

The world of coffee in the Amazon





Black Gold

Leida Etelvina da Silva, Embrapa Rondônia

In a field with no end With shades of color Where white covers all Iust like the clouds: The coffee field in bloom Aromas in biomes In unparalleled beauty A Christmas-like scene A white coating Of flowers that cover the ground The soil, the stay of the harvester After the pollinizers' feast The fruit will come, which in metamorphosis Will vest itself in many colors Until it becomes black gold; As in the hands of the potter The seeds will be broken, ground To the point of powder, and will attain the world Once around the world, it will hear the cockcrow Cars that come and go It will be on all tables, from the masses to the royals Served in simple glasses, or in fine porcelain It pervades all areas, wherever they be

For in all will be present, a flavorful COFFEE!



history of coffee in Rondônia SCENARIOS Change the state, change the status

10

INTERVIEW

INCENTIVES

Rondônia, a state of opportunities

24

Coffee from

Rondônia:

specialize,

and add value

expand,

20



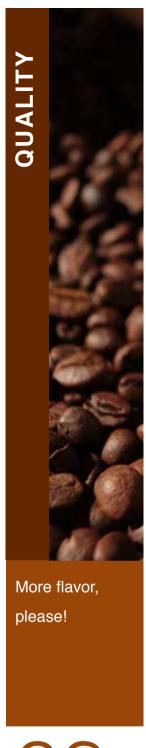
Coffee sustainability, Rondônia shows the way

28



RESEARCH Rondônia advances in coffee growing and places its bets on semimechanized harvest

46



68

38



Coffees of Rondônia Magazine

Flavor and quality from the Amazon

Embrapa Rondônia

Rodovia BR-364, Km 5,5, Zona Rural CEP: 76815-800 - Porto Velho - RO - Brazil Phone: (69) 3219-5004 sac@embrapa.br www.embrapa.br/rondonia

Director General:
Alaerto Luiz Marcolan

Deputy Head of Research and Development **Alexsandro Lara Teixeira**

Deputy Head of Technological Transfer Frederico José Evangelista Botelho

Deputy Head of Administration **Luiz Paulo Severiano Fernandes Neto**

STAFF

Editor-in-chief: **Renata Kelly da Silva** Technical editor: **Enrique Anastácio Alves**

Cover and graphic designer: Rafael Alves da Rocha

English translator: Lloyd John Friedrich Copy editor: Wilma Inês de Franca Araújo

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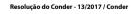




















Historical importance, new directions

Coffee growing is undoubtedly one of the main agricultural activities of Brazil and, in a certain way, represents its history. The Amazon region has always been important for the coffee crop. In fact, coffee was first planted in Brazil near Belem, Pará, at the beginning of the eighteenth century. Already at that time, coffee was a product of high commercial value in the western world. Nevertheless, commercial coffee production in the Amazon region only gained expression beginning in the 1970s, especially in the state of Rondônia, whose land was colonized by immigrants from traditional coffee producing regions, such as the states of Paraná, Minas Gerais, and Espírito Santo.

This tradition and cultural heritage of coffee has made Rondônia achieve a prominent place in Brazilian production. In recent years, coffee growing in the state has undergone positive transformations through adoption of technologies and increased efficiency. The advances made are the fruit of intense efforts of producers and support from research institutions, rural extension, and government agencies. There is still a great deal of

potential to develop and challenges to overcome.

In this context, Cafés de Rondônia (Coffees of Rondônia) magazine addresses, in this second edition, the main issues concerning coffee production and trade in the state. It presents the advances achieved, the main challenges for coffee

growing in Rondônia, governmental action, and research and rural extension strategies. A general updated profile is drawn of this production chain, gathering articles and journalistic material from institutions, companies, and agents of the coffee sector. Among them, we highlight women in the field and their fundamental role in development

