इंडियन कॉफ़ी

IndianCoffee

The Coffee Magazine Vol. 84 No. 9 September 2020

Adult

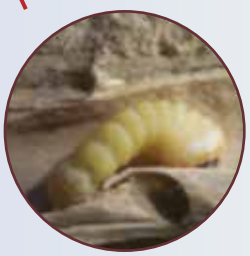
Pupae

Coffee white stem borer -

A saga of 100 years of

Research

Eggs



Mature larvae

Neonate larvae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P - 7

Research carried out on CWSB – An over view

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संपादक के नाम पर पत्र **Letters** to the **Editor**

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.

स्वच्छ भारत अभियान

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

कॉफ़ी बोर्ड

वाणिज्य एवं उद्योग मंत्रालय
भारत सरकार

From the Secretary's desk

Coffee Times

The Coffee White Stem Borer (CWSB) is the most dreaded pest of Arabica coffee. Since 1915, there has been a continuous research pursuit initially by Mysore Department of Agriculture and Mysore Coffee Experiment Station followed by the Central Coffee Research Institute (CCRI). These systematic research efforts carried out on various aspects of coffee white stem borer paved the way for development and refinement of an integrated pest management (IPM) protocol for management of CWSB over the decades. The IPM interventions helped the coffee growers to a great extent in effectively managing the pest at estate level. However, in recent years, flare ups of CWSB are noticed in most of the Arabica growing regions due to vagaries of climate and several other factors that necessitated a relook at the IPM strategies. Accordingly, major thrust of research at Central Coffee Research Institute (CCRI) has been on refining the IPM interventions by two pronged approach, protecting the healthy plants and retaining/recovering the infested plants. In this regard, the technology of stem wrapping with non oven fabric material is found very effective and gaining popularity for field adoption. Furthermore, breeding for CWSB tolerance has been the major focus of Arabica coffee breeding and pursued on highest priority at CCRI since 2012. One of the significant accomplishments of breeding is the development of a stem borer tolerant genotype, S.4595 which is under multi-location field testing. In this edition, an effort is made to narrate a comprehensive account of the research carried out on CWSB over the past several decades, highlighting the successes and disappointments in developing a pragmatic IPM strategy. The cover story, "CWSB – A Saga of 100 years of research" provides a brief overview of research carried out on CWSB, including the successes stories of planters who could effectively manage the pest by following recommended IPM interventions, published for the benefit of planters. Thus this special edition on Coffee White Stem Borer gives a holistic picture on CWSB research carried out in India including the recent initiatives. Nevertheless, the research undertaken in collaboration with several national and international institutions and its outcome will be published in forthcoming editions.

Besides, regular features viz., Calendar of Coffee Estate Operations, Market Watch column which focus on coffee market reports of ICO on global production, global prices, world consumption and global exports as well as domestic prices and exports are covered in this edition.

N.N. Narendra
Secretary

Coffee white stem borer - A saga of 100 years of Research

Roobak Kumar A., Uma M.S. Krishna Reddy P., Seetharama H.G., Surya Prakash Rao and Y. Raghuramulu

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The Coffee White Stem Borer (CWSB) is the most dreaded pest of Arabica coffee and certainly be the first problem encountered in India as early as in 1838, soon after the commencement of coffee cultivation by British entrepreneurs. Since 1915, there was a continuous research pursuit initially by Mysore Department of Agriculture and Mysore Coffee Experiment Station followed by the Central Coffee Research Institute that carried out systematic research on various aspects of coffee white stem borer. These efforts paved the way for development of different interventions for management of CWSB that helped to a great extent in effectively managing the pest at estate level. However, in recent years flare ups of CWSB are noticed in most of the Arabica growing regions due to vagaries of climate and several other factors that necessitated a relook at the IPM protocol. Here is a comprehensive account of the research carried out on CWSB, over the years, highlighting the successes and disappointments in developing a pragmatic IPM strategy and also the recent interventions.

Historical perspective

The report of Mr. H. Stokes of the Mysore Commission in 1838 was the first and foremost report regarding borer attack on coffee. In 1867, a note on the life history and behaviour of the borer was published in the proceedings of the Agri-Horticultural Society, Madras. A year later, in 1868 a detailed report on the ravages of the borer in Coorg and Mysore was prepared by Mr. Bidie, Commissioner, Government of Madras. In 1898-99, Mr. J. Cameron, Superintendent of Mysore Gardens suggested a few remedial measures including maintenance of shade. Research studies on borer was taken up by the Mysore Department of Agriculture from 1915 and pioneering work was carried out by Dr. L. C. Coleman, Dr. Kunhi Kannan, Mr. V. K. Subramanyam, Mr. T. V. Subramaniam, Mr. M. J. Narasimhan and Mr. T. V. Pattabhiraman. Dr. L. C. Coleman, Director of Agriculture, Mysore Government was responsible for setting up the Mysore Coffee Experiment Station near Balehonnur, Chikkamagaluru Dist., Karnataka during 1925 which was brought under the administrative control of Coffee Board of India during 1946 and rechristened as the Central Coffee Research Institute. These initiatives provided scope for conducting systematic research on various aspects coffee stem borer and its management.

Bio-ecology

Out of the two commercially cultivated coffee species viz., *Coffea arabica* (Arabica coffee) and *Coffea canephora* (Robusta coffee), CWSB is more prevalent in Arabica coffee and sporadic incidence of CWSB was also reported on Robusta and other *Coffea* species like *C. liberica* (tree coffee). This pest is endemic to Asian countries, and most of the coffee growing countries in this region, except India, such as Vietnam, Thailand, Indonesia etc. are predominantly Robusta producing countries. Thus, India is the only country where CWSB is the serious pest of concern on Arabica coffee. The borer was initially identified as *Cucujus coffeeophagus* Richter and subsequently named as *Xylotrechus quadripes* Chevrolat. Taxonomically, CWSB belongs to Group: Clytini; Subfamily: Cerambycinae;

Family: Cerambycidae; Order: Coleoptera. There is no clarity on alternate hosts of CWSB though there were few reports of its occurrence on live trees of *Ixora coccinea* and *Olea dioica* in natural forest.

Morphology

The adult is a slender beetle, diurnal in habit, elongated with a greyish pubescence on the head, prothorax and elytra. Elytra are marked with four pairs of whitish markings which are characteristic of the species; legs are black with hind femur varying in colour from dark red to black. Females are generally larger in size measuring 7.4 to 17.75 mm compare to males (7 to 15 mm). Unlike female beetles, the head of the male beetle possess distinctly raised black ridges. Eggs are small, elongated oval in shape, initially milky white and later turn to pale yellowish colour before hatching. The size of eggs varies from 0.8 to 1.5 mm. The larvae are elongated and sub-cylindrical, initially white and turn light yellow with well- developed head capsule and fully grown larvae measures 2 to 3 cm. in length. The pupae are milky white or waxy in colour, similar to adults in size, shape, and proportions of cephalic and thoracic appendages.

CWSB adult

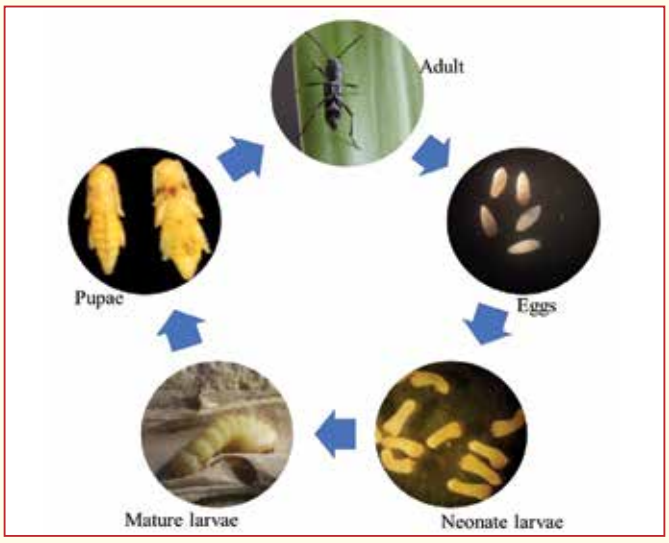
CWSB matured larva

CWSB adult Mating

Female *Male*

Life Cycle

Adult beetles of CWSB lay eggs under scaly bark of the main stem and thick primaries of coffee plants. A female beetle can lay 100 eggs,



CWSB life cycle

on average in groups of 1 to 10 during its life span of 9 to 30 days. Eggs hatch in 8-11 days and hatchability is about 77%. The larval period is about 6 to 10 months. Grown up larvae/ grubs pupates in a hollow chamber just below the outer layer of stem tissues after cutting a circular disc beneath the bark. The pupal period lasts between 25-35 days and the adult beetle remains in the pupal chamber for 3-7 days, before emergence. The round exit hole on the stem is the indication that the beetles have already emerged. The borer completes its life cycle in about a year, but the life cycle completes in relatively short time on dried or uprooted coffee stems. Adult stem borer emerges from the coffee stems twice during a year.

Mating behaviour

The vision of the adult beetles plays no role in mating, but the antennae are essential for courtship and mating. Both males and females of the borer produce sex pheromone for enhancing mating success and possibly the male produces pheromone acting at a long range, but the mating success is achieved by short range pheromone produced by

Egg laying of CWSB

the female. The mating usually takes place between 9 am to 12 noon and between 3 pm to 5 pm. The female beetles complete mating process and also start egg laying the same day or the next day after their emergence from the infested stems.

Damage of the CWSB and external symptoms

The eggs laid under the scaly bark of the main hatch within 8-11 days and the early instar larvae tunnel through the corky portion of the bark and feed on the tissue just below the phloem layer for about two months. Consequently, the bark split and appears in the form of ridges around the stem. The infested plants exhibit external symptoms like yellowing and wilting of leaves. The larvae of CWSB enter the main stem and make tunnels in all the directions. In certain cases, the tunnels may extend into the root portion also. Once the larvae entre inside the stem it is very difficult to access the larvae as the tunnels are packed with excreta of the grubs. Infested plants (up to 7-8 years old) die in a year while older plants withstand the attack for few seasons. However, such plants are less productive with more of floats.

