles; increasing water holding capacity of soils; providing ideal environment for growth of beneficial microorganisms and increasing the use efficiency of applied nutrients. Compared to any other agricultural

system, coffee plantations are endowed with large quantities of bio-degradable farm wastes like shade tree leaf litter, prunings, weed biomass and coffee processing by-products like pulp and cherry husk. It is estimated that shade trees alone contribute about 10 tonnes of bio-mass per hectare every year. Besides, for every tonne of clean coffee processed one tonne of pulp or cherry husk are produced depending on the type of processing.

### iv) Drought mitigation measures

Inadequate and uneven distribution of rainfall causes drought conditions in coffee, which affects vegetative growth, induces floral abnormalities; results in poor fruit set and prolonged drought increases production of more pea berries and "B" grade beans and ultimately loss in crop yield. Plants vary in their capacity to tolerate drought depending on their genetic constitution. High 'osmotic adjustments' occur in the drought-tolerant cultivars through accumulation of solutes such as free proline, nitrogen, phosphorus, potassium, calcium etc. These compounds increase the bound water capacity, regulate stomatal movements, trigger water uptake, induce heat stability and maintain the integrity of the membrane. In order to combat the drought, it is recommended to adopt drought ameliorative spray like nutrient mixture spray, Lantana camera extract spray or contact shade management using lime solution or planting drought tolerant selections in new areas (Anonymous, 2014).

**Nutrient mixture spray:** Attempts have been made to overcome the effect of drought in Robusta coffee through osmotic adjustment. Foliar application of nutrient mixture (urea 1kg + SSP 1kg + MOP 750g + ZnSO<sub>4</sub> 1kg) @ 1 litre/plant, 45 days after last rainfall and again 45 days after 1<sup>st</sup> spray will ameliorate the effect of drought. Alternatively, foliar application of *Lantana camara* leaf extract @ 1 per cent twice at monthly intervals during second fortnight of January and February could be taken up.

**Lime spray as a reflectant:** Foliar spray of 10per cent spray lime (Ca(OH)<sub>2</sub>) in combination with 0.5per cent starch (20 kg spray lime along with 1 kg starch in 200 litres of water) could be given to the upper surface of the coffee leaves once, 40-45 days after the last rainfall. The lime spray reflects the

direct solar radiation thus reducing leaf temperature, and acts as a contact shade protecting the leaves from chlorosis and scorching.

**Planting drought tolerant selections:** Studies conducted by CCRI has proved that among Arabica selections Sln.9 and Sln.5B are relatively tolerant to drought. Wherever new planting or replanting is being taken up it is suggested to plant such drought tolerant coffee selections like Sln.9 and Sln.5B.

**Nutrient spary for young clearings:** In juvenile plantations foliar spray of nutrient mixture (urea 0.5 kg + SSP 0.5 + MOP 375 g + ZnSO<sub>4</sub> 0.5 kg) will protect the young coffee from adverse effects of drought.

### v) Need based sustenance irrigation

Coffee is primarily cultivated as a rainfed crop. Among the two cultivated species, Arabica is relative drought tolerant while Robusta is susceptible to drought. Though around 2500 to 3000mm rain is received annually coffee areas experience dry period for period of four moths from December to March. The most important factor which limits the production of coffee even in well managed estates is the long dry period. Besides this, if blossom rains are delayed beyond March then the production of coffee receives a major set back. Increase in temperature coupled with low rain fall or erratic distribution will affect flowering and fruit set. Irrigation is mainly practiced in Robusta coffee as an insurance against failure of good blossom and backing showers and for overcoming long dry period. Hence farm ponds can be dug or small check dams can be constructed across hillocks to conserve the water. This water can be used for providing irrigation during summer months.



**Sprinkler Irrigation in Robusta**



**Water tank for water harvesting for rain water**

Being a shallow rooted plant Robusta plantations are mostly affected due to the lack of rain. Providing sprinkler irrigation during second fortnight of February at 25-38mm found helpful for healthy blossom followed by backing irrigation with a gap of 15-20 days after blossom for good fruit set. Blossom and backing irrigation improved yields by 48-57per cent and continuous irrigation throughout dry period gave a yield increase of 85-95per cent over un-irrigated plots in Robusta coffee.

The drip or trickle irrigation offers greater savings in water (up to 60per cent) and drip irrigation system helps in saving in labour, increased yields, better quality of produce, less weed growth, increased fertilizer efficiency, possibility of fertilizer application through irrigation water and reduced incidence of foliar pests. Application of 3-4 litres of water once a week was found to be ideal for establishment of young coffee. In established plantations, application of 8 litres of water per plant on alternate days to Arabica and daily to Robusta during dry months from November to May could increase the crop yield by 28per cent and 48per cent respectively. In Robusta coffee under drip irrigation, blossom could be induced by applying around 200 litres of water per plant during February/March months through drippers or micro sprinklers. This blossom irrigation needs to be given at a stretch in a period of 2-3 days, after withholding daily drip irrigation for about 15-20 days prior to blossom irrigation (Raghuramulu, 2005).

### vi) Pest and disease management

Maintenance of multiple shade system instead of mono shade with silver oak will decreases the incidence of coffee white stem borer as multiple shade with forest tress will provide cool micro-climate

which is unfavourable to stem borer. Providing mulch of natural shade trees helps in suppression of harmful pests and diseases. A healthy soil with optimal physical, chemical and biological properties increases the plant resistance to pests and diseases. Regular soil testing and application of organic manures helps in building of carbon in soil and plant health.

Creation of diverse fauna of natural enemy species by less use of pesticides and increase in crop diversity can successfully suppress pests. Planting tolerant varieties, providing optimum shade and adopting control measures based on early warning systems etc., are suggested to control the pest and disease.

### vii) Intercropping

It is advised to grow compatible inter crops in coffee plantations for better utilisation of available land and resources to the best advantage of growers. The risk involved in dependency on a single crop can be avoided by adopting crop diversification. Pepper and fruit crops like orange, Avacado and banana are cultivated as inter crops in various states. Annual crops like ginger turmeric and pine apple can be cultivated in young plantations. Besides getting additional income, the inter crops with varying canopies and varying root structures intercept the sunlight at varying heights and reduces the soil erosion by intercepting the rain drops and preventing it from falling directly on ground. It also improves the micro-climate inside the coffee plantation.



**Coffee +Pepper Mixed Cropping**

### viii) Certified Sustainable coffees

Organic, Fair Trade, Rain Forest/ UTZ, Shade grown, Bird Friendly certified coffees are arguably the best

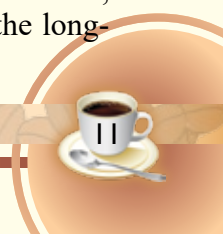


**Two Tire Mixed Shade with Diversification**

attempts toward sustainable production practices that meet a number of the vital environmental, social, and economic needs of nearly a million coffee producers. These certified coffees collectively referred as sustainable coffees fill a market niche, not only rewarded with a premium price but can also provide other superior benefits that help producers improve their sustainability. The present day trend indicates that sustainable coffees in the most important consumer markets in Europe and in Japan. The business for these coffees has recently grown quite robust at all levels of the supply chain. Sustainable coffees now involve 32 producer countries, many hundreds of producer organizations, dozens of specialized traders, more than 20 consuming countries, hundreds of roasters, hundreds of brand-owners, and thousands of retailers. In some countries between 10 and 20 percent of households are regular buyers of these coffees.

### Conclusion

It is evidenced from the fact that the coffee growing regions of India including the Western Ghats have already started experiencing the droughts, floods and heat waves. Its adverse impact on livelihood of coffee growers in this area is a major threat, as the economy of this area is primarily dependent on coffee based cropping system. The crop losses are likely to be heavy due to weather extremes of opposite nature like floods and droughts, which are likely to increase in ensuing decades. Hence, coffee growers should refrain from diluting the shade grown nature of coffee plantations, which may lead to uncertainty in monsoon behaviour and change in climatic pattern. There should be a determined effort to make the coffee sector environment friendly by following sustainable cultivation methods. The stakeholders, especially farmers should be educated on the long-



term impact on climate change and mitigation and adaptation strategies to on priority basis to minimize the risk in coffee sector.