Coffee is more than fieldwork. It is also science, technology, pleasure,

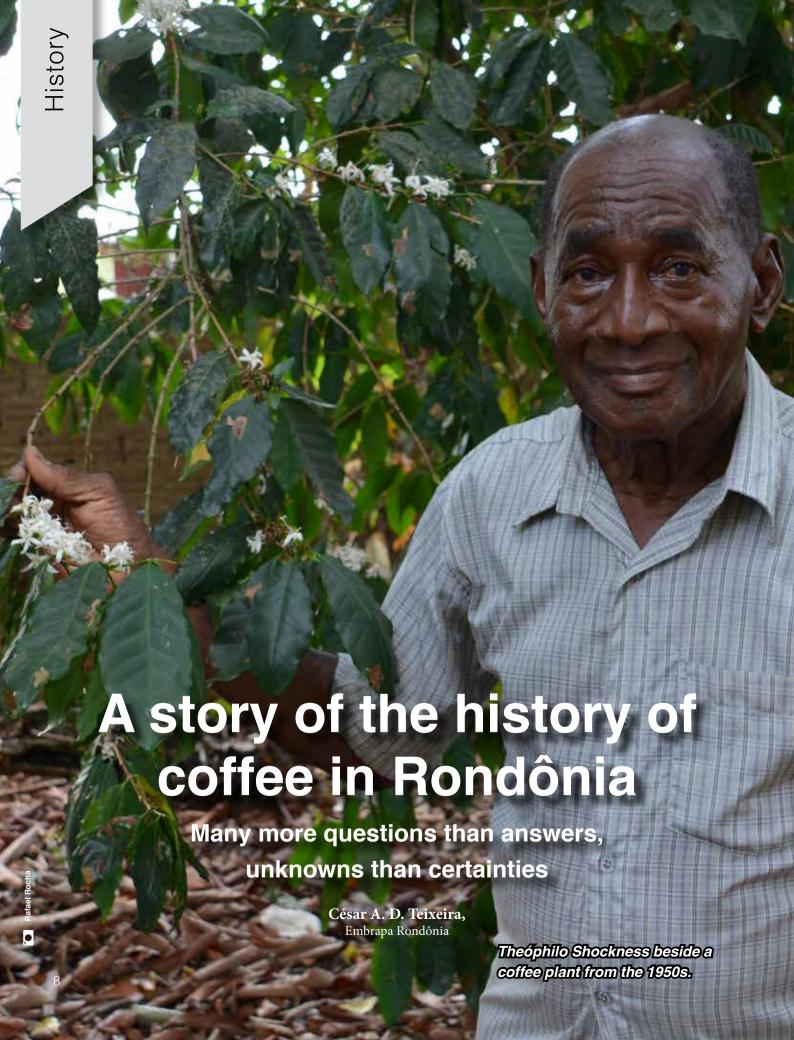
of this crop so important to farm

history, and a high dose of culture. It was no small quest to gather all these professionals and promote reflection and sharing of knowledge on what is happening in the coffee world in Rondônia. We hope that the content of this publication extends as far as the coffees produced in the state. We recommend careful reading of all the topics, preferably together with some good coffee.

families.

Alaerto Marcolan,

Director general of Embrapa Rondônia



"My parents drank coffee from plants grown here in our backyard," the elderly Teóphilo told me and added that one of the plants is still there. Thus spoken, in Rondônia in 2017, one would expect Teóphilo to be a descendent of settlers from the states of Paraná or Espirito Santo, right? At first sight, this is reasonable since, currently, their pioneering effort in establishing the first arabica and robusta coffee fields along the highway BR 364 in the 1960s to 1970s is well known.

But this appears not to be the case. After all, Teóphilo's story has nothing to do with the opening of the Brazilian national highway. He was very lucid at 84 years old in confirming to me that the plant has been in his backyard since at least the 1950s, and maybe longer. In this regard, he clarified that his parents, whose last name was Shockness, were from the island of Granada and were part of the revered group of Caribbean natives that came to Rondônia at the beginning of the twentieth century to work on building the Madeira-Mamoré Railroad (Estrada de Ferro Madeira-Mamoré - EFMM).