Eggs under the bark

Neonate larvae

Initial larval feeding

Tunnel showing frass

Tunneling inside stem

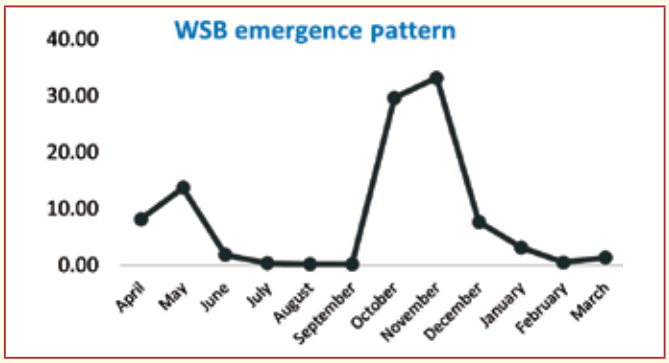
Ridge formation

Infested plant

Damage sequence of CWSB

Flight periods

Emergence season of adult beetles of CWSB from the infested stems is known as flight periods. There are two peak flight periods of the beetles, one during April - May and the other during October – December are noticed. The adult beetles after emergence are very active in bright and hot weather and ready for mating on the same day. In general female beetles are more in number than male beetles. Cloudy and wet weather during flight period affects the activity of the borer. Conditions like very low rain fall, improper shade and high defoliation of plants due to leaf rust disease, exhaustion of plants due to heavy crop etc. provide ideal conditions for stem borer infestation.



Integrated management measures:

Due to the economic importance of CWSB, development of appropriate management strategies for adoption at estate level has been the main thrust of coffee research over the years. Initially, cultural and mechanical strategies such as maintenance of ideal shade, tracing & uprooting of infested plant were commonly practised for management of CWSB. Chemical strategies such as swabbing of stem and thick primary branches with chemicals like BHC and Lindane were also integrated for pest management and proved to be very effective because of the long persistence of these chemicals. Thus, the Integrated Pest Management (IPM) strategies recommended by the Coffee Board Research Department (CBRD) from time to time helped Arabica coffee growers in India to successfully manage CWSB over the years.

Research carried out on CWSB – An over view

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1. Cultural measures

1.1. Coffee cultivation under ideal two tier shade canopy

The importance of shade was suggested as one of the few remedial measure for CWSB as early as 1898-99 by Mr. J. Cameron, Superintendent of Mysore Gardens. Thus, cultivation of Arabica coffee was commonly practiced under two tier mixed shade canopy that facilitated in conserving the rich biodiversity of natural flora and fauna. The native shade trees such as *Albizzia lebbeck*, *Albizzia stipulate*, *Artocarpus integrifolia*, *Cedrella toona*, *Dalbergia latifolia*, *Pterocarpus marsupium*, *Terminalia bellarica*, *Ficus glomerata*, *Ficus retusa*, *Ficus nervosa*, *Ficus tsiela* were maintained on estates that provided a mixed shade of upper canopy. Fast growing leguminous shade trees such as *Erythrina lithosperma* (Dadap) and *Grevillea robusta* (Silver oak) were the most commonly used for lower canopy/temporary shade. The shade trees essentially help in providing congenial micro climate to the plant growth and prevent large variations in soil temperature and soil moisture status. The tree cover reduces the intensity of sunlight and temperature, help in overcoming the drought effects. Thus, growing of Arabica coffee under two tier shade provided simulated micro climate that exists in tropical rain forests of Ethiopia, the natural habitat of Arabica coffee.

In general, CWSB beetles are light loving and attract towards less shaded areas in the estate and infestation starts from such exposed patches/plots. Hence, maintenance of ideal shade in Arabica coffee plantations helped to a great extent in restricting the flight activity and to keep the pest under control. Thus, as a cultural measure, shade management was proved to be a critical component of IPM during earlier years. However, the native shade trees in Arabica coffee plantations were gradually replaced with fast growing and exotic trees, predominantly the hardy silver oak that altered the ideal microclimate due to rise in canopy temperatures and high light intensity. These conditions are ideal for CWSB activity and in the absence of ideal shade, strict adoption of other IPM interventions becomes imperative with limited flexibility. It has been a proven fact that the CWSB menace is not so alarming in Arabica coffee plantations with ideal two tier mixed shade canopy, irrespective of the other IPM interventions adopted.

Coffee grown under two tier mixed shade

Coffee grown under mono shade

1.2. Minimizing the adult beetle population by tracing, uprooting and disposal

One of the very important components of stem borer management is minimizing the adult beetle population by timely tracing, removal and very careful disposal of borer affected stems by burning, before the commencement of flight periods. It is of utmost importance to burn the infested stems completely soon after uprooting preferably before the end of March and September, in order to ensure the death of all the borers within the coffee stems. Removal of borer plants after the commencement of flight period, as late as October and continuing up to November-December and heaping of uprooted stems on estates provide inoculums for fresh infestations which leads to increase in the borer incidence in subsequent years. In general, the development of CWSB beetles is fast in uprooted stems and complete the life cycle earlier than standing coffee plants. Consequently, overlapping emergence of CWSB adult beetles is commonly seen in such situations.

Tracing and uprooting of the infested plants is the only strategy recommended over the decades for control of CWSB and this strategy has been widely adopted at the estate level with great success. However, oflate this strategy has limitations of non-availability of skilled tracers among the estate workers and also the reluctance of the growers for losing the existing crop and prefers to postpone the uprooting of the infested plant till completion of harvest. This tendency of retaining the infested plants in field proves to be detrimental, as it leads to the emergence of CWSB adults in large numbers during post-monsoon flight (October to December) and facilitates the attack of healthy plants.

In order to desist the uprooting strategy that has been practiced to minimize the inoculum load, extensive studies were undertaken to kill the larvae within the infested stems by various approaches. Proven methods such as stem injection with insecticide solution, root feeding with systemic insecticides, Stem coating with Sealer cum Healer (SCH), stem covering with gunny bags and non-woven cloth material have been tried. Some of these strategies like stem injection in forest trees, root feeding of systemic insecticides in coconut against eryopid mites, stem coating with sealer cum healer against mango stem borer were proved effective against the targeted pests. Unfortunately, none of these strategies were found effective in case of CWSB primarily because it is difficult to access the CWSB larvae within the stem as the borer tightly packs the feeding tunnel with its excreta. It was observed that in all the treatments the larvae continued to survive within the treated stems.

Drilling of stem for insecticide injection

Root feeding of insecticide

Stem coating with SCH

However, recent trials with the wrapping of the stems with jute gunny bag material or Non woven fabric material, have yielded some promising results especially when the wrapped material/portion was sprayed with the recommended insecticide. As a result, the adult beetles ready for emergence were found dead at the exit hole.

2. Mechanical measures

2.1. Handpicking of beetles: Initial reports stated that the beetles could be very easily handpicked indicating the severity of the incidence in early years of coffee cultivation.

2.2. Scrubbing: Initially, scrubbing of main stems was tried particularly in open patches. In laboratory and field trials, beetles laid eggs on un-scrubbed stems, but no eggs observed on scrubbed stems.

Bark scrubbed plant

Because of efficacy of the method, scrubbing of loose bark has been recommended as one of the important control measures.

- Scrubbing was found effective if done before or during egg laying period or before the grubs enter the stem
- Scrubbing to be done once a year
- Scrubbing using sharp objects like metal pieces, knives etc. caused damage to the vascular tissues leading to the death of the plants
- Use of Coir gloves for scrubbing is found to be safe and efficient in removal of loose bark

3. Physical measures:

During initial years of CWSB flare-ups, several physical measures were tried but with limited success as detailed below.

3.1. Stem covering: Covering the main stem with polythene and wire mesh in the field was reported to be difficult and not feasible

i. Stems covered with strips of date palm matting to prevent the emergence and the egg-laying found effective, but cumbersome and cost quite prohibitive (Rs. 75/acre during 1941)

ii. Wrapping with newspapers and sheet from sugarcane megass were not effective .

iii. Wrapping stems with polythene and gunny strips did not prevent adult emergence

Among the above stem covering methods, only approach with some positive prospects was noticed in gunny bag wrapping followed insecticide spray which was effective in killing the emerging adults at the exit hole. However, the non-availability of readymade gunny strips, less field durability due to weathering and termite attacks is the limitation for wider adoptability of this method. Recently, Non-woven fabric (NWF) has been tried as substitute material for stem wrapping and this method is found very effective.

3.1.1. Stem wrapping with non-woven fabric - A promising approach

Stem wrapping with non-woven fabric (NWF) material is recommended only for less infested

CWSB plants. This strategy of stem wrapping with NWF material followed by the insecticidal spray was proved very successful as 100% mortality of adult beetles was observed. The CWSB adult beetles that were trying to emerge from infested stems were found killed after getting contact with the insecticide sprayed NWF material. This technology has been validated across the arabica growing zones of Karnataka and the results are very consistent. Hence, at present, this technology has been recommended as one of the important interventions for CWSB management which will help in three ways.

1. Tackling/killing adults at emergence site itself will minimize the population load.
2. Advantage of realizing the existing crop from the infested plant without uprooting.
3. Scope for recovering without uprooting the infested plant so that the cost and time of replanting could be saved.

It is interesting to note that the method NWF wrapping has been adopted on a large scale by some of the planters in the Coorg region and results are very convincing. Because of these positive findings, this approach is being recommended by the Coffee Board Research Dept. as the best alternative to the uprooting of infested plants with a strong probability of restoring the infested plants in case, the infestation is in initial stages.

Dead Adult at exit hole of gunny wrapped plant

NWF wrapped plant

Dead Adult at exit hole of NWF wrapped plant

3.2. Lime Coating

Application of 10% lime as coating on main stem and thick primaries using paint brush is found to be very effective in preventing the egg laying and thereby the CWSB infestation. This strategy also aimed at targeting the pest before egg laying.

Lime coating using brush

A view lime coated plant

3.3. Use of traps

Initially, different types of light traps were tried, but results were not promising.

1. Cut stems of coffee and other shade trees hung in the coffee estates as traps for egg laying gave no satisfactory results. Dry and fresh teak logs kept in the field did not attract the beetles for egg laying.