## References

- Aggarwal. P.K. (Ed.). 2009. Global Climate Change and Indian Agriculture Case Studies from the ICAR Network Project. Indian Council of Agricultural Research, New Delhi. p.146.
- Anonymous, 2014. Coffee Guide. Central Coffee Research Institute, Coffee Board. India. P.262.
- Castellanos, E., Conde, C., Eakin, H., and Tucker, C. 2003. Adapting to market shocks and climate variability in Mesoamerica: The coffee crisis in Mexico, Guatemala and Honduras. Final report to Interamerican Institute – Global Change Research.
- Claire Elouard, 2004. *In* Forest products livelihoods and conservation. Case studies of Non-timber forest product system. Vol.1. Asia. Eds. Koen Kusters and Brian Belcher. Centre for International Forestry Research. Indonesia.
- <http://www.ico.org/http://www.catie.ac.cr/http://www.thecoffeeguide.org> - Climate change and the coffee industry
- IPCC (Inter Governmental Panel on Climatic Change) 2007. Climate Change: The Physical Science Basis. Extracts from the IV Assessment Report. Survey of the Environment 2007, The Hindu, pp.147-155.
- IPCC (Inter Governmental Panel on Climate Change) (2007). Climate Change; The Physical Science Basis. Summary for Policy makers Contribution of Working Group I to the Fourth Assessment Report, 21 pp.
- IPCC (Inter Governmental Panel on Climatic Change) 2006. The Economics of Climate Change: Stern Review. The Summary of conclusions. Survey of the Environment 2007, The Hindu, pp. 141-145.
- Jaramillo J, Chabi-Olaye A, Kamonjo C, Jaramillo A, Vega FE, Poehling HM and Borgemeister C. 2009. Thermal tolerance of the coffee berry borer *Hypothenemus hampei*: Predictions of climate change impact on a tropical insect pest. PLoS ONE 4(8):e6487.
- Kushalappa. C. G. and Y. Raghuramulu. 2012. Project CAFNET- An effort to document the ecosystem services from coffee based agro-forestry system in Kodagu. Indian Coffee. Vol LXXVI.p.18-23.
- Mitchell, H. W. 1988. Cultivation and harvesting of the arabica coffee tree. In: Coffee. Volume 4: Agronomy. Ed. R. J. Clarke and R. Macrae. Elsevier Applied Science. P 43-90
- Myers, Norman., Russell A. Mittermeier, Cristina G. Mittermeier, Gustavo A. B. da Fonseca, and Jennifer Kents.2000. Nature, Vol. 403. 24 Feb 2000. p.853-858.
- Raghuramulu. Y., 2005. Significance of shade for sustainable coffee production in India. Indian Coffee. Vol. LXIX. Coffee Board. India p.21-24.
- Shonil A Bhagwat. 2002. *In* Sacred Natural Sites Conserving Nature and Culture. International Union for Conservation of Natural Resources 2010. Eds. Bas Verschuuren, Robert Wild, Jeffery Mc Neely and Gonzalo Oviedo. P.309.
- Bale, J.S.B., Masters, G.J., Hodkinson, I.D., Awmack, C., Bezemer, T.M., Brown, V.K., Butterfield, J., Buse, A., Coulson, J.C., Farrar, J., Good, J.E.G., Harrington, R., Hartley, S., Jones, T.H., Lindroth, R.L., Press, M.C., Symrnioudis, I., Watt, A.D. & Whittaker, J.B. 2002. Herbivory in global climate change research: direct effects of rising temperature on insect herbivores. Global Change Biology, 8. 1–16.
- Coakley S. M., Scherm H., Chakraborty S. 1999. Climate change and plant disease management. Annu. Rev. Phytopathol. 37, 399–426.
- Coakley S. M., Scherm H., Chakraborty S. 1999. Climate change and plant disease management. Annu. Rev. Phytopathol. 37, 399–426.
- Coviella, C. and J. Trumble. 1999. Effects of elevated atmospheric carbon dioxide on insect–plant interactions. Conserv. Biol. 13: 700-712.
- Ghini R., Hamada E., Junior M. J. P., Marengo J. A., and Gonçalves R. R. V. 2008. Risk analysis of climate change on coffee nematodes and leaf miner in Brazil. Pesq. Agropec. Bras., Brasilia. V.43. n.2. p. 187-194
- Hamilton, J. G., O. C. Dermody, M. Aldea, A. R. Zangerl, A. Rogers, M. R. Berenbaum, and E. H. DeLucia. 2005. Anthropogenic changes in tropospheric composition increase susceptibility of soybean to insect herbivory. Environmental Entomology 34: 479–485.

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Ranjini, A. P., Madhu S. Giri, Uma, M. S., Santhoshreddy Machenahalli, Sudha, M., Daivasikamani, S., Dhanam, M., Surya Prakash Rao, N. and Raghuramulu, Y.

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## Scientific workshop at Central Coffee Research Institute on the management of *Myrothecium* disease and shot-hole borer pest in coffee

A Scientific workshop was organised at Central Coffee Research Institute (CCRI) on 25<sup>th</sup> June, 2019 for the benefit of coffee growing community keeping in view of the seasonal problems faced by them. As the monsoon is set in, a one day interactive workshop was organised to enlighten on the emerging problem of *Myrothecium* disease and shot-hole borer pest in coffee and how best these problems could be addressed.

The workshop began with the introductory remarks by the Director of Research (Fig. 1). In the first session, the problem caused by the fungus *Myrothecium roridum* on coffee both in the nursery as well as in the field and how best this problem could be managed was elaborated by Dr. S. Daivasikamani, Divisional Head, Plant Pathology (Fig. 2). Followed by this, Mrs. M. S. Uma, Assistant Entomologist explained in detail on the shot-hole borer pest in coffee and its management (Fig. 3). After the presentation by the Scientists, a good response from the growers was received and during the interaction their queries were addressed. This interactive and fruitful discussion between the scientists, extensionists and coffee growing community through this one day workshop benefited 36 coffee growers from Adigebylu, Aldur,



Fig.1. Director of Research addressing the coffee growers



Fig.2. Dr. S. Daivasikamani Presenting on *Myrothecium* disease



Fig.3. Smt. M. S. Uma Presenting on shot-hole borer management

Balehonnuru, Chikkamagaluru, Koppa, Mudigere villages of Chikkamagaluru coffee growing areas.

The details on the presentation, problems discussed and solutions addressed during the workshop are as mentioned below:

### Disease: Stem necrosis, leaf spot and berry rot diseases in coffee and their management

The soil borne fungus *Myrothecium roridum* causes three different stages of disease on coffee in the nursery and field. They are Stem necrosis and leaf spot in the nursery on coffee seedlings and leaf spot and berry rot on the grown up plants in the field. This disease causes severe damage on coffee seedlings

especially during the continuous monsoon period from June to September. The symptoms expressed by the pathogen on coffee and its management practices are described as below:

### Disease symptoms:

**On stem:** In the nursery, the pathogen infects both stem and leaves of coffee seedlings. The infected seedling shows constriction of stem that occurs at any place above the soil. Sometimes 2-3 such lesions are noticed on the same stem. Infected region at later stage show cushion shaped black fruiting bodies surrounded by white mycelia of the pathogen (Fig.4). Affected seedlings gradually start wilting and die.



**Fig.4. Stem necrosis symptom on seedling**

**On leaves:** In the nursery and field, the infected leaves initially show water-soaked circular necrotic spots, later spreads gradually to more areas and changes to brown colour with concentric rings. Black fruiting bodies are noticed on the under surface of the affected leaf all along the concentric rings of the spot. Occasionally the centre of the lesion cracks irregularly, ruptures and some of the affected tissues drop down (Fig.5 & 6). The disease spread faster and the severity is high when there is continuous rain in the months of July and August.



**Fig.5. Leaf spot with concentric rings**

**On berries:** In the field, on the developing berries, initially small, circular, slightly sunken, black coloured, necrotic lesions appear near the stalk portion of the berries. As the infection progresses the necrotic lesion expand further and spreads towards the distal end of the berries and finally cover the entire

berries. At later stage, black coloured fruiting bodies will be observed on the lesion (Fig.7).

### Management

- Avoid primary nursery beds in the same location for more than 2 to 3 seasons.
- Use sun dried sieved jungle soil, compost and sand in the recommended proportion (6:2:1) while preparing either germination beds or filling poly bags for transplanting the seedlings.
- Remove and destroy the affected coffee seedlings from the germination beds and in the poly bags at regular intervals to prevent spread of the disease.
- Protect coffee seedlings in the nursery and grown up plants in the field by spraying propiconazole 25 EC @ 0.8 ml/litre of water and mancozeb 75% WP @ 2g/litre of water alternatively once in 20 days from May to September covering both the upper and lower surface of leaves. This will reduce the disease incidence both in nursery and field.
- Some of the weed plants growing in and around the coffee plantations are known to harbour the pathogen. Hence, field should be kept free from weeds to avoid the build up of inoculum during the rainy season.



**Fig.6. Fruiting bodies on lower surface**



**Fig.7. Myrothecium infected coffee berries**

### Pest: Shot-hole borer in coffee and its management

The Shot Hole Borer (SHB), *Xylosandrus compactus* was considered as a minor pest on coffee in the past.



**Fig.8. Shot-hole borer infested plant**

Recently the pest occurrence has been noticed in almost all the robusta coffee growing areas and is emerging as a major problem (Fig.8). The reasons might be change in climate and adoption of some of the innovative agronomic practices by the growers like drip irrigation coupled with fertigation. This agronomic practice leads to luxurious vegetative growth of the coffee bushes and thereby most vulnerable to SHB attack.



**Fig.9. Shot-hole borer entering the twig**

**The SHB pest:** The adult beetle is brown to black in colour with a short, sub-cylindrical body covered with fine hairs. Female beetles, usually infests the green and succulent branches/twigs. In young plants the pest occasionally attacks succulent portion of main stems as well as primaries. The SHB does not feed on coffee plant as such, it uses twigs as medium for growing *Ambrosia* fungus on

which it feeds and survives. The female beetle makes shot hole on the lower side of the twig/branches, usually between the intermodal regions (Fig.9). The beetle makes a longitudinal tunnel inside the twigs and cultivates ambrosia fungus to establish its colony. Always the female beetles carry the ambrosia fungus from the infested twig to the healthy twig and allow it to grow in the new tunnel. The life cycle, egg to adult emergence takes about 4 to 5 weeks. All the life stages of the pest can be seen in the same tunnel during the peak incidence period (Fig.10) i.e., September to January and then declines during the dry period. The



**Fig.10. Stages of shot-hole borer inside the tunnel with *Ambrosia* fungus**

pest build up could be severe under heavy shaded areas as humidity helps in better establishment of the *Ambrosia* fungus.

## Symptoms and nature of damage

- Withered branches/twigs with shot-holes on the coffee plants indicate the presence of the pest. The leaves above the point of attack drop off prematurely and twigs gradually turn black due to the discontinuity in the flow of sap.
- The tip of the branches/twigs wilt, droop and dry. Withering is faster in young branches and relatively slows in older twigs/ branches.
- Severe infestation of SHB results in the loss of considerable number of productive branches. The loss is pronounced in young plants because the loss of primaries affects the growth of young plants and also the canopy development.

## Management

The incidence of shot hole borer could be effectively managed by adopting the following measures:

- Prune the affected twigs 7 cm below the point of shot hole and burn immediately. This operation should commence from September onwards and as soon as the first symptom of attack like drooping of leaves is noticed.
- During the dry period, the pest prefers to breed in suckers. Hence, timely removal of unwanted or infested suckers helps in minimizing the inoculum.
- Maintain optimum shade and provide good drainage in the estate.
- If the pest incidence level is still high, application of systemic fungicide propiconazole 25 EC @ 160 ml in 200 litre of water is recommended. The fungicide should be sprayed during August and September months on the infested branches.
- Indiscriminate use of nitrogen based fertilizers above the recommended dose favours the vegetative growth in plants, which indirectly helps for pest build up. Hence, care should be taken for rationale use of fertilizers.