I went to see the plant (Figure 1), but I couldn't define if it was "arábica", "robusta" or another lesser-known species of coffee. In fact, it is a coffee plant of advanced age and significantly different from those we have in commercial coffee fields in Rondônia. I asked the venerable Teóphilo about the origin of that coffee plant. He said he wasn't sure but he thought his brother had gotten the seeds in Pará. When? He didn't know for sure. However, there are natives of Barbados that affirm that the coffee seeds were brought from the Caribbean between 1905-1912, when they came to Porto Velho.

So, it is reasonable to assume that coffee came to Rondônia well before the opening of BR-364. But, if this is true, various questions arise: Who was the first to plant coffee here? How and when did that happen? Where did the seeds come from? For answers to these questions, I sought the assistance of the historian Marco A. D. Teixeira, of the Federal University of Rondônia (Universidade Federal de Rondônia). I found that, in spite of the surprising story of the elderly Teóphilo, the literature indicates that the Barbadians, too, were not the first to grow and savor coffee from here.

First place seems to belong to other much earlier "migrants". And thus, I came upon two possibilities:

one is that slaves fled from Vila Bela da Santíssima Trindade (in what is currently the state of Mato Grosso) at the end of the eighteenth century and established *quilombos* (Brazilian hinterland settlements of mainly former slaves) in the Vale do Guaporé (currently Rondônia), and brought coffee seeds along with them. Another possibility is planned action of the Portuguese, who introduced various crops in the Vale do Guaporé, including coffee in the second half of the eighteenth century, for commercial purposes.

At any rate, the probable origin of this coffee in the Vale would be from seeds brought from Grão-Pará (now Pará) during the "agricultural reform" established as part of the extensive reforms carried out by the Portuguese crown (from 1750 to 1777) under the leadership of the Marquis of Pombal. At that time, the Portuguese strengthened their claim to various areas of the Amazon, including the region currently known as Rondônia. Within this effort, agriculture (through coffee and other products) was considered economically and militarily strategic for the Portuguese empire. This resulted in coffee being one of the items traded in that region up to part of the nineteenth century.

In a certain way, just as the Portuguese monarchy in the eighteenth century, the Brazilian republic, two centuries later, between 1960 and 1980, promoted one more plan for occupation of the Amazon. It is in this context that the opening of the BR364 allowed coffee to be "reintroduced" in lands of Rondônia. The pioneers at that time were Brazilians coming from all parts of the country, but especially from Espírito Santo, Paraná, and Minas Gerais. Here, brilliantly overcoming enormous difficulties in little more than two decades, they led Rondônia to become one of the five largest producers of coffee in Brazil.

This is a short story of the history of coffee in Rondônia. It leads us to many more questions than answers, unknowns than certainties. It shows us an Amazonian gap waiting to be filled with clear information. However, more importantly, this short history broadens the horizons of the human epic in the treatment of such a fantastic plant.

Acknowledgments:

Theóphilo Shockness, Carlos Shockness, Marco A. D. Teixeira.

Change the state, change the status

The incipient revolution in coffee growing in Rondônia directly reflects two changes in global coffee consumption: the increase in global demand for robusta coffee and appreciation for products of greater quality and of a differentiated nature at the end of the production chain

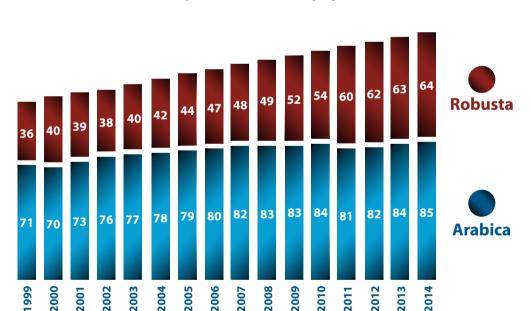
Jefferson Carvalho,
Agronomist and analyst of agricultural
markets for more than 10 years

There are those that say that in less than a decade the volume of robusta coffee consumed in the world may equal or even exceed that of arabica coffee, a statement that would be inconceivable a few short years ago.