Plain glued trap

Delta trap

Funnel trap

Cross vane

3.3.1. Pheromone traps:

The Central Coffee Research Institute worked in collaboration with Natural Resources Institute, UK and identified the pheromone components by EAG and GC-EAG techniques. It was established that the **male CWSB beetles produces the sex pheromone to attract the female beetles**. The male pheromone was identified as 2 - hydroxy -3-decanone. Once the pheromone was identified and synthesized, extensive trials were also undertaken on mass trapping using four types of traps viz., Plain glued trap, Delta trap, Funnel trap, Cross vane trap and out of these four types of traps, Cross vane traps were found to be the best. Pheromone dispensers and release rates of (s)-2-hydroxy-3-decanone were also studied and polyethylene vials were found to be more suitable due to slow release of the compound. Field trials were conducted for over 4 years (nine flight periods) from 1997 to 2001, covering Chikkamagaluru, Hassan, Kodagu and Tamil Nadu in a total of 233 locations. The cross-vane traps with polyethylene vials as dispensers for the pheromone were found to be the most effective.

4. Chemical control

Use of insecticides/chemicals is an important strategy for management of pests. Over the years, several insecticides have been tested and effective ones have been recommended to the coffee growers from time to time. A overview of the insecticides evaluated and their efficacy is as follows.

4.1. Phase I: Pre - world war

Swabbing or spraying of Mortegg, Calcium arsenate, Paris green, cashew oil, tar distillate, DNOC (2-methyl-4,6, dinitrophenol) were practiced. Tar distillate and Mortegg were found to reduce borer incidence up to 5% and 8% respectively, in the field.

4.2. Phase II: Post- world war (1945-1955)

Many insecticides like DDT, BHC, DNOC, Lindane, Folidol, Chlordane, Toxophene, Aldrin, Dieldrin were screened in the field, incidence of borer was reduced in plots sprayed with these formulations in laboratory studies. Toxic effect of BHC 50% W.P @1% was found to last up to 75 days. Stem injection of systemic insecticides like, Systox, Pestox, Tetrax, Systam, Metasystox found not effective in killing the stages inside the plants.

4.3. Phase III: 1956-1965

BHC, Dieldrin, Azinphos methyl, Telodrin, Parathion, BHC were found effective in field and heptachlor was less effective

4.4. Phase IV: 1965-1975

Carbaryl, Malathion, Endrin, Carbofuran, Lannate, Anatox, Helitox, Lindane, Dieldrin, Phorate, Terracur, Disulfuton were tested in field and the results were not effective. However, Terracur, Disyston and Phorate 83 EC found to have some repellent action.

4.5. Phase V: 1975-1985

Quinalphos, Methyl parathion, Endosulfan, Zolan, Toxaphene, Dimethoate, Fenvalerate, Permethrin, Monocrotophos and synthetic pyrethroids like Permethrin, Cypermethrin, and Corsair were tried. None of these chemicals were found effective Experiments indicated that monocrotophos by stem implantation or padding method did not kill stages inside the plant

4.6. Phase VI: 1986-1995

None of the new formulations tested were found effective. **Spraying of BHC or Lindane was found equally effective as swabbing**. Spraying on stem was more beneficial in terms of better coverage and penetration, reduced quantity of spray solution and lesser man power requirement. In laboratory screening experiments conducted after 1995, effectiveness of Endosulfan (83 days) and Chlorpyrifos (76 days) was found comparable with that of Lindane (83 days).

4.7. Phase VII: Post 1996 onwards

Based on systematic trials conducted by CCRI during 2000s, out of 30 insecticides tested, Chlorpyrifos, Chlorpyrifos 50EC + Cypermethrin 5 EC, Fipronil and Phenthoate are found to be efficient both in efficacy and persistence.

5. Organic products

Among the organic products/botanicals, Neem seed kernel (NSK) extract was found effective may be because of pest repellent action. However, persistence of neem product was found short and repeated application is necessary to protect during the entire flight period, hence not economical. Several other Neem based products like Gronim, Econeem, Neem limnoids were also tested and found not effective.

6. Bio-control studies

The Bio-control trials against CWSB were also not effective. Several parasitoids were recorded from India and all of them were failed to establish in the field. Further, some egg, larval and pupal parasitoids were also collected, reared, mass multiplied, and checked their parasitisation potential against CWSB. Some of these parasitoids include, *Allorhogas palladiceps*, *Campylonerus* sp., *Doryctus compactus*, *D. coxalis*, *Eurytoma* sp, *Iphiaulax* sp. *Metapelma* sp., *Gasteruption* sp., *Avetianella* sp. *Scleroderma vigilans*, *Apenesia sahyadrica* and few other species.

Studies on potential entomo-pathogens like *Beauveria bassiana*, *Metarhizium anisopliae* and EPNs (*Steinernema carpocapsae* and *Heterorhabditis* sp.) revealed that these entomo-pathogens are not effective against CWSB under field conditions.

The predatory bird, Blue barbet *Megalaima sp.* chipped the last stage larva or pupa from the borer infested plants.

Thus, bio control strategies have limited prospects in management of CWSB.

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Pragmatic and proficient approach for control of CWSB - Few Success Stories

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In the backdrop of the current scenario, outbreaks of CWSB have been observed across all Arabica-growing regions. Even under these circumstances, some of the planters maintained the CWSB infestation in low level. Hence, a case study was carried out in 30 arabica coffee farms at Karnataka and Tamil Nadu to collect the data on the management practices that helps to minimize the CWSB population. During these case studies, we found that whoever is maintaining the plant vigour and adopting timely management measures against pest and diseases they could be able to successfully maintain the pest incidence at low levels. In case of any delay or failure in taking up timely control measures, increase in CWSB incidence was reported.

Some of the recommended practices that have been implemented in the surveyed estates are as follows:

- Maintenance of optimum shade on the estates. A two-tier system of shade trees with permanent shade trees (Jungle tree / Silver oak) forming the topmost canopy followed by a lower canopy of temporary shade trees like Dadap were the most common in these estates.
- Efficient tracing, uprooting, and destroying of CWSB infested plants before the commencement of flight period.
- More focusing on the preventive measures like bark scrubbing and 10% lime application especially in the CWSB prone areas.
- Regular pruning to maintain the proper framework of the bush for balancing vegetative and crop wood.
- Maintenance of the plant vigour with proper nutrition at appropriate time.
- Regular gap filling, timely application of insecticides and fungicides in the estates were the other practices strictly adopted in these well-maintained estates.

Success stories of CWSB management

The very purpose of the case studies is to capture the success stories of some planters who managed the CWSB infestation by adopting the Coffee Board's recommended IPM strategies. This information on success stories would endorse the effectiveness of the IPM tools recommended by the Coffee Board and help in motivating other planters to adopt IPM technologies on a large scale. The following success stories are summarised based on the experiences shared by the respective planters.

1. M/S. Shivakrupa Estate, Channagondanahalli, Chikkamagaluru: Mr. Dinesh

The estate is located at an elevation of 3,990 feet above mean sea level (MSL) in Upper Giris, Chikkamagaluru and receives an average rainfall of 80-90 inches annually. The total extent of the estate is 25 acres of Chandragiri & Sln.9 with mixed age group of 10 to 45 years. The estate was maintained under ideal two-tier mixed shade canopy and the CWSB incidence was found to be very low, around two to three plants per acre. The planter expressed that he is not resorting to any chemical sprays against CWSB and attributed the following are the key interventions that helped him to manage the CWSB efficiently.

- Maintenance of two-tier mixed shade
- Timely tracing, uprooting and immediate destruction of uprooted plants
- Bark scrubbing once in every three years
- Maintaining the plant vigour by regularly supplementing organic manure (similar to jeevamrutha) prepared on estate.

Ideal bush management as practiced by Mr. Dinesh, Channagondanahalli, Chikkamagaluru. This practice protects the main stem from direct exposure to the adult beetles.

2. M/S Geetha Estate, Alur, Hassan: Mr. Dharmaraj

The estate is in Honkarvalli village of Sakaleshpura Taluk and situated at an elevation of 2,500 feet above MSL and receives annual rainfall of 60-70 inches. The extent of the estate is 50 acres of which, 30 acres was planted to Arabica while 13 acres was planted to robusta. The entire area of arabica planted with Chandragiri variety and belongs to different age groups of 2 to 10 years. As seen from the bush stature and also as expressed by the planter, major focus has been on canopy management and maintenance of plant vigour which helps not only in harvesting sustainable crop yield but also in limiting the CWSB incidence to less than five plants per acre. The key issues of success in maintaining the low incidence of CWSB are as follows.

- Personal involvement and close supervision of the pruning operation that helps in maintaining the plant canopy in a conical shape without exposing the main stem.
- Irrigation during drought months and during flight periods to maintain ideal micro climate in the estate and also humid conditions, thus creating unfavorable conditions for CWSB activity.
- Timely swabbing depending on labor availability or spray of Chlorpyriphos in CWSB prone areas.

Well managed Chandragiri block with very low incidence of CWSB at Geetha Estate

3. M/s Bettadamalali Estate, Kanathi, Chikkamagaluru: Mr. Ramdev S/O Nagesh Gowda

It is a large estate with an extent of over 400 acres located at an elevation of 3,000-3,500 feet

with an average annual rainfall of 80 - 90 inches. The coffee varieties under cultivation are Sln. 6, Sln. 9, Sln.795 and Chandragiri. The incidence of CWSB infested plants has been observed to be high (20 plants/acre) in Western aspect & open patches with low shade compared to other blocks within the estate. The planter has been adopting the bark scrubbing using coir gloves in CWSB prone areas like western aspect and less shaded blocks. On realizing that the bark scrubbing could remarkably reduce the CWSB incidence, bark scrubbing was extended to the rest of the blocks in a phased manner. The planter opined that it would take few years for the re-growth/appearance of loose scaly bark on scrubbed/smoothened stem. The scrubbed portion is not preferred by the CWSB adults for egg laying because of lack of cracks and crevices and thus remains free from CWSB infestation for longer period.

Bark scrubbing practiced by Mr. Ram Dev, Bettadamalalli, Kanathi, Chikkamagaluru. Preventive measure to make unsuitable for egg laying of CWSB adult beetles.