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## A Report on the Coffee Board's Participation in the "65<sup>th</sup> Summer Fancy Food Show at New York, United State of America

**I**ndia Trade Promotion Organization (ITPO), the premier trade promotion agency of the Ministry of Commerce & Industry (Govt. of India) is committed to showcase the excellence achieved by the country in diverse fields especially, trade and commerce. The ITPO provides a wide spectrum of services to trade & industry and acts as a catalyst for the growth of India's trade. The ITPO organises national level participation in major overseas trade fairs for showcasing the best of India, globally.

Under the ITPO chapter, Coffee Board has recently participated in the "65<sup>th</sup> Summer Fancy Food Show-2019" held from 23<sup>rd</sup> to 25<sup>th</sup> June, 2019 at New York City in the United States of America. Shri. Srivatsa Krishna, IAS, Secretary/CEO of Coffee Board headed the delegation along with Dr.T.N. Gopinandhan, Biochemist (Post Harvest Technology Division, CCRI, Chikkamagaluru) and two coffee traders from Karnataka (Shri. Sathyanath Inchora, M/s. Sarwam Naturals Pvt. Ltd. & Mr. Surya Shastry, M/s. Phalada Agro Res. Foundations Pvt. Ltd.).

### Summer Fancy Food Show - An overview:

The Speciality Food Association (SFA) founded in early 1950, is a non-profit trade association with 3,500 plus members who are dedicated in producing, discovering and marketing foods that are new, different and exceptional quality. The SFA is a powerful partner in supporting business success, providing the tools, knowledge and connections to help its members grow in an ever-evolving market place. Since its founding in 1950, the SFA has been showcasing remarkable food products and their producers at its annual shows.

As per the reports from the SFA and Mintel (World's Leading Market Intelligence Agency, United Kingdom), the specialty food remains one of the fastest-growing segments of the food business. Fuelled by increasing interest from both consumers and retailers, the total sale of speciality foods jumped to 9.8% between 2016 and 2018 reaching 148.7 billion, last year. At retail level, the specialty food sales out-paced the growth of all foods, up 10.3%, as compared to 3.1% during the two-year period.

Mr. Phil Kafarakis, President of SFA said that product innovation and broader availability of specialty foods are propelling the specialty food Industry. Further he added that diverse consumer life-styles are taking specialty foods into main-stream and Nearly, three in four consumers purchase specialty food products, which may be defined as premium (or) produced in mirco-lots (or) featuring authentic recipes (or) high-quality ingredients.

### Summer Fancy Food Show (2019) – A Glimpse:

The Summer Fancy Food Show (SFFS) is the largest North-American market place devoted exclusively to specialty food and beverage producers and buyers with more than 200,000 specialty food products on display. The SFA has recently organized "65<sup>th</sup> Summer Fancy Food Show" from 23<sup>rd</sup> to 25<sup>th</sup> June, 2019 at Jacob K. Javits Convention Centre in New York, United States of America. The "65<sup>th</sup> SFFS -2019" featured more than 200,000 specialty foods & beverages and over 2,500 exhibitors from 55 countries. There were twenty one categories of food industries participated in the "65<sup>th</sup> SFFS-2019" which include right from baby food to life-style foods (dairy-free & sugar-free). Under the hot beverage-coffee category, there were fifty-one exhibitors from

different parts of the world participated and displayed their vast range of coffee/coffee based products in the “65<sup>th</sup> SFFS- 2019”.

### Trends of Coffee Consumption in the United States:

The United States of America is the single largest consumer of coffee in the world and imports about 28622 thousand bags of 60kg each (17.2 lakh MT) of coffee in 2018. The major suppliers of coffee to the US market are Brazil (25.4%), Colombia (19.3%), Vietnam (13.4%), Mexico (5.9%) and Guatemala (4.4%). On a cumulative basis, these five countries together share about 68% of USA’s total coffee imports. The Central and South American countries are the major producers & exporters of coffee in the world and are contributing 60% of global coffee production. Due to their proximity advantage to the US market, USA imports a major portion of coffee from these countries.

Indian coffee is primarily an export-oriented commodity with over 75% of the annual production exported to various destinations around the world. India is the 7<sup>th</sup> largest producers of coffee with a production potential of 3.2 lakh tons during 2018 -19

and 6<sup>th</sup> largest exporter of coffee with total exports of 3.55 lakh tons during 2018-19.

We have a share of about 3.5% of the world production (169 million bags i.e. @ 101.44 lakh tons as per the estimate of ICO) and about 5% of global coffee exports (117.50 million bags of 70.5 lakh tons as reported by ICO).

It has been our constant effort to bump-up the export earnings by ensuring the quality improvement of coffee on one hand and increasing the competitiveness of our high quality Arabica & Robusta coffees through incentivizing to offset the impact of taxes, on the other hand. These efforts may help in the escalating the export base into the high value market like USA.

India has a small share in the United State’s total coffee imports (less than 1%), mainly because of higher logistic costs, as USA is a far-off destination compared to its major competitors. Nevertheless, India’s coffee exports to USA have been increasing for the last few years. Data on major suppliers of coffees to the US market (in-terms of quantity) and India’s coffee exports to US market during last five years (green coffee, grounded coffees & speciality coffee) are presented in the following tables (Tables 1 to 3).

**Table 1. Major suppliers of coffee to USA (Green Bean Equivalent) in ‘000 bags of 60 kg each**

Exporting Countries	2014	2015	2016	2017	2018	Average
Brazil	7699.30	8197.30	7071.70	6575.00	6762.20	7261.10
Colombia	4726.40	5594.10	5378.40	5941.60	5913.20	5510.70
Vietnam	3907.10	3003.80	4592.70	4032.90	3649.80	3837.30
Mexico	1784.70	1611.30	1421.40	1758.60	1800.70	1675.30
Guatemala	1390.60	1191.10	1012.20	1277.20	1379.40	1250.10
Indonesia	1122.70	1222.00	1217.20	1260.30	986.70	1161.80
Honduras	883.70	963.00	1256.30	1424.50	1128.30	1131.20
Peru	872.40	774.60	1092.90	1069.50	1080.30	977.90
Costa Rica	663.30	581.60	648.50	492.50	604.20	598.00
India	131.90	106.80	128.10	164.10	60.00	118.20
Other Countries	4509.80	4613.90	5145.80	5570.10	5662.10	5100.30
Total	27,691.00	27,859.00	28,965.00	29,566.00	29,026.00	28,622.00

Source: F.O. Licht

**Table 2. India's coffee exports to USA during last five years**

Year	Green Coffee (MT)	Instant Coffee (MT)	R&G Coffee (MT)	Total Qty. (MT)	Value (Rs. in Crores)	Value in (US \$ Lakhs)
2014-15	2127.4	3459.7	178.4	5765.5	102.03	167.4
2015-16	1613.4	3587.5	208.2	5409.1	91.69	140.3
2016-17	2137.4	4914.6	93.6	7145.6	126.52	188.5
2017-18*	3031.4	10207.2	159.8	13398.3	140.55	218.0
2018-19*	2318.6	4973.8	80.4	7372.8	134.79	193.4
Av (2014-15 to 2018-19)	2245.6	5428.6	144.1	7818.3	119.12	181.5

\*Based on the export permits issued, Source: Market Research & Intelligence Unit, Coffee Board.

**Table 3. India's specialty coffee exports to USA during last five years**

Year	Qty. (MT)	Value (Rs. Lakhs)	USD \$ (Lakhs)	India's total specialty Coffee (MT)	% share in total specialty coffee
2014-15	453.00	1226.80	20.10	12640.00	3.6
2015-16	268.00	617.90	9.40	16308.00	1.6
2016-17	713.00	2044.30	30.70	16403.00	4.3
2017-18*	624.00	1464.30	23.40	19914.00	3.1
2018-19*	643.00	1643.20	23.80	20054.00	3.2
Average	540.20	1399.30	21.50	17063.80	3.2

\*Based on the permits issued; Source: Market Res. & Intelligence Unit, Coffee Board, Bengaluru.

In order to increase the competitiveness of Indian coffees and to ensure higher value realization, the Board extend export incentives at the rate of Rs.2 per kg for the export of high value green coffees and Rs.3 per kg for export of value added coffees in retail consumer packs exported under “India Brand” to the USA market. Further, Coffee Board also participate in coffee-centric events in US market for promotion of Indian coffees. In this direction, the Coffee Board has recently participated in the 65<sup>th</sup> Summer Fancy Food Show held at New York, USA and the details furnished here-under:

### Coffee Board's Participation in the “65<sup>th</sup> Summer Fancy Food Show”- 2019:

The Coffee Board's pavilion was set up at the exhibition venue on 22<sup>nd</sup> June 2019 itself at the Jacob K. Javits Convention Centre in the New York City of United States of America. The Coffee Board's

pavilion was decorated with very impressive backdrops depicting the sustainable nature of coffee cultivation in India, conservation of bio-diversity, fostering the livelihoods of coffee estate workers, specialty coffees of India and various regional coffees of India & their uniqueness. The green coffee beans of Monsooned Malabar, Mysore Nuggets Extra Bold and Robusta Kaapi Royale (specialty Indian coffees) and Plantation ‘A’, Arabica Cherry ‘AB’, Robusta Cherry and Robusta Parchment were displayed to showcase the high quality Indian coffee samples to the traders and visitors. In addition, the green coffee beans of organic coffee samples which are being promoted by M/s. Sarwam Naturals Pvt. Ltd. Bengaluru and M/s. Phalada Agro Research Foundations Pvt. Ltd. Bengaluru were also displayed in the Board's pavilion along with their company brochure.

Further to the above, the high quality Roasted & Ground coffee in attractive packs representing 13 different coffee growing regions of India and specialty coffee Mysore Nuggets Extra Bold, Monsooned

Malabar and Robusta Kaapi Royale were displayed. The coffee brewed from the Indian Speciality Coffee (Monsooned Malabar, Mysore Nuggets Extra Bold & Robusta Kaapi Royale) was served to the visitors on all the days of expo.