Driven especially by the increase in coffee consumption in tea-consuming markets, worldwide demand for robusta coffee has grown more than 4% a year for some time. The advance in coffee consumption in these regions is highly based on the ease and practicality of caffeine in the instantaneous form, soluble coffee. An excellent opportunity for robusta coffee producers, an excellent opportunity for Rondônia.

The state appears to be preparing well for this possible increase in global demand for coffee. Even with sharp reduction in planted area, Rondônia exhibited recovery in total production of coffee in the past 5 or 6 years; this is from the increase in yield!

In spite of divergences among the various estimates of coffee production in the state, all sources appear to agree that coffee production in Rondônia has increased significantly from 2010 to now. The recovery of coffee growing in the state is the direct effect of new investments in technology, an increase in planting higher yielding clones, and a strong advance in mean crop yields.

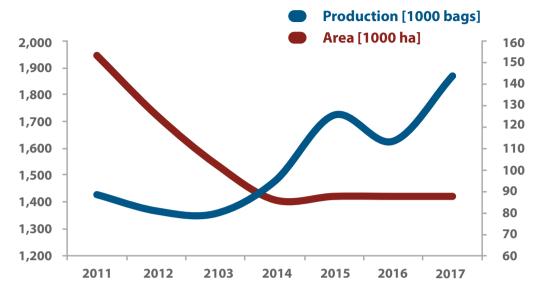


Global coffee consumption – in millions of 60-kg bags of coffee beans.

Though part of the coffee world seeks quantity, "traditional" coffee countries, notably those that import arabica coffee, have come to value quality and differentiation. Rondônia seems to be in a very good position to pick up both of these waves, those of volume produced and of added value.

Sources OIC and USDA, 2017

Harvested volume and coffee production area in Rondônia



Source Conab, 2017

Rondônia? quality? value and differentiation? in robusta? - Yes! Why not?

"100% robusta coffee produced in the Amazon biome". Yes! Even though some conservatives, at times from the excessively traditional coffee world come to turn up their noses at the idea, a portion of consumers will be greatly tempted to try a cup of this distinct product. They will probably come to try coffee from Rondônia not in search of something similar to what they have already tried, but precisely for the chance of trying something really different from everything they have already tried. If this cup comes along with quality, marketing, certificates of sustainability, and some stories, better yet.

But, will they really pay for quality? in robusta?

The question is not if this will happen – because it is already happening! Some robusta producers who have worked toward quality have already received more for it. It is noteworthy that at the same time that coffee growers aim at increasing yield, using healthier and higher yielding clones, interest in offering a better quality coffee begins to appear.

The state still faces many challenges; however, on some properties, it is already possible to find significant advances in drying processes, semi-mechanized harvest (reducing costs and providing greater uniformity in maturation of coffee beans), and even suspended drying patios, all for the purpose of improving the

quality of robusta coffee, offering the best possible product to the consumer and, obviously, increasing the profitability of the activity.

The coffee world has truly changed more rapidly than it seems, and there also seems to be room for a product different from the traditional classifications of what has come to be known as "premium coffee" or a coffee that theoretically should provide better remuneration to the producer.

The fact is, just as for many other markets, the one who establishes the price of coffee is the buyer and not the seller. There is the saying: "It's not what you want to sell, but rather what they want to buy." If there are buyers willing to pay more for a differentiated product from the Amazon, it shouldn't be such a surprise at this stage of the game.

The work developed in Rondônia is not for provocation or any kind of threat to the arabica world. On the contrary, it simply reflects a little more clearly the long awaited "decommoditization" of commodity coffee. The consumer is ever more open to trying new and differentiated products, whether this be fine blends with high scoring arabica coffees or robusta beans from Rondônia handled with a great deal of care in suspended patios.