4. Mr. Mohammed Sajid Hussain Estate, Belagod, Hassan

This estate is located at Golgonde village of Belagod Taluk in Hassan Dist., at an elevation of 2,200 feet MSL and receives an annual rainfall of 70-80 inches. The estate consists of 15 acres of arabica planted with varieties, Chandragiri & S.795. It was reported that initially, i.e. prior to 2015-16, the CWSB infestation was very high on the estate @ 70-100 plants/acre which was attributed to the untimely sprays. Subsequently, swabbing of insecticide has been adopted and soon the planter observed remarkable decrease in CWSB infestation, 3-5 plants/season. In addition to insecticide swabbing, bark scrubbing is also practiced on estate boundaries and CWSB prone areas that helped to a great extent in minimizing the CWSB infestation. The planter mentioned that after observing the efficiency of bark scrubbing, the same has been extended to the entire estate, in a phased manner.

Bark scrubbing adopted by Mohammed Sajid Hussain, Belagodu helps in preventing egg laying of CWSB adult beetles

5. M/s Kandayya estate, Yercaud, Tamil Nadu:

The estate is located at an elevation of 3,400feet above MSL in Yercaud region of Tamil Nadu

and receives an average annual rainfall of 54-58 inches. The total extent of the estate is 60 acres, planted to coffee varieties like BBTC, 5A, 5B, Chandragiri & Sln.9 with mixed age group of 8 to 30 years. The estate was maintained under ideal two-tier mixed shade canopy and the CWSB incidence was found to be around three to five plants per acre. The planter expressed that to tackle the CWSB, a combination of preventive measures is being adopted.

- Maintenance of two-tier mixed shade canopy and timely tracing, uprooting and destruction of infested plants.
- Giving more importance to the preventive management measures like 10% lime application or Bark scrubbing in time rather than curative measures.
- Depending on the availability of labor and condition of individual blocks, the planter decides on the type of management interventions to be adopted, sometimes a combination of the recommended measures. If adequate labor force is available, then bark scrubbing followed by either lime application or insecticide sprays is adopted. These selective measures helped the planter in maintaining the CWSB incidence at very low levels.

Timely adoption of need based interventions proved very effective at Kandayya Estate, Yercaud, Tamil Nadu

Conclusion:

The most successful strategies, as seen in the case studies, are primarily aimed at preventing egg laying or destroying laid eggs prior to hatching. Once, eggs laid by the adult beetles in cracks and crevices of the bark hatched and entered inside the stem, it is very difficult to access the pest by any of the management intervention. Therefore, prevention is the right choice for efficient in handling the CWSB as in case of certain other coleopteran beetles. From the case studies, it is also apparent that among the IPM interventions, chemical intervention was the last option considered only when there was an issue of labour scarcity. All other interventions that have been successfully adopted and validated are maintenance of ideal shade, canopy management, bark scrubbing and lime washing. The innovative idea of irrigating the field during dry periods and flight periods might have helped in creating unfavourable conditions for the egg laying. However, availability of water resources is an added advantage. In conclusion, the message is clear that the timely adoption of the recommended interventions is proved to be effective in managing the CWSB inspite of the climate change associated pest flare ups. Community approach is also important to have a visible impact in CWSB management.

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The authors acknowledge all the Entomologists who have contributed time to time for the development and updating the IPM for Coffee White Stem Borer . The authors are also grateful to the planters referred in this article for providing their consistent support and inputs.

Breeding for coffee white stem borer tolerance – significant breakthrough

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Since early years of commercial coffee cultivation, Coffee white stem borer (CWSB) has been a major production constraint for arabica coffee. Over the decades, extensive research pursued on CWSB management, resulted in development of an Integrated Pest Management (IPM) strategy that includes the cultural, physical and need based chemical measures. Nevertheless, development of CWSB tolerant arabica varieties remained as an unfulfilled challenge. The main limitation for systematic breeding for CWSB tolerance is the lack of resistance sources in coffee gene pool. As a consequence, unlike breeding for coffee leaf rust resistance, breeding for stem borer tolerance could not be pursued with great success at Central Coffee Research Institute (CCRI). In recent years, increased flare-ups of CWSB has been noticed across the Arabica growing tracts as a consequence of climate change, especially the erratic rainfall and rising temperatures, posing a great threat for arabica coffee cultivation. The Indian coffee growers are losing hope on prospects of Arabica and shifting towards Robusta cultivation. The Arabica coffee growing community is desperately looking at Coffee Board Research department for some scientific breakthrough to address the CWSB menace. Obviously, development of white stem borer tolerant Arabica variety has been the sought-after demand for sustainability of arabica coffee in India. Therefore, breeding for CWSB tolerance has been the major thrust of Arabica coffee breeding and pursued on highest priority at CCRI since 2012. The promising leads in development of a stem borer tolerant variety accomplished and the way forward are detailed and discussed in this communication.

Search for sources of tolerance for exploitation in breeding:

Identification of the sources of tolerance is the primary requisite for systematic breeding. In coffee it has been a well established fact that the tetraploid *C. arabica* genotypes doesn't possess host resistance to most of the pests and diseases while the diploid species forms the valuable source for genes that impart tolerance/resistance to several diseases and pests like coffee leaf rust, coffee berry disease, leaf minor, nematodes etc. Even in case of CWSB, the preference of the pest is more towards Arabica compared to other diploid species like *C. canephora* and *C. liberica* in field situations. Therefore, the tetraploid interspecific hybrids of arabica derived from diploid inter-specific hybrids and the diploid introgessed lines formed the focus material for critical monitoring.

Field infestation data as a scale of host tolerance

Since the initiation of organized research on coffee in 1925, the important objective of Arabica coffee breeding has been for leaf rust resistance. Accordingly, during the long pursuit of breeding for leaf rust resistance, few spontaneous tetraploid inter-specific hybrids have been exploited as donors of resistance. Additionally, few diploid inter-specific hybrids generated from crosses between diploid species were also used for resistance breeding purposes at CCRI. To start with, the field infestation data

of these hybrids in respect of CWSB collected over the years has been reviewed critically to identify the differential host response, if any? The close analysis of field infestation data provided an important insight on relative tolerance of few hybrid populations against CWSB. Simultaneously, field infestation data in respect of different station bred selections of arabica at CCRI and Regional Coffee Research Station, R.V.Nagar, revealed that Sln.11 recorded low level of natural infestation of CWSB compared to all other Selections. Further, the emergence of adult beetles from different station bred selections was also monitored at CCRI, by keeping the borer infested cut stems in nylon cages separately. These experiments established that the number of live beetles that emerged from Sln.11 was very low. Observations on survival of larval stages in cut stems revealed maximum larval mortality in Sln.11 followed by HDT – 1343. Thus, both the field observations and laboratory experiments established the relative tolerance for CWSB in Sln.11 plants.

About Sln.11 and its agronomic performance

Sln.11 was derived from a diploid inter-specific cross, *C. liberica* x *C. eugenioides*. The progeny of the cross between *C. liberica*a, a tree coffee type and *C. eugenioides* a compact bush type resulted in varied phenotypes most of them resembling towards tree coffee types. The F_1 plants were not very fertile and from one of the F_1 plants an orthotropic shoot (sucker) originated spontaneously by chromosome doubling. This branch with tetraploid chromosome number (2n = 4n = 44) was self-fertile and bred true as the progeny raised from seed was resembling normal arabica types but with more of *C. eugenioides* features. The Sln.11 was derived from selfed progeny of this tetraploid sucker. Though the Sln.11 exhibited good agronomic performance, this material was not preferred in traditional coffee growing tracts because of the small sized beans. Hence, breeding efforts were continued to improve the bean size in Sln.11 several hybrid progenies (S.4595 to S.4600) were developed from reciprocal crosses between Sln.11 (S.2464) and four other arabicas (HDT, Tafarikela, Cioccie, Wallamo x HDT). These hybrids were established at CCRI during 1989-90 season and field evaluation of these hybrids revealed promising performance of two progenies, S.4595 (Sln.11 x HDT) and S.4596 (Sln.11 x S.3155 - *C. arabica*: Wallamo x HDT), wherein substantial improvement in plant vigour, production potential (1200 to 1500 kg/ha), field tolerance to leaf rust **(Fig.1)** and also relative improvement in bean size compared to Sln.11. Thus, the focus of initial evaluation was on improvement of bean size coupled with leaf rust resistance.

Fig.1. Bush and Bearing pattern in S.4595

Field performance of S.4595 and S.4596 with respect to CWSB:

Because of the suitability of Sln.11 to hot and humid climate, the variety was recommended for cultivation in tribal holdings of Andhra Pradesh. Hence, further improved genotypes, S.4595 and S.4596 were also planted at RCRS, R.V.Nagar and subjected to systematic field evaluation especially host resistance. This is because the harsh climate (hot and humid areas) and limited interventions in respect of plant protection measures provide ideal conditions for expression

of host tolerance/resistance. Interestingly, the genotypes especially S.4595, manifested high field tolerance to leaf rust and low incidence of CWSB without any plant protection measures. In order to validate the tolerance manifestation, elite plants in F_2 were selfed and large F_2 populations were established at RCRS, RV.Nagar (2 Acres) and Technology Evaluation Centre, Minumuluru (1 Acre) during 2007. Systematic monitoring of these populations in both locations confirmed the earlier findings as field infestation of CWSB was found very low, less than 1%.