**Buyer – Seller Meeting held at the Consulate of India at New York City on 25th June 2019**

The commerce wing of the Consulate General of India at New York (USA) has arranged for a buyer-seller meeting on the evening of 25<sup>th</sup> June 2019. Shri. Srivatsa Krishna, IAS, Secretary/CEO of Coffee Board, Shri. Suresh Kumar, Director of Research, Spices Board, Shri. John Kingsly, IAS (Resident Director, Trade Promotion Office, New York) and delegates from Coffee Board & Spice Board as well as representatives from Consulate General of India at New York (USA) participated in the buyer-seller meeting. Coffee Board displayed green coffee beans of Monsooned Malabar, Mysore Nuggets Extra Bold and Robusta Kaapi Royale (specialty Indian

coffees) and Plantation ‘A’, Arabica Cherry ‘AB’, Robusta Cherry and Robusta Parchment. Besides the presentation from the Commodity Board, there were two technical presentations on “US-FDA Regulations” and “Star-K Kosher Certification” by Ms. Coley Anderson, Director of Industry & Government Relations (M/s.Registrar Corp, USA) & Mr. Joel Weinberger, Head-Regional Sales (M/s. Star-K Kosher Food Works), respectively, for the benefit of stakeholders in the coffee value chain.

### Important dignitary/visitors to the Board’s Pavilion:



Shri. Sandeep Chakravorty, IFS, Consul General from Consulate General of India, New York (USA) visited to the Board’s pavilion on 24<sup>th</sup> June 2019 and interacted with Coffee Board’s Officers as well as coffee exporters.

Shri. Sathyanath Inchora, (Sarwam Naturals Pvt. Ltd. Bengaluru) & Mr. Surya Shastry (Phalada Agro Res. Foundations Pvt. Ltd. Bengaluru) had business negotiation with the importers/retailers/distributors, who visited to the Board’s pavilion.

### Salient points emerged during the interactions with the visitors:

- o Demand for the Monsooned Malabar Coffee was very much visible from the interactions had with some of the traders at the pavilion.
- o Some of the niche coffee roasters are looking for single-origin estate coffees.
- o Large number of visitors who visited to the Board’s pavilion expressed their willingness to buy the displayed pockets of roasted & ground with regional logos & speciality logos and appreciated the unique regional logos. Further, few distributors expressed their interest to market Indian Coffee under the same logo.



**Secretary/CEO, Coffee Board of India and Coffee exporter from Sarwam Naturals Pvt. Ltd. interacting with Ms. Amy Dubin (Founder of Janam Tea)**



**Visit of Shri. Sandeep Chakravorty, IFS, Consul General from Consulate General of India, Newyork (USA) to Board's Pavilion**

- o Few of the traders enquired about the possibility of supplying micro-lots of Indian organic coffee samples.
- o Visitors appreciated the back-drops depicting the sustainable nature of coffee cultivation in India (India is the only coffee growing country grows all its coffee under shade), conservation of biodiversity, fostering the livelihoods of coffee estate workers, specialty coffees of India and various

regional coffees of India & their uniqueness installed at the Coffee Board's pavilion.

In conclusion, the United States of America is being the largest importer as well as consumer of coffee in the world, Board's participation in the "65<sup>th</sup> Summer Fancy Food Show"- 2019 helped to showcase the Indian coffees (regular & speciality) to a wide range of stakeholders in the US market.

Laboratory Equipments





**Dry Parchment Huller**



**Dry Cherry Huller**



**Test Sieve**



**Moisture Meter**

Small Grower Equipments

IC Mag / 04-2017



**Drum Pulper**



**Mini Pulper (Economic)**



**Mini Pulper (Standard)**



**Mini Pulper with Gear Motor**



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## *Beauveria bassiana*, a potential bio-control agent against Coffee berry borer

The interest towards biological control has increased recently due to its least risk on environment and human health. Many organisms are potentially used as bio-control agents in the pest management such as viruses, fungi, bacteria, nematodes, predators and parasitoids. Among these, some entomopathogens are mass-produced *in vitro* (bacteria, fungi, and nematodes) or *in vivo* (nematodes and viruses) and sold as commercial formulations or produced for non-commercial local use. The entomopathogen based bio-pesticides like *Beauveria bassiana*, *Metarhizium anisoplaea*, *Paecilomyces fumosoroseus* and *Lecanicillium lecanii* have broad host range, causing significant reduction in host population under ideal conditions. Myco-bicontrol i.e. using fungus for bio-control measures are considered as one of the important tools in IPM strategies in both organic & conventional crop production systems. Among these, *Beauveria bassiana* is the most popular and efficient bio-control agent against many pests worldwide. However, difficulties in mass multiplication of the fungus and its establishment in field has reduced the prospects of these bio-control agents for large scale adoption.

### Coffee Berry Borer

Coffee Berry Borer (CBB), *Hypothenemus hampei* (Coleoptera: Curculionidae) is the most serious pest of coffee across the coffee growing countries. In India, it was first reported in coffee plantations of Gudalur, Tamil Nadu during 1990 and since then attained as a major pest status in all coffee growing areas of India except non-traditional regions. Adult beetles are small and black in colour, with 1.5 mm long and 1 mm wide in size. Female beetles are larger in size compared to males. Female beetles infest the berries by making a hole on the naval region. A single female lays around 50 eggs within the matured bean. The eggs hatch in

9-10 days and grubs feed on the beans, making small tunnels. Complete development from egg to adult takes place in about 30 days.

**Nature of damage:** Female makes a circular hole at the tip of the berry and remains in the entry tunnel if the endosperm is soft. Later, bores into the endosperm if it is sufficiently hard and lay the eggs. The berry borer damages young as well as matured berries. Premature fruit drop due to rotting of tender berries may occur and normally only one bean is damaged. In case of delayed harvest both the beans might be damaged. Because of this, yield is reduced and in consequence quality is also affected. Hence, for effective control of CBB and to minimize the financial loss due to this pest, Coffee Board Research Department has recommended the following Integrated Pest Management (IPM) strategies.

### IPM strategies

It is obvious that it is very easy to target the pests/stages in case they are accessible or feeding the external surface of the crop. But unfortunately, all the borers attacking coffee including CBB have cryptic nature i.e. because much of its life cycle occurs deep inside the berry. Thus, because of hidden lifestyle, it is very difficult to access the pest for effective tackling. CBB is vulnerable for control measures, only when it is outside the berry i.e. before entering the bean tissue. Taking up appropriate management interventions at that stages results in efficient control of pest. The first and foremost component of IPM is cultural method, which predominantly helps in reducing CBB inoculum. Installation of broca traps helps in monitoring and also to reduce pest load by trapping the beetles. Insecticide spray should be carried out only when insects are accessible i.e. waiting at naval region for better efficiency. In case chemical sprays are delayed, the pest enters the bean

& becomes difficult to target. Thus, chemical sprays have practical limitations as it has to be taken up with in the limited time frame.

In this context, the next best approach is bio-control strategy by using an entomopathogenic fungus, *Beauveria bassiana*. This strategy facilitates the colonization of fungus on the adult borers and spreads inside the beans attacking the stages along with the borer.



**Fig. 1 Berry Borer infested fruit**

From the extensive studies conducted at Central Coffee Research Institute (CCRI) it has been found that *B. bassiana* is highly effective against

berry borer and compatible with other methods of IPM programme. Studies also showed that integration of cultural/phytosanitary measures with timely application of *B. bassiana* resulted in good control of CBB under suitable conditions.

### Favourable conditions & its mode of action:

*B. bassiana* is highly infective when the temperature ranges between 25-28 °C with relative humidity of 80-90%. When *B. bassiana* spores come in contact with the cuticle (skin), they germinate and grow directly through the cuticle to the inner body of their host. The fungus proliferates throughout the insect's body, producing toxins which aid penetration of the host physical defense eventually killing the insect by covering with a layer of white mold.

### Preparation & application of *B. bassiana*:

To prepare one barrel (200L) of spray fluid with 10 million conidia per ml, take the conidia harvested from one kg of rice culture (about 40 gms) and add 100 ml of APSA 80/ACTIVE 80. Add small quantities of water into bag and mix thoroughly to form a uniform paste & make up the volume to 200 Litres of water. If rice culture bags are used for immediate field application, the following method

is used. Crush the contents of five bags (prepared with one kg of rice culture) & empty in to suitable container with screw cap, add 100 ml APSA 80/ACTIVE 80 mix thoroughly by vigorous agitation. Filter the suspension into the barrel. Repeat the mixing and filtration three to four times to extract maximum spores. Make up the volume to 200 Litres of water and spray using a knapsack or rocker sprayer fitted with solid cone or adjustable nozzle of 350 to 450 cc output per minute. For covering large areas, motorized sprayers with suitable lances and nozzles can be used for better efficacy. Spray the culture suspension when beetles are present at the navel region for better efficiency.

The effect of the fungus can be observed in the field in about 10 days after spray with the development of white hyphal mass or spores on the dead insects, often projecting through the bore holes on the berries. Around 80% suppression of CBB life stages can be achieved using this fungus. Apart from environmental safety, the advantage of the *B. bassiana* over insecticides is its ability to kill the stages inside



**Fig. 2 Beauveria bassiana rice culture bags**

the tunnels through cross contamination. Hence, field application can be taken up till berries starts ripening. Spraying of *B. bassiana* during August - September, when

temperature is below 30 °C and relative humidity above 70%, is the ideal period for the effective control of CBB.

The important precaution to be followed while handling the fungus is to avoid inhalation of spores, as some people may be allergic. Use protective mask & gloves at the time of field application of spray suspension.

### Critical factors for improving the efficacy of bio-control agent :

- Generally, bio-pesticides are target specific so timely application is important. Hence, need to spray *B. bassiana* suspension when CBB is at naval region of berries for better efficacy against pest.

- The spray coverage is important as suspension should come in contact with insects to take the fungal infection and multiply.
- Avoid the *B. bassiana* suspension spray in rains. Because, application during heavy rains cause loss of inoculum and decreased infection against CBB.
- Don't take up any chemical spray in *B. bassiana* sprayed blocks for two to three weeks. This aids in reduction of fungus inoculum.
- Despite the existence of several commercial *B. bassiana* products in market, on farm mass production always helps to maintain the quality



Fig. 3 CBB infested with *B.bassiana*

by good spore load and decreased cost of production.

### Coffee Board's support for on-farm mass multiplication:

Coffee Board Research department has developed a simple method of mass culturing of *B. bassiana* using rice grains with a native virulent strain. *B. bassiana* can be produced by farmers with few basic infrastructure facilities available in estates.