If these opportunities are taken advantage of, the whole production chain should benefit from this strong wave of appreciation of "new coffees". After all, in spite of the excitement of creating 100% robusta coffee products, the main focus of coffee growers in Rondônia at this time still seems to be on increasing yield and offering a better quality coffee for possible blends with arabica, which, in theory, benefits the whole coffee chain, from production to consumption.

In addition, the opening of new markets, especially Asia, based on soluble instant coffee inevitably promotes future growth in consumption of arabica coffee. The expectation is for a movement similar to that seen in the middle of the 1960s and 1970s in what has now come to be one of the most sophisticated coffee markets in the world, Japan.

Opportunity and responsibility

In addition to the work on yield and quality that has been developed by producers together with Embrapa and Emater, RO, and other governmental institutions, the marketing opportunity that "Coffee from the Amazon" can present is undeniable.

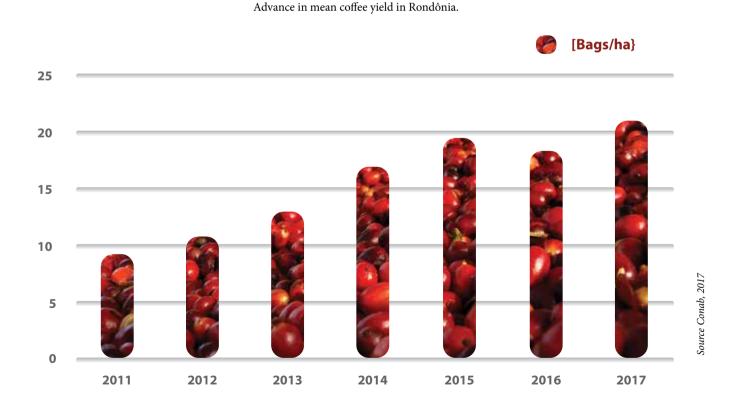
This opportunity also entails great responsibility. Care concerning sustainability in producing coffee in a biome of such importance to the world as the Amazon would be key to success in local coffee growing. There is no room for slip-ups or recklessness. Current efforts at increasing yield must be carried out in a responsible manner.

In spite of the excitement, the revolution in Rondônia is still a very incipient endeavor. There is still much to be done!

In spite of advances, mean yield for the state is still low for robusta coffee, a little more than 21 60-kg bags/ha, according to Conab. However, in 2011, this yield was 9.3 60-kg bags/ha; in other words, yield more than doubled in 6 years. Yet, there is truly still much to be done in this regard.

To make advances in the quality of coffee harvested in Rondônia, the opportunities and challenges for improvement are even greater. However, a significant number of coffee growers have been highly receptive to the innovation and the increase in knowledge and research necessary for the detailed work of coffee post-harvest. There is enormous potential, as well as challenges in implementing all this.

In fact, a promising window of opportunity seems to be opening for Rondônia, and the state is beginning to prepare well to continue to supply the Brazilian market and to try to increase exports. A new market is opening, both in volume and in quality and differentiation. Time to get to work!

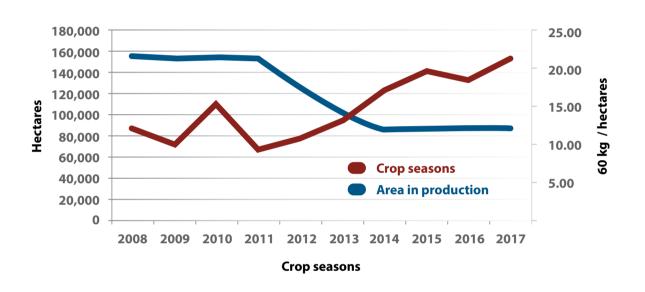




reduction in planted area, which, as a rule, was replaced by pasture. Nevertheless, in the last five years, replacing old plants with clonal varieties, even in a partial manner, has led to a significant increase in average yield per hectare, passing from little more than 9 bags of hulled coffee per hectare in 2011 to more than 20 bags in the 2017 crop season, according to data from Conab (2017).

Evolution of area in production and of coffee yield in the last ten years.