Bioassays against CWSB for assessing plant tolerance:

To validate these interesting findings, S.4595 progenies were subjected to systematic bioassays both in laboratory and field conditions, by caged release of adult beetles (mating pairs) of CWSB **(Fig. 2).** As seen from the bioassays, the resistance/tolerance response to CWSB was evident from either oviposition deterrence (avoidance of egg laying) or mortality of early instar larvae after initial feeding of bark tissues **(Fig. 3).** Further, quick callus formation was noticed at wounded region. In susceptible varieties (Catimor and S.795) used as control, larval mortality has not been observed and live larvae could be recovered. . In total, 43 F_1 plants of S.4595 and 111 F_2 plants raised from four individual F_1 plant progenies were subjected to bioassays. Interestingly, all the F_1 plants manifested tolerant reaction to CWSB and in F_2 progenies, 85.58% plants manifested tolerant reaction while 14.41% plants recorded susceptibility, confirming the heritable nature of the trait. Random screening of the F_3 progenies is also being pursued and bulk F_4 progeny established at CRSS, Chettalli **(Fig.4)** is being monitored and this progeny recorded segregation to the extent of 14-18% susceptible types. For large scale validation on expression of CWSB tolerance in different locations, bulk seed of select F_3 plants (S.5355)

Fig.2. Caged release of adult beetles on S.4595 beetles

Fig. 3. Mortality of early instar larva after initial feeding

Fig. 4. Trial plot of S.4595 (F_4 generation) at CRSS, Chettalli

has been supplied to around 70 growers since 2016-17 to validate the performance. From monitoring of different generations viz. F_1 to F_4,

it is clear that there is segregation for CWSB tolerance in different generations except in F_1 progeny. Hence, commercialization of F_1s itself may be a better strategy. Hence, large scale multiplication of select F_1s by tissue culture has been undertaken in partnership with M/s Jain Irrigation Ltd. Field trials with ~ 30,000 tissue culture plants have been established in 27 locations covering Karnataka and Tamil Nadu, during 2020. Simultaneously, in order to establish seed raised populations in a systematic manner, 14 elite plants were identified in F_2 population at RCRS, R.V. Nagar and confirmed the tolerance manifestation through bioassays. Selfed progenies of these 14 plants have been raised and field established at CCRI during 2020 season for further monitoring and exploitation as potential seed blocks.

Current line of work:

Taking into account the devastation of CWSB on arabica in recent past because of climate change and other associated problems in coffee cultivation, identification of stem borer tolerant arabica line is a significant lead accomplished by the CCRI. Hence, the future prospects and perspectives of exploiting this plant material relies on effective propagation strategy that ensures limited segregation for CWSB tolerance. As the heritability of CWSB tolerance is found high, there exists a scope for propagation by seed, though propagation of F_1s by tissue culture is the best option. The ongoing field trials with both seedling progenies and also tissue culture plants of S.4595 may provide useful information to finalize appropriate strategy for commercialization of CWSB tolerant variety.

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Coffee gets a green twist: Study says it can help boost immunity

Source: Times of India, Chennai

For those on the trail of all foods green, coffee beans are among the latest to join the mix. Made with raw and unroasted coffee beans - which is why they retain the natural green - these coffee beans are viewed as immunity boosters as they are believed to have a higher amount of chlorogenic acid.

BREWING A CUP

- Pour hot water into a cup of Gound green coffee
- You can add sugar, honey or cardamom
- Let stand for about 10 minutes and then filter the broth
- You can mix around 70% roasted and 30% unroasted green coffee beans for a cup

"The chlorogenic acid in green coffee acts as an antioxidant," says nutritionist Grace Valentina, who Publlshed a study on the 'anti-diabetic, anti-obesity antioxidant' properties of the extract in the August issue of Asian Food Science Journal.

"It works in much the similar way as green tea. Green coffee has less caffeine too as compared to regular coffee," says Valentina, who conducted experimental studies on the extract. In terms of taste, green coffee has a slightly herbal taste, similar to green tea.

"Coffee on its own is a good thing for the human body," says nutritionist Manjari Chandra. "And green coffee would be slightly more beneficial than the roasted version because its inherent goodness is not lost in the roasting. Green coffee contains more antioxidants, which help in fighting free radicals that damage the growth, development and survival of cells m the body"

Chandra adds, "But one must also be wary of marketing gimmicks surrounding green coffee. It's not a miracle food. Also, several brands come with substances added to green coffee powder, which de-natures the product"

Chennai-based pharmacologist Suresh Rathinasamy, who has been studying green coffee extracts, says green coffee keeps the polyphenols intact Polyphenols are reducing agents, and, according to research, protect tissues against oxidative stress and associated pathologies such as coronary heart disease and inflammation.

Dieticians say like with green tea. too much of it can cause insomnia or restlessness, among other caffeine-like side effects. "Just like green tea you can drink two to three cups a day of the brew," says Valentina.

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Editor-in-Chief

SEPTEMBER

South-West Monsoon Areas:

1. Planting coffee and shade trees
2. **Stem Borer:** Tracing & burning of Stem borer affected plants to be completed before end of March in the entire estate without fail. If uprooted stumps are to be retained for further use, immerse them in water for about 10 days to kill all pest stages.
3. Control measures against cockchafer, if necessary
4. Control measures against hairy caterpillars
5. Control measures against green scale, if necessary
6. **Leaf Rust**: Post-monsoon spray against leaf rust in Arabica with systemic fungicides like Triademefon @ 0.02% a.i. (Bayleton 25 WP @ 160g in 200 litres of water) or *Hexaconazole* @ 0.01% (Contaf 5% EC @ 400 ml in 200 litres of water). Tolerant Varieties like Chandragiri, Sln.6, Sln.5B can be sprayed with 0.5% Bordeaux mixture
7. **Nursery**: Spraying nursery seedlings with dithane M-45 or Ferbam at 0.4% or Foltaf at 0.3% against brown eye-spot disease
8. Post monsoon manuring
9. Regulation of dadap shade
10. Shot-hole borer tracing, removal and burning of infested twigs
11. **Berry Borer**: Control measures against berry borer. Harvesting of borer infested berries, if present and treat them with hot water. Spot spray with *Chlorpyriphos* especially in the case of Robusta.

North-East Monsoon Areas:

Same as above.

OCTOBER

South-West Monsoon Areas:

1. **Leaf Rust:** Post monsoon spraying with 0.5% *Bordeaux* mixture or 0.2% a.i of *Bayleton* 25 WP to be completed.
2. Menuring (post monsoon)
3. **Stem Borer:** Spraying / Swabbing / with *Chlorpyriphos* to protect the healthy plants, In open patches and in border areas adjoining poorly maintained estates, adopt any one the measures like scrubbing or coating with 10% lime or wrapping with woven polythene strips made from used fertilizer bags.
4. Control measures against green scale, if necessary.
5. Control measures against cockchafer, if necessary.
6. Control measures against hairy caterpillars.
7. Clean weeding in Arabica blocks.
8. Handling, centring and de-suckering, where excess vegetative growth is observed. 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.
9. Regulation of temporary shade (by lopping dadaps)
10. Cover digging in new clearings and light digging in older areas, if necessary.
11. Opening cradle pits / staggered trenches in sloppy areas.
12. Removal of hanging branches in permanent shade trees.
13. Cleaning and preparation of drying yard, pulper site and pulping equipment.
14. Removal and burning of shot-hole borer infested twigs.
15. **Berry Borer:** Harvesting of borer infested berries, if present and treat them with hot water. Installation of Broca traps. Spot spray with *Chlorpyriphos* in Robusta.
16. **Nursery work:** Erection of pendal. Spraying of nursery seedlings with *Dithane* M-45 or *Indofil* M45 at 0.4% against brown eye-spot disease.
17. **Root diseases:** Drench the soil with *Bavistin* 50 WP at 0.4% (24 g/3 lt.) or *Vitavx* 75 WP at 0.3% (12g/3 lt.) in the early wilting stage. It should be followed by application of F.Y.M. or compost @ 10 kg/plant once in 2 or 3 years.

North East Monsoon Areas:

1. Planting of coffee
2. Rest as above

NOVEMBER

South-West Monsoon Areas

1. Clean weeding in Robusta blocks.
2. Liming for correction of soil wherever necessary
3. In new clearings, cover digging during the year of planting followed by scuffling during 2nd and 3rd year
4. Control measures against hairy caterpillars.
5. Forking, mulching and hutting young plants in new clearings.
6. Winter irrigation with sprinklers in Robusta blocks, depending on rainfall conditions and availability of water.
7. Lime washing young dadap stems.
8. Commencement of Arabica harvesting and processing.
9. Removal and burning of shot-hole borer infested twigs in Robusta coffee.
10. Control measures against coffee berry borer-installation of Broca traps. Spot spray with Chlorpyriphos in Robusta.

North-East Monsoon Areas

1. Regulation of dadap shade.
2. Post-monsoon spraying with 0.5% Bordeaux mixture against leaf rust.
3. Rest as above.

August 2020

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

In this column, the extracted information from August 2020 Coffee Market Reports of ICO on global production, global prices, world consumption and global exports as well as domestic prices and exports are covered.

Global Coffee Production and Consumption

World coffee production is estimated at 169.34 million bags in 2019/20, 2.2% lower than in 2018/19. Arabica output is estimated to decrease by 5% to 95.99 million bags while Robusta output is expected to rise by 1.9% to 73.36 million bags. Production is expected to fall in all regions except for Asia & Oceania, where it is estimated to increase by 2.2% to 50.92 million bags. Africa is estimated to harvest 18.83 million bags, 0.2% less than in 2018/19. Production in Central America & Mexico is estimated to decline by 4.6% to 20.73 million bags and in South America by 4.6% to 78.87 million bags.

Viet Nam is the largest producer in Asia & Oceania and its output in 2019/20 is estimated to increase by 0.7% to 31.5 million bags. Viet Nam's harvesting ended before the start of the global pandemic and benefited from the higher yields of newer trees as well as less favourable prices for competing crops like pepper. Indonesia's production is estimated to increase by 16.5% to 11.2 million bags due to beneficial weather and firm prices for its Robusta crop. Production in the next two largest producers of the region, India and Papua New Guinea, is expected to decrease by 2.5% to 5.85 million bags and by 19.2% to 752,000 bags, respectively.

Production is expected to rise in Africa's two largest producers, Ethiopia and Uganda. Ethiopia's harvest is estimated to increase by 2.1% to 7.7 million bags due to beneficial weather and improved agricultural extension services. Output from Uganda is estimated at 4.9 million bags, 4.2% higher than last year, which is the second year of increase. Favourable weather and new trees reaching maturity have boosted yields in Uganda. However, output from Côte d'Ivoire is estimated to decrease by 10.2% to 2.2 million bags and from Tanzania by 23.4% to 900,000 bags.