Training on production and use of *B. bassiana* is being imparted in Central Coffee Research Institute, Balehonnur and all the Regional Research Stations. Interested growers (Individual/groups) can source the pure culture from the Coffee Research Stations. If unable to produce on-farm, growers can indent to nearest research station at least 3 weeks in advance for the supply of ready to use *B. bassiana* culture.

CALENDAR OF COFFEE ESTATE OPERATION	June	July	August
	<p><b>South-West Monsoon Areas:</b></p> <ol style="list-style-type: none"> <li>1. Completion of dadap lopping.</li> <li>2. Planting stakes/ seedlings of shade plants (both temporary &amp; permanent) in new clearings and open patches.</li> <li>3. In new clearings closing of pits.</li> <li>4. Supply planting, staking and mulching.</li> <li>5. Weeding &amp; de-suckering in established fields.</li> <li>6. Clearing of drains and renovation of cradle pits / trenches.</li> <li>7. Installation of light traps for collection and destruction of moths of hairy caterpillars.</li> <li>8. Control measures against shoot-mealy bug, and green scale, if necessary.</li> <li>9. <b>Black rot:</b> Completion of handling centring of bushes in black rot endemic blocks and spraying with 1% <i>Bordeaux</i> mixture or 0.03% (120g / 200 litres of water) <i>Bavistin</i> 50 WP (<i>Carbendazim</i>).</li> <li>10. <b>Leaf Rust:</b> Pre-monsoon spraying of 0.5% <i>Bordeaux</i> mixture as pre-monsoon application against coffee leaf rust. Susceptible varieties like S.795, Cauvery etc., should be sprayed with systemic fungicide like Bayleton 25 WP @ 0.02% a.i. (160g in 200 litres of water)</li> <li>11. Nursery: Thinning and removal of pendal depending on weather and aftercare.</li> <li>12. <b>Berry Borer:</b> If berry borer is noticed, spot sprays with chlorpyrifos 20EC or <i>Beauveria bassiana</i> may be taken up.</li> </ol> <p><b>North East Monsoon Areas:</b> Same as above, except items 1 and 2. Liming for correction of soil pH wherever necessary.</p>	<p><b>South -West Monsoon Area</b></p> <ol style="list-style-type: none"> <li>1. Handling, centring and de-suckering. In marginal areas, centring should be minimised in Arabica to avoid exposure of main stem so as to minimise the risk of stem borer attack.</li> <li>2. <b>Black Rot:</b> In black rot effected plants, removal and destruction of black rot affected twigs, leaves etc. should be done followed by drenching spray with <i>Bavistin</i> 50 WP @ 0.03% (<i>Carbendazim</i> 120g per barrel) during the break in rains.</li> <li>3. Sash weeding.</li> <li>4. Planting including supply planting- weather permitting.</li> <li>5. Removal and burning of shot-hole borer infested twigs.</li> <li>6. Nursery: Aftercare of seedlings.</li> <li>7. <b>Berry Borer:</b> If berry borer is noticed, spot sprays with <i>Beauveria bassiana</i> may be taken up.</li> </ol> <p><b>North-East Monsoon Areas:</b></p> <ol style="list-style-type: none"> <li>1. Dadap lopping.</li> <li>2. Planting dadap stakes, permanent shade seedlings and Coffee depending on weather conditions.</li> <li>3. Rest as above.</li> </ol>	<p><b>South-West Monsoon Areas:</b></p> <ol style="list-style-type: none"> <li>1. Weeding to be continued.</li> <li>2. Handling, centring and de-suckering to be continued. (In marginal areas, centring should be minimised in Arabica to avoid exposure of main stem so as to minimise the risk of stem borer attack).</li> <li>3. Planting, if weather permits.</li> <li>4. <b>Stem Borer:</b> Tracing &amp; destruction/ disposal of stem borer affected plants.</li> <li>5. Control measures against cockchafer, if necessary.</li> <li>6. Removal and burning of shot-hole borer infested twigs.</li> <li>7. <b>Black Rot:</b> In black rot affected plants, removal and destruction of black rot affected twigs, leaves etc. should be done followed by drenching spray with <i>Bavistin</i> 50 WP @ 0.03% (<i>Carbendazim</i> 120g per barrel) during the break in rains.</li> <li>8. Mid monsoon manuring (during break in the monsoon)</li> <li>9. <b>Berry Borer:</b> If berry borer is noticed, spot sprays with <i>Beauveria bassiana</i> or <i>Chlorpyrifos</i> 20EC may be taken up.</li> </ol> <p><b>North-East Monsoon Areas:</b></p> <ol style="list-style-type: none"> <li>1. Pre-monsoon spraying with 0.5% <i>Bordeaux</i> mixture against leaf rust.</li> <li>2. Rest as above</li> </ol>

**Prashanth Nagaraj**  
 Managing Partner at  
 Woodpeckers Coffee  
 Trading House, Bengaluru

# World of Coffee 2019, Berlin Germany



**W**orld of Coffee is an essential event for coffee professionals, this event travels all over Europe – drawing a loyal audience from the global specialty coffee community. The event is organized by the Specialty Coffee Association each year. This year it was held in Berlin in Germany from 6-8 June 2019.

Berlin has begun to buzz with a growing affinity for high-quality coffees and as you walk the streets you can find a lot of them at every nook and corner. Perhaps this could be because it is a haven for Australian and American experts, which is quite visible as most of them speak English in Berlin, the third-wave coffee movement is quite loud as you witness this in every coffee shop.

Germany is the second largest importer of Indian Coffee and some data from Coffee Board website during 01/01/2019 to 11/07/2019

Arabica (in tonnes)	Robusta (in tonnes)	Instant (GBE) (in tonnes)	Total (in tonnes)
4011.081	19959.368	227.760	24198.209

Looking at this data it makes it very evident for Coffee Board of India to have a stall and showcase



**Representatives of the Indian Embassy team in Berlin, Fine Cup award Jury, Coffee Board Officials and Exporters**

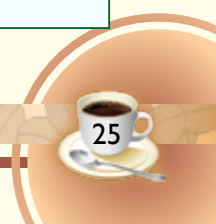
other types of coffee it has to offer to the consumers there, Coffee Board had booked a beautiful stall and had around 12 Indian exporters participate in this massive event spread in 3 different halls. Our exporters had varieties of coffee to showcase ranging from Commercial grades to specialty to single origin and single estate.

With almost all the coffee growing countries, roasters, equipment manufacturers and trainers participating in this event it really showcased the size and grandeur of this event.

This show had a lot of feature events to help coffee professional gain insights in Industry trends, technology, equipment's and coffee cultivation and other highlighted in detail.

**ROASTER VILLAGE** - A dedicated area in 2 halls where people can explore and taste coffees produced and roasted by some of the best roasters in the industry.

Best New Product Competition & Display	The Best New Product Competition and Display was organised to recognize new products based on their quality and value to the specialty coffee and tea industry. Award trophies were presented to the winners of exhibiting companies during World of Coffee.
Design Lab	Great design and great coffee often go hand in hand. This year, WOC had introduced a new interactive exhibit concept - Design Lab. This year's exhibits was focus on coffee packaging, vessels, spaces and branding.



Lectures	Each year, World of Coffee welcomes industry respected experts who inspire, educate and motivate nearly 7,000 coffee professionals to reach for their goals and expand their coffee knowledge. Lecture presenters are carefully vetted experts who are highly enthusiastic about their area of expertise and have a strong desire to share that knowledge for the betterment of the industry.
Automating Excellence	SCA has partnered with Cup of Excellence to launch Automating Excellence, a new initiative bringing together major super-automatic machine manufacturers to create a space where attendees can taste the world's finest coffee brewed by a selection of the most innovative fully-automated machines.
Cupping Room	Made for cupping coffees, the Cupping Room was hosting coffee cuppings every day throughout World of Coffee. A selection of cuppings was open to the public also.
World Coffee Competitions	The World Latte Art Championship, World Coffee In Good Spirits Championship, World Cup Tasters Championship and the Cezve/Ibrik Championship were all held at the World of Coffee.

**BREW BAR & ESPRESSO BAR** - Coffee coffee everywhere, still if you need your caffeine fix there was Brew Bar or the Espresso Bar! Beverages were prepared and served by skilled volunteer baristas across the globe.

**SPECIALTY COFFEE ASSOCIATION STORE** - Interested in the latest books, posters and accessories from the coffee world? Find a wide selection of coffee tools, apparel, books and more at the SCA Store.

We had attended **TRENDS IN EUROPEAN COFFEE MARKET - SEEN FROM CONSUMER**

**PERSPECTIVE** which was held on June 7<sup>th</sup> Friday, this was an amazing lecture from the senior analyst Maria Castroviejo from Robobank, this session lasted more than 30 minutes and was a packed house of more than 50 curious audience,

This event also showcases the Flavour of India fine cup award which was graced by Smt. Paramita Tripathi, Mr. Prathit Misra and Mr Vettel from the Indian Embassy team in Berlin.

**Winners for awards:-**

Category	Estate Name
Fine Cup Arabica	SLN Plantations
Fine Cup Robusta	Harley Estates

Coffees from both the award winning estates were served to all the visitors, exports and buyers coming to visit the stall.

Post the awards the event was followed by Dinner which was hosted by the Coffee Board of India it was good place to meet other fellow exporters and buyers.



Overall it was a great power packed event. I extend by thankfulness to the Coffee Board of India which support's exporters like me and graciously invite other exporters to join in as well.

Eagerness to explore, learn and enrich you again as the baton for the next year's World of Coffee goes to Warsaw, Poland.

**Disclaimer:** Views Expressed by the author in the article are purely of his own and not necessarily of the Coffee Board

## May and June 2019

In this column, the extracted information from May and June 2019 Coffee Market Reports of ICO on global production, global prices, world consumption and global exports as well as Indian domestic prices and exports are covered.

### Global Production and Consumption

Global coffee production is estimated at 167.75 million bags in coffee year 2018/19, compared to global

consumption of 164.64 million bags. Consumption is estimated to rise by 2% to 164.64 million bags, with consumption in exporting countries growing by 1.3% to 50.26 million bags. While demand has grown at an average annual rate of 2.2% in the last five years, global output is expected to exceed it by 3.11 million bags in coffee year 2018/19, making this the second consecutive year of surplus.

### Prices

Domestic Market Prices: ICTA (Bangalore) Weekly Auction Prices (Rs./kg)

Month/	May'19	May'18	May'19	May'18	May'19	May'18	May'19	May'18	May'19	May'18
Week	I		II		III		IV		Average	
Plant . 'A'	190.70	---	188.00	---	210.00	189.00	204.00	192.00	<b>198.18</b>	<b>190.50</b>
Arb.chy. 'AB'	---	148.00	140.36	148.00	170.00	148.00	135.00	149.00	<b>148.45</b>	<b>148.25</b>
Rob.Pmt. 'AB'	200.00	181.50	200.00	183.00	201.00	190.00	200.00	195.00	<b>200.25</b>	<b>187.38</b>
Rob.Chy. 'AB'	---	---	---	125.00	139.00	125.00	137.50	126.00	<b>138.25</b>	<b>125.33</b>

Month/	Jun'19	Jun'18	Jun'19	Jun'18	Jun'19	Jun'18	Jun'19	Jun'18	Jun'19	Jun'18
Week	I		II		III		IV		Average	
Plant . 'A'	---	195.00	---	183.50	219.00	185.00	225.16	185.46	<b>222.08</b>	<b>187.24</b>
Arb.chy. 'AB'	142.16	155.80	148.00	154.16	147.00	157.56	144.30	159.40	<b>145.37</b>	<b>156.73</b>
Rob.Pmt. 'AB'	200.00	200.00	202.00	---	210.00	---	215.00	---	<b>206.75</b>	<b>200.00</b>
Rob.Chy. 'AB'	---	133.00	139.00	133.10	140.56	132.56	140.00	---	<b>139.85</b>	<b>132.89</b>

### International Spot Prices – ICO Daily Group Indicator Prices of Arabica (Other Milds) and Robustas

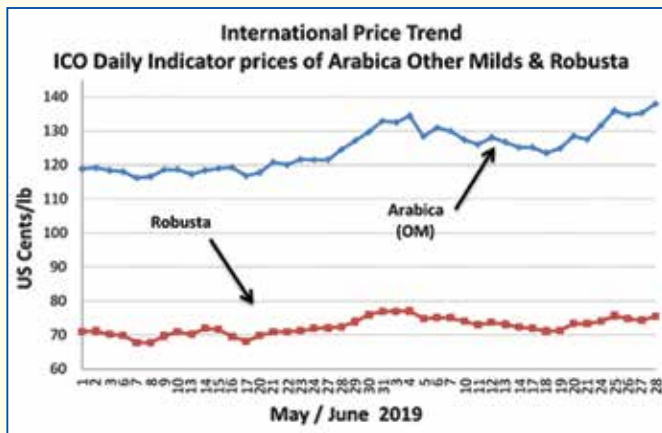
The monthly average of the ICO composite indicator fell to 93.33 US cents/lb in May 2019, 1.2% lower than in April 2019. While the monthly average of the ICO composite indicator rose by 7.1% to 99.97 US cents/lb in June 2019, which is the first increase in the monthly average since January 2019. The daily

composite indicator ranged between 95.17 US cents/lb on 18 June and 105.25 US cents/lb on 28 June. The daily price rose above 100 US cents/lb for the first time since 18 February 2019 on 30 May and remained above that level on 9 out of 20 days during the month of June.

Average prices for all group indicators rose in June 2019. Prices for Brazilian Naturals experienced the largest increase, averaging 100.69 US cents/lb,

9.5% higher than in May 2019. Robusta prices grew by 4.1% to 74.02 US cents/lb. Colombian Milds increased by 7.3% to 133.49 US cents/lb while Other Milds rose by 7.6% to 129.73 US cents/lb. As a result of these price movements, the differential between Colombian Milds and Other Milds in June 2019 fell by 2.3% to 3.76 US cents/lb, compared to May 2019, which follows three months of increase.

In June, the arbitrage between Arabica and Robusta coffees, as measured on the New York and London futures markets, rose by 20.4% to 39.03 US cents/lb. Intra-day volatility of the ICO composite indicator price increased by 1.8 percentage points to 8.9% as the intra-day volatility of all group indicators rose. Amongst the Arabica group indicators, the intra-day volatility of Other Milds rose by 2.2 percentage points to 9%, of Brazilian Naturals by 2 percentage points to 11%, and of Colombian Milds by 1.9 percentage points to 8.5%. The intra-day volatility of Robusta increased to 8.6%, 1.3 percentage points higher than last month.



**Exports:**

In May 2019, world coffee exports rose by 19.4% to 11.6 million bags compared to May 2018. This growth was led by shipments of Brazilian Naturals, which rose by 65.4% to 3.5 million bags. However, in May 2018, shipments were well below expectations due to a nationwide trucking strike that delayed delivery of coffee to ports. Brazil’s May exports averaged 2.73 million bags from 2013 to 2017.

Robusta exports grew by 8.3% to 4.05 million bags in May 2019 compared to the same month one year ago. Significant growth in Robusta shipments from Brazil, where exports of green Robusta rose from 46,621 bags to 376,257 bags as well as increases in exports from Tanzania and Uganda offset the 5.1% decline in Vietnam’s green Robusta shipments. Exports of Colombian Milds grew by 6.1% to 1.15 million bags while Other Milds increased by 4.4% to 2.9 million bags.

Global exports in the first eight months of coffee year 2018/19 reached 86.57 million bags, an increase of 7.5% compared to the same period one year ago. Shipments of Brazilian Naturals rose by 21.9% to 28.22 million bags while Colombian Milds increased by 6.8% to 10.13 million bags. Robusta exports increased by 3% to 30.65 million bags in October 2018 to May 2019 while Other Milds fell by 3% to 17.57 million bags.

Imports by ICO importing Members and the United States, which on average account for around 75% of global imports, increased by 4.9% to 66.56 million bags in the first half of coffee year 2018/19. Imports by the EU in October 2018 to March 2019 rose by 3.5% to 42.71 million bags, and those of the United States increased by 8.1% to 14.98 million bags. Imports by Japan grew by 13.5% to 3.92 million bags, and the Russian Federation by 4.9% to 2.77 million bags. In contrast, Switzerland’s imports declined by 7.4% to 1.53 million bags in the first six months of coffee year 2018/19. Imports by Norway and Tunisia increased by 1.3% to 364,958 bags and 12.9% to 282,259 bags, respectively.

Brazil was the largest source of coffee imports by the European Union, accounting for 20.9% of its imports in October 2018 to March 2019. This was followed by Vietnam (15%), Colombia (3.8%), Peru (3.6%) and Honduras (3%). Imports from Brazil and Vietnam increased by 12.5% to 8.92 million bags and by 5% to 6.41 million bags in the first half of coffee year 2018/19. However, imports from Colombia declined by 2.7% to 1.63 million bags and from Honduras by

4.8% to 1.3 million bags. Peru's shipments to the European Union increased by 6.5% to 1.54 million bags.

Imports from Brazil and Colombia accounted for 52.4% of imports by the United States in the first six months of coffee year 2018/19. Vietnam represented 10.2%, Mexico 5.7% and Peru 5.1% of US imports. Shipments from the five largest origins increased in October 2018 to March 2019 except from Vietnam where they declined by 19.7% to 1.53 million bags. US imports from Brazil increased by 24.5% to 4.33 million bags and from Colombia by 11.4% to 3.52 million bags. Shipments from Mexico amounted to 855,799 bags, 6% higher than in October 2017 to March 2018, and from Peru rose by 20% to 767,411 bags.

Similar to the European Union and the United States, Brazil, Vietnam and Colombia were the main origins for Japan's imports in the first half of coffee year 2018/19, accounting for 38.6%, 20.4%, and 12.3%, respectively. Indonesia and Ethiopia, representing

7.2% and 6% of Japan's imports, were the next two largest suppliers. Imports from Brazil rose by 36.4% to 1.52 million bags, from Ethiopia by 22.4% to 235,787 bags, and from Indonesia by 15.3% to 283,614 bags. However, imports from Colombia fell by 23.4% to 481,734 bags while imports from Vietnam were almost unchanged, increasing by 0.6% to 800,568 bags.

Vietnam and Brazil were the two main origins imported by the Russian Federation in October 2018 to February 2019, accounting for 30.8% and 20.9%, respectively. India represented 7.5% of total imports. However, Germany (9.6%) and Italy (6.1%) were important origins for imports by the Russian Federation. Nearly 50% of imports by the Russian Federation were of roasted (11.5%) or soluble (36.9%) coffee during this period. This is a much higher share of processed coffee than the other large importers where green coffee imports tend to account for around 90% of imports, except in the European Union where roasted coffee imports represented 20.1% of total imports.

## Indian coffee exports (01.01.2019 to 30.06.2019) in MT

Sl. No.	Exports	Provisional exports		Provisional re-exports		Total provisional exports	
		Indian coffee	corresponding period last year	Provisional re-exports	corresponding period last year	Total provisional exports	corresponding period last year
		1	2	3	4	(1+3)	(2+4)
1	Ar. Pmt.	27569	29286	7	0	27576	29286
2	Ar.Chy.	7287	8699	0	0	7287	8699
3	Rob.Pmt.	23417	16216	0	0	23417	16216
4	Rob.chy.	96877	96117	0	0	96877	96117
5	Roasted seeds	30	43	0	0	30	43
6	R&G	101	149	0	0	101	149
7	Instant	10919	14726	45176	47239	56095	61965
8	Total	166200	165236	45183	47239	211383	212475

Compiled by: Dr. D.R. Babu Reddy, Dy. Director (Market Research), Coffee Board, Bengaluru

## मई व जून 2019

इस कॉलम में, भारतीय स्वदेशी मूल्यों एवं निर्यातों के साथ-साथ, वैश्विक उत्पादन, वैश्विक मूल्य, विश्व उपभोग तथा वैश्विक निर्यातों पर आई सी ओ कॉफ़ी बाज़ार रिपोर्ट मई व जून 2019 की सार-सूचना सम्मिलित की गई है।

### वैश्विक उत्पादन एवं उपभोग

विगत वर्ष के 164.64 मिलियन बैग्स के वैश्विक कॉफ़ी उत्पादन की तुलना

में कॉफ़ी वर्ष 2018/19 में उत्पादन 167.75 मिलियन बैग्स अनुमानित किया गया है। उपभोग 2% बढ़कर 164.64 मिलियन बैग्स होने का अनुमान है, साथ ही निर्यातकर्ता देशों में उपभोग 1.3% बढ़कर 50.26 मिलियन बैग्स तक पहुँचने का अनुमान लगाया गया है। जबकि पिछले पाँच वर्षों के दौरान, कॉफ़ी की माँग में औसतन 2.2% की दर से बढ़ी है, वर्ष 2018/19 में कॉफ़ी का वैश्विक उत्पादन बढ़कर 3.11 मिलियन बैग्स तक पहुँचने की उम्मीद की गई है, जिससे यह निरंतर अधिशेष का दूसरा वर्ष बन गया है।

### मूल्य

स्वदेशी बाज़ार मूल्य : आई सी टी ए (बेंगलूरु) के साप्ताहिक नीलामी मूल्य (₹/कि.ग्रा.)