Production is projected to decrease in four of the five largest producers in Central America & Mexico. Honduras' harvest is estimated to fall by 7.2% to 6.8 million bags, which is the second year of decline. Low prices and a limited labour supply have discouraged farmers from harvesting their coffee. Production in Mexico is estimated to decrease by 5.8% to 4.1 million bags, in Guatemala by 1.2% to 3.96 million bags, and in Nicaragua by 3.7% to 2.7 million bags. However, Costa Rica's harvest is estimated to increase by 5.1% to 1.5 million bags benefiting from beneficial weather and greater rainfall.

Output from Brazil, both the world's and South America's largest producer, fell by 10.9% to 58 million bags in crop year 2019/20, which ended March 2020. Brazil's Arabica output decreased by 17.4% to 37.12 million bags as it was an off-year of the biennial production cycle, but Robusta output rose by 3.4% to 20.88 million bags. The 2020/21 harvest has not been greatly affected by covid-19, with output anticipated to be similar to previous on-year crops. Colombia's production is expected to grow by 1.7% to 14.1 million bags in 2019/20.

Global coffee consumption

Global coffee consumption is estimated to rise by 0.3% to 168.39 million bags in 2019/20. The first half of the coffee year showed a strong

trend following an increase in global demand of 5% to 167.84 million bags in 2018/19. A surge in demand at the start of the global pandemic and increased at-home consumption helped to limit the fall in demand, but the latter half of the coffee year faces ongoing pressure from a global economic downturn and limited recovery in out-of-home consumption. As a result, the overall supply/demand balance is estimated as a surplus of 952,000 bags.

World Supply/Demand Balance (in thousand 60-kg bags)

Coffee Year	2015	2016	2017	2018	2019*	% change 2018/19
PRODUCTION	**157160**	**160713**	**166476**	**173096**	**169344**	**-2.20%**
Arabicas	91083	100686	97478	101085	95987	-5.00%
Robustas	66077	60027	68998	72011	73357	1.90%
Africa	15566	16539	17307	18866	18825	-0.20%
Asia & Oceania	51837	47930	52203	49806	50922	2.20%
Mexico & Central America	17106	20322	21727	21742	20733	-4.60%
South America	72651	75921	75240	82682	78865	-4.60%
CONSUMPTION	**155279**	**157970**	**159847**	**167837**	**168392**	**0.30%**
Exporting countries	47349	48334	49686	50275	50203	-0.10%
Importing countries (Coffee Years)	107930	109636	110161	117562	118189	0.50%
Africa	10739	10689	9701	11061	11135	0.70%
Asia & Oceania	32863	34395	34832	36466	36542	0.20%
Mexico & Central America	5295	5172	5252	5321	5326	0.10%
Europe	52147	52045	53199	56052	56287	0.40%
North America	28934	29559	29941	31779	31983	0.60%
South America	25299	26111	26922	27156	27120	-0.10%
BALANCE	**1881**	**2742**	**6630**	**5259**	**952**	

Prices

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

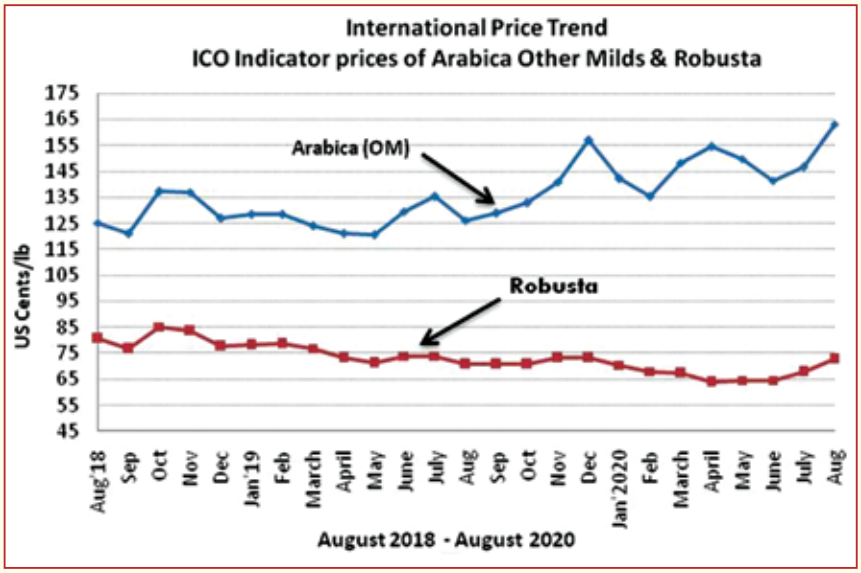
Month/	Aug'20	Aug'19	Aug'20	Aug'19	Aug'20	Aug'19	Aug'20	Aug'19	Aug'20	Aug'19
Week	**I**		**II**		**III**		**IV**		**Average**	
Plant . 'A'	---	238.00	---	233.50	---	233.00	---	235.00	**---**	**234.88**
Arb.Chy. 'AB'	---	---	154.96	---	154.00	141.00	158.26	---	**155.74**	**141.00**
Rob.Pmt. 'AB'	149.00	---	149.00	---	---	---	157.00	---	**153.00**	**---**
Rob.Chy. 'AB'	133.76	142.26	133.76	141.00	136.50	140.76	---	142.00	**135.13**	**141.51**

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

The monthly average of the ICO composite indicator rose by 10.7% to 114.78 US cents/lb in August 2020. This is an increase of 19.5% compared to August 2019 when the ICO composite indicator averaged 96.07 US cents/lb, the lowest average for August since 2006. While prices have increased, they remain low compared to the long-term average of 139.21 US cents/lb in the previous ten years. The daily composite indicator continued the upward trend at the end of July starting the month at 113.62 US cents/lb before reaching a low of 109.90 US cents/lb on 11 August. However, prices recovered over the rest of the month and reached a high of 121.31 US cents/lb on 31 August. Concerns over temporary tightness in supply, as evidenced by the lower output and exports in some countries, particularly producers of Mild Arabica, supported firm prices in August.

Prices for all group indicators rose in August 2020 for the second consecutive month. The largest increase occurred in the average price for Brazilian Naturals, which grew by 14.1% to 111.79 US cents/lb. Other Milds increased by 11.2% to 163.25 US cents/lb while Colombian Milds rose by 9% to 167.22 US cents/lb. As a result, the differential between Colombia Milds and Other Milds decreased by 39.8% to an average of 3.97 US cents/lb. The monthly average Robusta price increased by 7.4% to 72.68 US cents/lb.

Prices for all group indicators rose in July 2020. The largest increase occurred in the average price for Brazilian Naturals, which grew by 5.8% to 97.96 US cents/lb. Colombian Milds increased by 4.2% to 153.38 US cents/lb while Other Milds rose by 3.7% to 146.78 US cents/lb. As a result, the differential between Colombia Milds and Other Milds increased by 17% to an average of 6.60 US cents/lb. The monthly average Robusta price increased by 4.8% to 67.69 US cents/lb.



Exports:

In July 2020, world coffee exports fell by 11% to 10.61 million bags compared to July 2019. Shipments of Arabica fell by 7.6% to 6.65 million bags, and Robusta exports decreased by 16.1% to 3.96 million bags. Other Milds recorded the largest decrease in July, falling by 19% to 2.24 million bags. Exports of Colombian Milds fell by 1.4% to 1.21 million bags, and Brazilian Naturals declined by 0.1% to 3.2 million bags. Among the five largest exporters in July, the shipments of Colombia, Ethiopia, and Indonesia grew while those of Brazil and Viet Nam declined.

Global exports in the first ten months of coffee year 2019/20 reached 106.59 million bags, 5.3% lower than the same period in 2018/19. Shipments of Other Milds shrank by 9.7% to 21.41 million bags in October 2019 to July 2020. Colombian Milds decreased by 6.6% to 11.74 million bags while Brazilian Naturals exports fell by 5.8% to 32.54 million bags in the first ten months of the coffee year. Robusta shipments reached 40.9 million bags, 2% lower than in October 2018 to July 2019.

Indian coffee exports (01.01.2020 to 31.08.2020) 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.	26408	30876	5	7	26413	30883
2	Ar.Chy.	9128	8154	0	0	9128	8154
3	Rob.Pmt.	22508	28986	0	0	22508	28986
4	Rob.Chy.	103155	119624	0	0	103155	119624
5	Roasted Seeds	28	46	0	0	28	46
6	R&G	161	130	0	0	161	131
7	Instant	9174	14320	56919	59619	66093	73939
8	Total	170561	202137	56924	59626	227485	261763

अगस्त 2020

इस कॉलम में, घरेलू कीमतों के साथ-साथ वैश्विक उत्पादन, वैश्विक कीमतें, विश्व उपभोग तथा वैश्विक निर्यातों पर आईसीओ कॉफ़ी बाजार रिपोर्ट अगस्त 2020 की सार-सूचना शामिल हैं।

वैश्विक कॉफ़ी उत्पादन और उपभोग

वर्ष 2019/20 में विश्व कॉफ़ी का उत्पादन 169.34 मिलियन बैग्स का अनुमान लगाया है, जो 2018/19 की तुलना में 2.2% कम है। अरेबिका का उत्पादन 5% घट कर 95.99 मिलियन बैग्स होने का अनुमान लगाया है जबकि रोबस्टा का उत्पादन 1.9% बढ़कर 73.33 मिलियन बैग्स हो जाएगा। एशिया और ओशियानिया में 2.2% की वृद्धि के साथ 50.92 मिलियन बैग्स का अनुमान लगाया है। इसके अलावा, बाकी सभी प्रदेशों में उत्पादन कम होने का अनुमान है। वर्ष 2018/19 की तुलना में अफ्रीका की पैदावार 0.2% की कमी के साथ 18.83 मिलियन बैग्स होने का अनुमान है। मध्य अमेरिका एवं मैक्सिको में उत्पादन 4.6% घटकर 20.73 मिलियन बैग्स होने का अनुमान है और दक्षिण अमेरिका में 4.6% घटकर 78.87 मिलियन बैग्स होने का अनुमान है।