माह/	मई'19	मई'18	मई'19	मई'18	मई'19	मई'18	मई'19	मई'18	मई'19	मई'18
सप्ताह	I		II		III		IV		औसत	
प्लांटेशन 'ए'	190.70	---	188.00	---	210.00	189.00	204.00	192.00	198.18	190.50
अरेबिका चेरी 'एबी'	---	148.00	140.36	148.00	170.00	148.00	135.00	149.00	148.45	148.25
रोबस्टा पार्च 'एबी'	200.00	181.50	200.00	183.00	201.00	190.00	200.00	195.00	200.25	187.38
रोबस्टा चेरी 'एबी'	---	---	---	125.00	139.00	125.00	137.50	126.00	138.25	125.33

माह/	जून'19	जून'18	जून'19	जून'18	जून'19	जून'18	जून'19	जून'18	जून'19	जून'18
सप्ताह	I		II		III		IV		औसत	
प्लांटेशन 'ए'	---	195.00	---	183.50	219.00	185.00	225.16	185.46	222.08	187.24
अरेबिका चेरी 'एबी'	142.16	155.80	148.00	154.16	147.00	157.56	144.30	159.40	145.37	156.73
रोबस्टा पार्च- 'एबी'	200.00	200.00	202.00	---	210.00	---	215.00	---	206.75	200.00
रोबस्टा चेरी- 'एबी'	---	133.00	139.00	133.10	140.56	132.56	140.00	---	139.85	132.89

### अंतर्राष्ट्रीय तत्स्थान मूल्य-अरेबिका (अन्य मृदु) तथा रोबस्टा के आई सी ओ दैनिक समूह सूचकांक मूल्य

मई 2019 में, आई सी ओ समष्टिक सूचकांक का मासिक औसत 93.33 यू. एस सेंट्स/पाउंड तक कम हुआ, जो अप्रैल 2019 की तुलना में 1.2% कम था। जबकि जून 2019 में, आई सी ओ समष्टिक सूचकांक का मासिक औसत 7.1% बढ़कर 99.97 यू. एस सेंट्स/पाउंड हो गया, जो जनवरी 2019 के बाद मासिक औसत की पहली वृद्धि है। 18 जून से 28 जून के बीच दैनिक समष्टिक सूचकांक 95.17 यू. एस सेंट्स/पाउंड और 105.25 यू. एस सेंट्स/पाउंड के बीच था। 30 मई को दैनिक मूल्य 100 यू. एस

सेंट्स/पाउंड से भी अधिक हो गया, जो 18 फरवरी 2019 के बाद पहली बार हुआ था और जून माह के 20 दिनों की तुलना में शेष 9 दिनों में यह मूल्य ऊपरी स्तर पर रहा है।

जून 2019 में सभी समूह सूचकांकों के औसत मूल्य बढ़ गए हैं। ब्राजीलियन नैचुरल्स का मूल्य सबसे अधिक बढ़ गया, जो मई 2019 की तुलना में 9.5% बढ़कर 100.69 यू. एस सेंट्स/पाउंड तक पहुँच गया। रोबस्टा का मूल्य 4.1% की वृद्धि के साथ 74.02 यू. एस सेंट्स/पाउंड हो गया। कोलंबियाई का मूल्य 7.3% बढ़कर 133.49 यू. एस सेंट्स/पाउंड हो गया, जबकि अन्य मृदु 7.6% बढ़कर 129.73 यू. एस सेंट्स/पाउंड हो गया। इन

मूल्य परिवर्तन के परिणामस्वरूप, मई 2019 की तुलना में जून 2019 में कोलंबियाई मृदु एवं अन्य मृदु के बीच का अंतर 2.3% घटकर 3.76 यू एस सेंट्स/पाउंड हो गया, जो तीन महीने की वृद्धि के बाद हुई है।

जून के दौरान, न्यूयॉर्क व लंदन फ्यूचर्स बाज़ारों के मापन के अनुसार, अरेबिका एवं रोबस्टा कॉफ़ियों के बीच का अंतरपणन 20.4% बढ़कर 39.03 यू. एस सेंट्स/पाउंड हो गया। आई सी ओ समष्टिक सूचकांक मूल्य की अंतर-दिवसीय अस्थिरता 1.8 प्रतिशत बढ़ गई, जिससे सभी समूह सूचकांकों की अंतर-दिवसीय अस्थिरता के 8.9% तक बढ़ने का संकेत प्राप्त हुआ है।



अरेबिका समूह सूचकांकों में से, अन्य मृदु की अंतर-दिवसीय अस्थिरता 2.2 प्रतिशत बढ़कर 9% हो गई है, ब्राजीलियन नैचुरल्स में यह 2 प्रतिशत बढ़कर 11% तथा कोलंबियाई मृदु में 1.9% बढ़कर 8.5% हो गया। रोबस्टा की अंतर-दिवसीय अस्थिरता बढ़कर 8.6% हो गई, जो विगत महीने की तुलना में 1.3 प्रतिशत अधिक है।

### निर्यात :

मई 2018 की तुलना में, मई 2019 के दौरान विश्व कॉफ़ी का निर्यात 11.6 मिलियन बैग्स के साथ 19.4% बढ़ गया। ब्राजीलियन नैचुरल्स के नौभरण के कारण यह वृद्धि हुई थी, जो 65.4% बढ़कर 3.5 मिलियन बैग्स हो गया। हालाँकि, मई 2018 में, राष्ट्रव्यापी ट्रक हड़ताल के कारण नौभरण में अत्यधिक कमी अनुमानित की गई थी, जिससे बंदरगाहों पर कॉफ़ी की सुपर्दगी में देरी हुई। 2013 से 2017 तक मई में ब्राजील के निर्यात का औसत 2.73 मिलियन बैग्स था। विगत वर्ष के मई महीने की तुलना में मई 2019 में रोबस्टा का निर्यात 8.3% बढ़कर 4.05 मिलियन बैग्स हो गया। ब्राजील से रोबस्टा के नौभरण में उल्लेखनीय वृद्धि हुई है, जहाँ हरी रोबस्टा का निर्यात 46,621 बैग्स से 376,257 बैग्स तक बढ़ गया, साथ ही तांजानिया एवं उगांडा के निर्यात में वृद्धि हुई है, जिससे वियतनाम की हरी रोबस्टा के नौभरण में 5.1% की कमी को समायोजित किया गया है।

कोलंबियाई मृदु का निर्यात 6.1% बढ़कर 1.15 मिलियन बैग्स हो गया, जबकि अन्य मृदु 4.4% बढ़कर 2.9 मिलियन बैग्स हो गए।

कॉफ़ी वर्ष 2018/19 के प्रथम आठ महीनों में वैश्विक निर्यात 86.57 मिलियन बैग्स तक पहुँच गया है, जो विगत वर्ष की इसी अवधि की तुलना में 7.5% अधिक रहा है। ब्राजीलियाई नैचुरल्स का नौभरण 21.9% बढ़कर 28.22 मिलियन बैग्स हो गया, जबकि कोलंबियाई मृदु 6.8% बढ़कर 10.13 मिलियन बैग्स हो गए हैं। अक्टूबर 2018 से मई 2019 तक रोबस्टा का निर्यात 3% बढ़कर 30.65 मिलियन बैग्स हो गया, जबकि अन्य मृदु 3% घटकर 17.57 मिलियन बैग्स पहुँच गया है।

आई सी ओ आयातित सदस्यों तथा संयुक्त राज्य अमरिका द्वारा कॉफ़ी वर्ष 2018/19 के प्रथम छमाही में किया गया आयात 4.9% से बढ़कर 66.56 मिलियन बैग्स पहुँच गया है, जो वैश्विक आयात के लगभग 75% माना जाता है। अक्टूबर 2018 से मार्च 2019 तक यूरोपीय संघ द्वारा किया गया आयात 3.5% बढ़कर 42.71 मिलियन बैग्स हो गया और संयुक्त राज्य अमरिका में यह 8.1% बढ़कर 14.98 मिलियन बैग्स हो गया। जापान द्वारा आयात 13.5% से 3.92 मिलियन बैग्स और रूसी संघ का आयात 4.9% से 2.77 मिलियन बैग्स तक बढ़ गया। इसके विपरीत, कॉफ़ी वर्ष 2018/19 के पहले छः महीनों में स्विट्ज़रलैंड का आयात 7.4% घटकर 1.53 मिलियन बैग्स हो गया। नॉर्वे एवं टुनीशिया द्वारा किए गए आयात में क्रमशः 364,958 मिलियन बैग्स के साथ 1.3% और 282,259 मिलियन बैग्स के साथ 12.9% की वृद्धि हुई है।