एशिया और ओशियानिया में वियतनाम कॉफ़ी का सबसे बड़ा उत्पादक है, वर्ष 2019/20 में इसका उत्पादन 0.7% बढ़कर 31.5 मिलियन बैग्स होने का अनुमान लगाया गया है। वियतनाम की कटाई वैश्विक महामारी के पहले समाप्त हो गई और वियतनाम को नए पेड़ों की उच्च पैदावार के साथ-साथ काली मिर्च जैसे प्रतिस्पर्धी फसलों के लिए कम अनुकूल कीमतों से लाभ हुआ। अनुकूल मौसम एवं रोबस्टा फसल की स्थिर कीमतों के कारण हैइंडोनेशिया के उत्पादन में 16.5% की वृद्धि के साथ 11.2 मिलियन बैग्स होने का अनुमान लगाया गया है। प्रदेश के अगले दो सबसे बड़े उत्पादकों यानी, भारत एवं पापुआ न्यू गिनीया में उत्पादन क्रमश: 2.5% घटकर 5.85 मिलियन बैग्स और 19.2% घटकर 752,000 बैग्स होने की उम्मीद है।

अफ्रीका के दो सबसे बड़े उत्पादकों यानी, इथियोपिया और युगांडा में उत्पादन बढ़ने की उम्मीद है। अनुकूल मौसम और बेहतर कृषि विस्तार सेवाओं के कारण इथियोपिया की फसल उत्पादन 2.1% बढ़कर 7.7 मिलियन बैग्स होने का अनुमान है। युगांडा से 4.9 मिलियन बैग्स उत्पादन का अनुमान है, जो पिछले साल की तुलना में 4.2% अधिक है और वृद्धि का दूसरा वर्ष है। अनुकूल मौसम और नए पेड़ों में कॉफ़ी फलों की परिपक्वता ने युगांडा में पैदावार को बढ़ा दिया है। हालाँकि, कोट डी'आईवायर का उत्पादन 10.2% घटकर 2.2 मिलियन बैग्स और तंजानिया का 23.4% घटकर 900,000 बैग्स होने का अनुमान लगाया गया है।

मध्य अमेरिका और मेक्सिको के पांच सबसे बड़े उत्पादकों में से चार में उत्पादन घटने का अनुमान है। होंडुरास का उत्पादन 7.2% घटकर 6.8 मिलियन बैग्स होने का अनुमान है, जो घटाव का दूसरा वर्ष है। कम कीमतें और श्रमिकों की सीमित आपूर्ति ने किसानों को कॉफ़ी के फसल कटाई से हतोत्साहित किया है। मेक्सिको में उत्पादन, 5.8% से घटकर 4.1 मिलियन बैग्स दूसरी ओर ग्वाटेमाला में 1.2% से घटकर 3.96 मिलियन बैग्स और निकारागुआ में 3.7% से घटकर 2.7 मिलियन बैग्स होने का अनुमान लगाया गया है। हालाँकि, अनुकूल मौसम और अधिक वर्षा के लाभ उठाकर कोस्टा रिका की फसल 5.1% से बढ़कर 1.5 मिलियन बैग्स तक पहुँचने का अनुमान है।

मार्च 2020 को समाप्त हुए फसल वर्ष 2019/20 में, विश्व तथा दक्षिण अमेरिका दोनों के सबसे बड़े उत्पादक ब्राजील का उत्पादन, 10.9% कम होकर 58 मिलियन बैग्स हुआ। उत्पादन का द्विवार्षिक चक्र में कम उत्पादित वर्ष होने के कारण ब्राजील में अरेबिका का उत्पादन 17.4% घटकर 37.12 मिलियन बैग्स हो गया लेकिन, रोबस्टा का उत्पादन 3.4% बढ़कर 20.88 मिलियन बैग्स हो गया। वर्ष 2020/21 की फसल कोविड-19 से ज्यादा प्रभावित नहीं हुई है, जिसका उत्पादन पिछले वर्ष के समान अधिक होने का अनुमान लगाया गया है। वर्ष 2019/20 में कोलंबिया का उत्पादन 1.7% बढ़कर 14.1 मिलियन बैग्स होने की उम्मीद है।

वैश्विक कॉफ़ी उपभोग

वर्ष 2019/20 में वैश्विक कॉफ़ी की खपत 0.3% बढ़कर 168.39 मिलियन बैग्स होने का अनुमान है। कॉफ़ी वर्ष 2018/19 की पहली छमाही में वैश्विक मांग 5% बढ़कर 167.84 मिलियन बैग्स तक पहुँचने की मजबूत प्रवृत्ति दिखाई। वैश्विक महामारी की शुरुआत में मांग में वृद्धि और घरेलू खपत में वृद्धि ने मांग की कमी को सीमित करने में मदद की, लेकिन कॉफ़ी वर्ष के उत्तरार्द्ध में वैश्विक आर्थिक मंदी और घर के बाहर की खपत परिमित होने से मांग के दबाव सामना करना पड़ रहा है। परिणामस्वरूप, समग्र आपूर्ति/मांग शेष को 952,000 बैग्स अधिशेष होने का अनुमानित किया गया है।

विश्व आपूर्ति/मांग शेष (हजार में - 60 कि.ग्रा.में)

कॉफ़ी वर्ष	2015	2016	2017	2018	2019*	2018/19 में परिवर्तन का %
उत्पादन	**157160**	**160713**	**166476**	**173096**	**169344**	**-2.20%**
अरेबिका	91083	100686	97478	101085	95987	-5.00%
रोबस्टा	66077	60027	68998	72011	73357	1.90%
अफ्रीका	15566	16539	17307	18866	18825	-0.20%
एशिया और ओशियानिया	51837	47930	52203	49806	50922	2.20%
मेक्सिको और मध्य						
अमेरिका	17106	20322	21727	21742	20733	-4.60%
दक्षिण अमेरिका	72651	75921	75240	82682	78865	-4.60%
उपभोग	**155279**	**157970**	**159847**	**167837**	**168392**	**0.30%**
निर्यातित देश	47349	48334	49686	50275	50203	-0.10%
आयातित देश (कॉफ़ी वर्ष)	107930	109636	110161	117562	118189	0.50%
अफ्रीका	10739	10689	9701	11061	11135	0.70%
एशिया और ओशियानिया	32863	34395	34832	36466	36542	0.20%
मेक्सिको और मध्य अमेरिका	5295	5172	5252	5321	5326	0.10%
यूरोप	52147	52045	53199	56052	56287	0.40%
उत्तरी अमेरिका	28934	29559	29941	31779	31983	0.60%
दक्षिण अमेरिका	25299	26111	26922	27156	27120	-0.10%
शेष	**1881**	**2742**	**6630**	**5259**	**952**	

मूल्य

घरेलू बाजार मूल्य : आईसीटीए (बेंगलूरु) साप्ताहिक नीलामी मूल्य (रु /कि.ग्रा.)

महीना/ सप्ताह	अगस्त		अगस्त		अगस्त		अगस्त		अगस्त	
	2020	2019	2020	2019	2020	2019	2020	2019	2020	2019
	I		II		III		IV		औसत	
प्लांटेशन 'ए'	--	238.00	--	233.50	--	233.00	--	235.00	--	234.88
अरे.चेरी.'एबी'	--	--	154.96	--	154.00	141.00	158.26	--	155.74	141.00
रोब.पार्च. 'एबी'	149.00	--	149.00	--	--	--	157.00	--	153.00	--
रोब.चेरी. 'एबी'	133.76	142.26	133.76	141.00	136.50	140.76	---	142.00	135.13	141.51

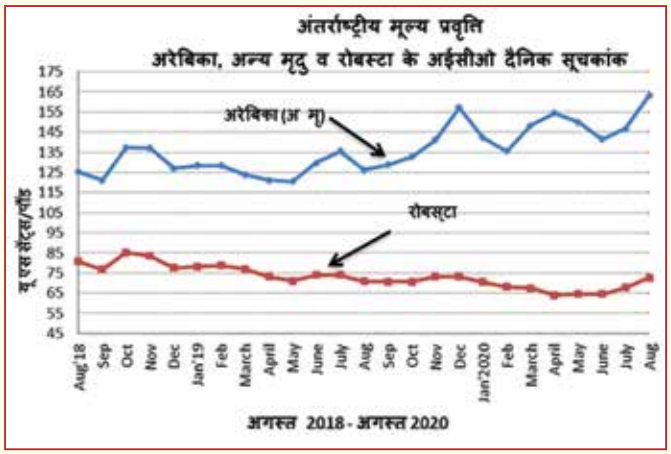
अंतर्राष्ट्रीय तत्स्थान मूल्य - अरेबिका (अन्य मृदु) तथा रोबस्टा के आई सी ओ दैनिक समूह सूचकांक

वर्ष 2006 से अगस्त महीने में जब आईसीओ समष्टिक सूचकांक 96.07 यूएस सेंट्स/पाउंड तक निम्नतम औसत में रहने के बाद, अगस्त 2020 में आईसीओ समष्टिक सूचकांक का मासिक औसत 10.7% बढ़कर 114.78 यूएस सेंट्स/पाउंड हो गया जो अगस्त 2019 की तुलना में 19.5% अधिक है। जबकि कीमतें बढ़ गई हैं, जो पिछले दस वर्षों में 139.21 यूएस सेंट्स/पाउंड के दीर्घकालिक औसत की तुलना में कम हैं। दैनिक समष्टिक सूचकांक 11 अगस्त को 109.90 यूएस सेंट्स/पाउंड के निचले स्तर तक पहुंचने से पहले जुलाई महीने की शुरुआत में 113.62 यूएस सेंट्स/पाउंड होकर महीने के अंत में बढ़ते गए। हालाँकि, शेष महीने में कीमतों में सुधार पायी और 31

अगस्त को 121.31 यूएस सेंट्स/पाउंड के उच्च स्तर पर पहुंच गईं। कुछ देशों में उत्पादन एवं निर्यात कम होने से आपूर्ति कम होने की चिंता हुई। विशेष कर, अरेबिका मृदु के उत्पादकों में, जिनको अगस्त में स्थिर कीमतों का समर्थन मिला।

लगातार दूसरे महीने के लिए अगस्त 2020 में सभी समूह सूचकांकों की कीमतें बढ़ीं। ब्राजीलियन नैचुरल्स की औसत कीमत में सबसे बड़ी वृद्धि हुई, जो 14.1% बढ़कर 111.79 यूएस सेंट्स/पाउंड हो गई। अन्य मृदु 11.2% बढ़कर 163.25 यूएस सेंट्स/पाउंड हो गया जबकि कोलंबियन मृदु 9% बढ़कर 167.22 यूएस सेंट्स/पाउंड हो गया। परिणामस्वरूप, कोलंबिया मृदु और अन्य मृदु के बीच का अंतर 39.8% घटकर 3.97 यूएस सेंट्स/पाउंड के औसत रह गया। रोबस्टा की मासिक औसत कीमत 7.4% बढ़कर 72.68 यूएस सेंट्स/पाउंड हो गई।

जुलाई 2020 में सभी समूह सूचकांकों की कीमतें बढ़ीं। सबसे बड़ी वृद्धि ब्राजीलियन नैचुरल्स के औसत कीमत में हुई, जो 5.8% बढ़कर



97.96 यूएस सेंट्स/पाउंड हो गई। कोलम्बियाई मृदु 4.2% बढ़कर 153.38 यूएस सेंट्स/पाउंड हो गया, जबकि अन्य मृदु 3.7% बढ़कर 146.78 यूएस सेंट्स/पाउंड हो गया। इसके फलस्वरुप, कोलम्बियाई मृदु और अन्य मृदु के बीच का अंतर 17% बढ़कर औसतन 6.60 यूएस सेंट्स/पाउंड हो गया। रोबस्टा की मासिक औसत कीमत 4.8% बढ़कर 67.69 यूएस सेंट्स/पाउंड हो गई।

निर्यात :

जुलाई 2019 की तुलना में जुलाई 2020 में, विश्व कॉफ़ी के निर्यात 11% घटकर 10.61 मिलियन बैग्स हो गया। अरेबिका का निर्यात 7.6% कम होकर 6.65 मिलियन बैग्स हो गया और रोबस्टा निर्यात 16.1% घटकर 3.96 मिलियन बैग्स हो गया। जुलाई में अन्य मृदु ने सबसे बड़ी कमी दर्ज की, जो 19% घटकर 2.24 मिलियन बैग्स हुई। कोलंबियाई मृदु का निर्यात 1.4% घटकर 1.21 मिलियन बैग्स हो गया और ब्राज़ीलियाई नैचुरल्स 0.1% घटकर 3.2 मिलियन बैग्स हो गया। जुलाई में पांच सबसे बड़े निर्यातकों में से कोलम्बिया, इथियोपिया और इंडोनेशिया के निर्यात में वृद्धि हुई, जबकि ब्राजील और वियतनाम में गिरावट आई।

कॉफ़ी वर्ष 2019/20 के पहले दस महीनों में वैश्विक निर्यात 106.59 मिलियन बैग्स तक पहुंच गया, जो 2018-19 के इसी अवधि की तुलना में 5.3% कम है। अक्टूबर 2019 से जुलाई 2020 तक अन्य मृदु का निर्यात 9.7% से गिरकर 21.41 मिलियन बैग्स तक हो गया। कोलम्बियाई मृदु 6.6% घटकर 11.74 मिलियन बैग्स हो गया, जबकि कॉफ़ी वर्ष के पहले दस महीनों में ब्राज़ीलियन नैचुरल्स का निर्यात 5.8% के साथ 32.54 मिलियन बैग्स तक गिर गया। अक्टूबर 2018 से जुलाई 2019 की तुलना में रोबस्टा का नौभरण 2% कम होकर 40.9 मिलियन बैग्स तक पहुँचा।

भारतीय कॉफ़ी निर्यात (01.01.2020 से 31.08.2020 तक) मे.ट. में

क्र. सं.	निर्यात	अनंतिम निर्यात		अनंतिम पुनर्निर्यात		कुल अनंतिम निर्यात	
		भारतीय कॉफ़ी	पिछले वर्ष की संगत अवधि	अनंतिम पुनर्निर्यात	पिछले वर्ष की संगत अवधि	कुल अनंतिम निर्यात	पिछले वर्ष की संगत अवधि
		1	2	3	4	(1+3)	(2+4)
1	अरे. पार्च.	26,408	30,876	5	7	26,413	30,883
2	अरे. चेरी.	9128	8154	0	0	9128	8154
3	रोब. पार्च.	22508	28,986	0	0	22508	28,986
4	रोब. चेरी.	103,155	119,624	0	0	103,155	119,624
5	भुने बीज	28	46	0	0	28	46
6	भुने व पिसे	161	130	0	0	161	131
7	इंस्टंट	9174	14320	56,919	59,619	66093	73,939
8	कुल	170,561	202,137	56,924	59,626	227,485	261,763

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

कॉफ़ी बोर्ड में हिंदी दिवस समारोह

वाणिज्य एवं उद्योग मंत्रालय, वाणिज्य विभाग के अधीन कार्यरत कॉफ़ी बोर्ड के मुख्य कार्यालय, बेंगलूरू में दिनांक 14 सितंबर 2020 को "हिंदी दिवस" मनाया गया। सर्वव्यापी महामरी कोरोना के इस संकट काल में एहतियाती उपायों जैसे सैनिटैजेशेन, सामाजिक दूरी का पालन करते हुए समारोह का आयोजन किया गया। कार्यक्रम का आरंभ दीप प्रज्वलन से हुआ।

मुख्य अतिथि के रुप में बिशप कॉटन विमेन्स क्रिश्चियन कॉलेज, बेंगलूरु के हिंदी विभागाध्यक्ष डॉ. विनय कुमार यादव को आमंत्रित किया गया था। कॉफ़ी बोर्ड के सचिव महोदय श्री एन. एन. नरेंद्रा कार्यालय के आवश्यक कार्यवश समारोह में भाग नहीं ले सकें, उनके अनुपस्थिति में संयुक्त निदेशक (प्रशासन) डॉ. तस्वीम अहमद शोईब समारोह की अध्यक्षता निभायी। सलाहकार (प्रशासन) श्री ए.पी. अनंत कुमार जी भी मंच पर उपस्थित थे।

सहायक सचिव, श्रीमती प्रेमकुमारी द्वारा प्रार्थना गीत प्रस्तुत किया गया। संयुक्त निदेशक (प्रशासन) डॉ. तस्वीम अहमद शोईब जी ने मंचासीन गणमान्यों का स्वागित किया और उन्हें पुष्पगुच्छ का सम्मान दिया। राजभाषा स्कंध के हिंदी अनुवादक श्रीमती अनुश्री पी.एस., ने सभा को मुख्य अतिथि का परिचय करवाया तथा हिंदी दिवस के अवसर पर माननीय गृह मंत्री जी के संदेश का वाचन किया। राजभाषा स्कंध के हिंदी अनुवादक, सुश्री उषा ने कार्यालय में राजभाषा हिंदी की गतिविधियों पर तैयार किया गया वार्षिक रिपोर्ट प्रस्तुत किया। सरकार के मितव्यायिता संबंधी आदेश तथा डिजिटलीकरण की नीति के अनुसरण करते हुए, इस बार राजभाषा स्कंध के गृह पत्रिका "**अंकुर**" को ई-पत्रिका के रुप में रिलीज़ किया गया। साथ ही, हिंदी भाषा के कुछ प्रमुख सूक्तियों का डिजिटल डिस्प्ले भी किया गया।

सांस्कृतिक कार्यक्रम के तौर पर बोर्ड के अधिकारी/कर्मचारियों ने समूह-गान, एकल गायन पेश किया। सितंबर 1 से 14 तक हिंदी पखवाड़े के उपलक्ष्य में बोर्ड के अधिकारियों और कर्मचारियों के लिए विविध हिंदी प्रतियोगिताओं का आयोजित किया गया था। प्रतियोगिताओं के विजेताओं को मुख्य अतिथि के कर-कमलों से पुरस्कृत किया गया और प्रतियोगिताओं में भाग लिए सभी को प्रोत्सा-हित करने हेतु सहभागिता पुरस्कार भी प्रदान किया गया। कॉफ़ी बोर्ड के मुख्य कार्यालय के अनुभागों/एककों और उप-कार्यालयों से प्राप्त राजभाषा हिंदी तिमाही प्रगति रिपोर्टों का मूल्यांकन कर उसमें सर्वोत्तम, अत्युत्तम, उत्तम राजभाषा कार्य निष्पादन के लिए मुख्य कार्यालय के तीन अनुभाग/एकक और तीन उप-कार्यालयों को "राजभाषा कीर्ति पुरस्कार" से सम्मानित किया गया। वार्षिक पत्रिका '**अंकुर**' में कॉफ़ी बोर्ड के अधिकारी/कर्मचारी और उनके परिवार के सदस्यों से

योगदान किए गए लेख, कविता, चित्रकारिता आदि के लिए उनको "स्मरण चिह्न" से सम्मानित किया गया।

मुख्य अतिथि डॉ. विनय कुमार यादव जी, अपने वक्तव्य में स्वतंत्रता संग्राम में हिंदी की भूमिका और संविधान सभा में हिंदी को राजभाषा की दर्जा दिलाने में तमिल भाषी श्री गोपाल स्वामी अय्यंगार की भूमिका का स्मरण किए। हिंदी के प्रचार-प्रसार में सभी भारतीय भाषाओं की सहयोग की आवश्यकता और सभी को अपनी मातृभाषा के महत्व को समझने पर ज़ोर दिए। अपने वक्तव्य को बहुत ही सरल, सहज, सुबोध रूप में प्रस्तुत किए।

राजभाषा स्कंध के हिंदी अनुवादक श्री सी. मादप्पा, ने धन्यवाद ज्ञापित किया। राजभाषा स्कंध के हिंदी अनुवादक श्रीमती अनुश्री पी.एस. की सुपुत्री कुमारी स्मृति एस.नायर के गिटार वादन से राष्ट्रगान प्रस्तुत किया गया। राजभाषा स्कंध के हिंदी अनुवादक सुश्री उषा ने कार्यक्रम का संचालन किया। पूरा समारोह, बोर्ड के सचिव महोदय श्री एन. एन. नरेंद्रा के मार्गदर्शन से संपन्न हुआ।

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