यूरोपियन संघ में से ब्राजील, कॉफ़ी आयात का सबसे बड़ा स्रोत था, जहाँ अक्टूबर 2018 से मार्च 2019 तक का आयात 20.9% था। इसके बाद वियतनाम (15%), कोलम्बिया (3.8%), पेरू (3.6%) एवं होंडुरास (3%) आए थे। ब्राजील और वियतनाम से आयात 8.92 मिलियन बैग्स के साथ 12.5% बढ़ गया तथा कॉफ़ी वर्ष 2018/19 की प्रथम छमाही में 6.41 मिलियन बैग्स के साथ 5% बढ़ गया। हालाँकि, कोलंबिया का आयात 2.7% घटकर 1.63 मिलियन बैग्स और होंडुरास का 4.8% से 1.3 मिलियन बैग्स हो गया। यूरोपीय संघ के लिए पेरू के नौभरण में 6.5% वृद्धि के साथ 1.54 मिलियन बैग्स पहुँचा।

ब्राजील एवं कोलंबिया से आयात 52.4% तक पहुँच गया, जो कॉफ़ी वर्ष 2018/19 के प्रथम छह माहों के दौरान, संयुक्त राज्य अमरिका द्वारा किए गए आयात के समतुल्य था। वियतनाम का आयात 10.2% तथा संयुक्त राज्य अमरिका के आयात में मेक्सिको और पेरू ने क्रमशः 5.7% व 5.1% का प्रतिनिधित्व किया। अक्टूबर 2018 से मार्च 2019 तक वियतनाम के अलावा, पाँच सबसे बड़े स्रोतों से नौभरण बढ़ गया है, वियतनाम का नौभरण 19.7% घटकर 1.53 मिलियन बैग्स पहुँच गया। ब्राजील से संयुक्त राज्य अमरिका का आयात 24.5% बढ़कर 4.33 मिलियन बैग्स तथा कोलंबिया

से 11.4% बढ़कर 3.52 मिलियन बैग्स हो गया। अक्टूबर 2017 से मार्च 2018 तक की तुलना में मेक्सिको से नौभरण 855,799 बैग्स के साथ 6% बढ़ गया और पेरू से 20% बढ़कर 767,411 बैग्स हो गया।

कॉफ़ी वर्ष 2018/19 की प्रथम छमाही में, यूरोपीय संघ और संयुक्त राज्य अमरिका के समान, ब्राज़ील, वियतनाम एवं कोलंबिया, जापान में आयात के लिए प्रमुख स्रोत थे; जहाँ से क्रमशः 38.6%, 20.4% और 12.3% आयात हुए। इसके बाद, दो सबसे बड़े आपूर्तिकर्ता यथा, इंडोनेशिया एवं इथियोपिया, जापान के आयात का क्रमशः 7.2% तथा 6% आयात का प्रतिनिधित्व करते हैं। ब्राज़ील, इथियोपिया तथा इंडोनेशिया से आयात क्रमशः 1.52 मिलियन बैग्स के साथ 36.4%, 235,787 बैग्स के साथ 22.4% तथा 283,614 बैग्स के साथ 15.3% बढ़ गए हैं। हालाँकि, कोलंबिया से आयात 23.4% गिरकर 481,734 बैग्स हो गया, जबकि वियतनाम से

आयात लगभग अपरिवर्तित रहा, जो 0.6% बढ़कर 800,568 बैग्स हो गया।

अक्टूबर 2018 से फरवरी 2019 तक रूसी संघ द्वारा आयात के दो प्रमुख स्रोत वियतनाम एवं ब्राज़ील थे, जहाँ से क्रमशः 30.8% और 20.9% आयात किए गए थे। भारत द्वारा कुल आयात के 7.5% का प्रतिनिधित्व किया जाता है। हालाँकि, रूसी संघ द्वारा किए गए आयात में जर्मनी (9.6%) एवं इटली (6.1%) महत्वपूर्ण स्रोत थे। इस अवधि के दौरान रूसी संघ द्वारा भुनी हुई (11.5%) या घुलनशील (36.9%) कॉफ़ी का लगभग 50% आयात हुआ था। यूरोपीय संघ के अलावा, जो कॉफ़ी के कुल आयात में से 20.1% भुनी हुई कॉफ़ी के आयात का प्रतिनिधित्व करता है, जबकि अन्य बड़े आयातकों की तुलना में प्रसंस्कृत कॉफ़ी का सबसे अधिक भाग है, जहाँ ग्रीन कॉफ़ी का आयात लगभग 90% है।

### भारतीय कॉफ़ी निर्यात (01.01.2019 से 30.06.2019) में.ट. में

क्र.सं.	निर्यात	अनंतिम निर्यात		अनंतिम पुनः निर्यात		कुल अनंतिम निर्यात	
		भारतीय कॉफ़ी	विगत वर्ष की संगत अवधि	अनंतिम पुनः निर्यात	विगत वर्ष की संगत अवधि	कुल अनंतिम निर्यात	विगत वर्ष की संगत अवधि
		1	2	3	4	(1+3)	(2+4)
1	अरे.पार्चमेंट	27569	29286	7	0	27576	29286
2	अरे.चेरी	7287	8699	0	0	7287	8699
3	रोब.पार्चमेंट	23417	16216	0	0	23417	16216
4	रोब.चेरी	96877	96117	0	0	96877	96117
5	भुने बीज	30	43	0	0	30	43
6	भुने व पिसे	101	149	0	0	101	149
7	इंस्टेंट	10919	14726	45176	47239	56095	61965
	कुल	166200	165236	45183	47239	211383	212475

संकलन : डॉ. डी. आर. बाबु रेड्डी, उप निदेशक (बाज़ार अनुसंधान), कॉफ़ी बोर्ड, बेंगलूरु

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### Stand Up Pouches For Coffee Packaging



### Side Gusset Pouches For Coffee Packaging



### Quad Seal Pouches For Coffee Packaging

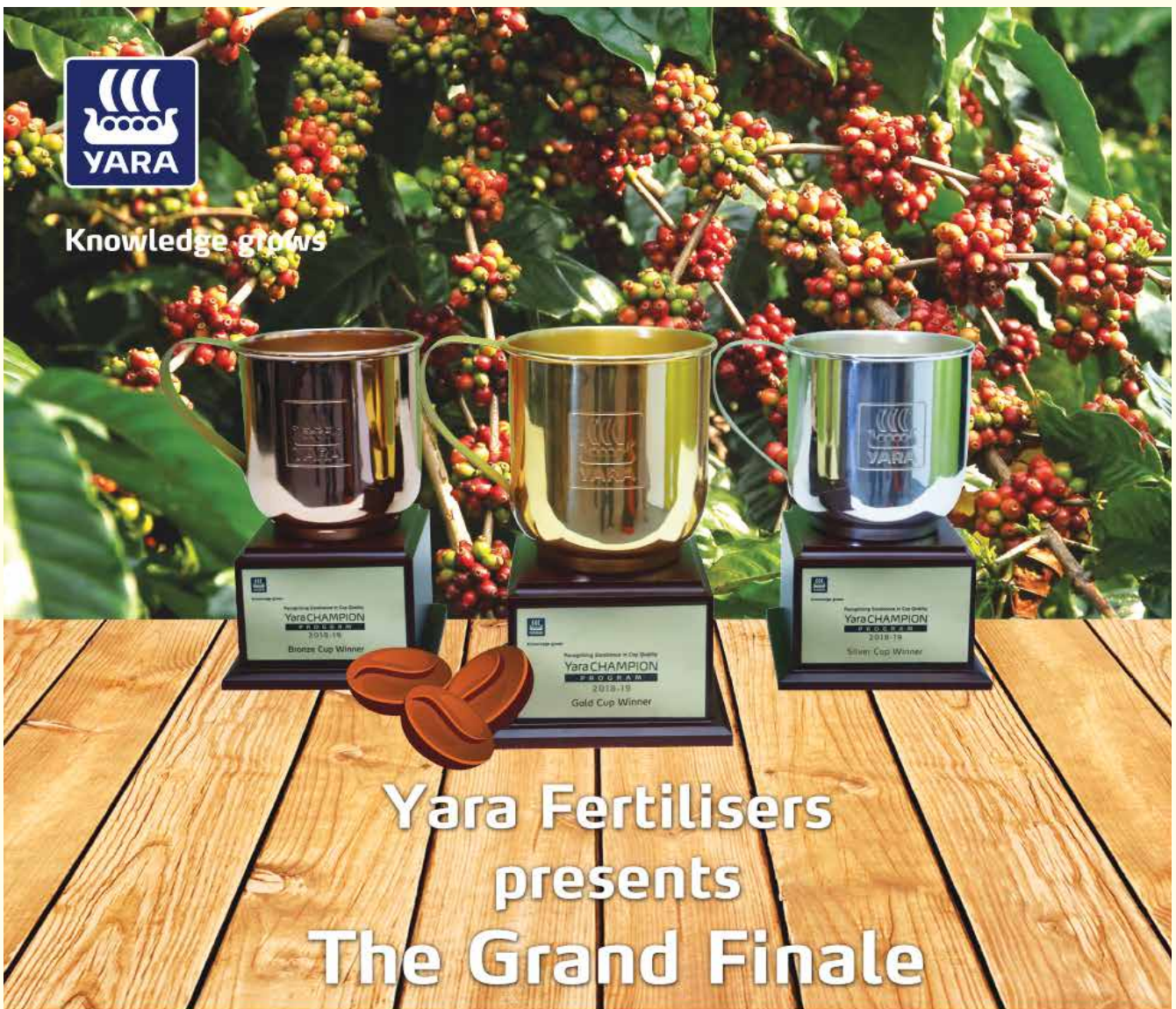


### Flat Bottom Pouches For Coffee Packaging





Knowledge grows



# Yara Fertilisers presents The Grand Finale

## Yara CHAMPION PROGRAM 2019-20

Recognizing Excellence in Cup Quality

The Yara CHAMPION Program has been instituted to celebrate the special qualities of Indian coffees, to strengthen our niche in the global markets. It is also Yara's endeavour to recognize and reward excellence in the cup quality of our Indian shade grown coffees.

Crop Nutrition influences an array of parameters in taste and quality of the bean. Planters who have used the comprehensive Yara Crop Nutrition program have participated in the CHAMPION Program and their coffees have undergone systematic evaluation by a group of stalwarts in the field of cup tasting. The top qualifiers will compete in a final tasting round on May 2020. It will be our honor and privilege to announce the winners of the Yara CHAMPION Program, an event which is poised to become the hallmark of defining good taste in coffee.

For more details please contact : Kartik Manjunath, Mobile : 9980513375

### COFFEE BOARD

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