Source: Conab, 2017



The history of coffee growing in Rondônia dates back to the mid-1970s, marking the beginning of

area peaked at about 200 thousand hectares. Price instability, together with low yield, contributed to

colonization of the state. Over these years, coffee growing has passed through diverse cycles, and planted

Given the highly dynamic production scenario, as has been the case in coffee production in Rondônia, awareness of production costs constitutes an important factor in assessing the competitiveness of the activity, allowing the producer to make more rational decisions and to increase the effectiveness of the production process.

To assess the profitability of coffee growing in Rondônia, Embrapa Rondônia, in partnership with Emater - RO and coffee producers of the microregion of Cacoal, carried out a survey of crop production costs on a 5-hectare property with a good level of technology, the use of clones, pruning management, fertilization, plant health measures, and crop irrigation.

The economic performance achieved from growing canephora coffee (also known as "conilon" or "robusta") on the property that was the object of the study proved to be positive. The average net annual profit was nearly R\$ 7 thousand per month, approximately seven minimum monthly salaries (as

established by the Brazilian government)¹ (Table 1). This remuneration was calculated based on years of full crop production, from the third to the eleventh year after planting.

Table 1. Economic performance of the 5-hectare coffee crop in Rondônia, 2017.

Item	R\$
Total cost per 60-kg bag of hulled coffee	180,15
Profit per 60-kg bag of hulled coffee	204,85*
Net annual profit of the activity on 5 ha	81.940,94
Monthly net profit of the activity on 5 ha	6.828,41
Net monthly profit of the activity (5 ha) in minimum salaries	7,29

Note: * Average price paid to the producer in June 2017: R\$ 385.00/bag (EMATER, 2017)

Considering a price paid to the producer of R\$ 385.00 for a bag of hulled coffee, profit per bag will be R\$ 204.85; thus, net annual profit from coffee growing in a typical 5 ha module is R\$ 81,940.94.

This value was obtained from data surveys with producers, and gathering prices of inputs and services from local businesses. Production costs of canephora coffee were then possible to calculate considering the technological level with a goal of average yield of 80 60-kg bags of hulled coffee per hectare, for a total cost of R\$ 180.15/bag. Included in this cost are all expenses on inputs, labor, and processing the crop. The fixed costs of production were also considered, such as depreciation, return on capital, and land cost.

The cost of establishing the crop, maintenance, and production of coffee is shown in Table 2. In this system, the cost of establishing the crop on one hectare was estimated at R\$18,527.81 (year 0), and expenditures on an irrigation system, fertilizers, and seedlings represented 35%, 14.32%, and 13.74% of the total cost, respectively. The use of fertilizers with macronutrients is intensified in year I and represents up to 35% of total cost. At this technological level for year I, the producer performs the first harvest, called culling, which will produce about 35 bag/ha, generating a positive net income.

In year II, the producer will have the first production harvest (60 bag/ha) and stabilization of the fertilization level. In that year, combined expenses on harvest and hulling/storage of production represent about 40% of the total cost.

From year III to year XI, called the productive period, production costs are considered stable, and average yield, estimated at 80 bag/ha, is higher than that observed in the state (22 bag/ha). In these years, in addition to routine activities, pruning and thinning of excess branches, two drastic prunings for renewal of the coffee field in the period are considered, which is highly important to maintain crop yield. For that

reason, in these years, there will be intensified use of labor in the pre-harvest phase, representing a little more than 12% of the total cost.

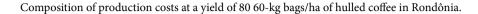
It is important to emphasize that labor taxes and contributions were not considered in the labor costs in this study because the producers that served as a reference do not make this payment. In a production system published by Embrapa in 2012, the value of taxes and contributions on temporary labor was estimated at 33.033%. This type of labor is commonly used in coffee growing, especially in the harvest period. Thus, applying this percentage to the cost of labor considered in the case analyzed, there would be an increase of 10% in the costs of a bag of hulled coffee, which would raise this cost to R\$ 198.16, reducing profit per bag to R\$ 186.84.

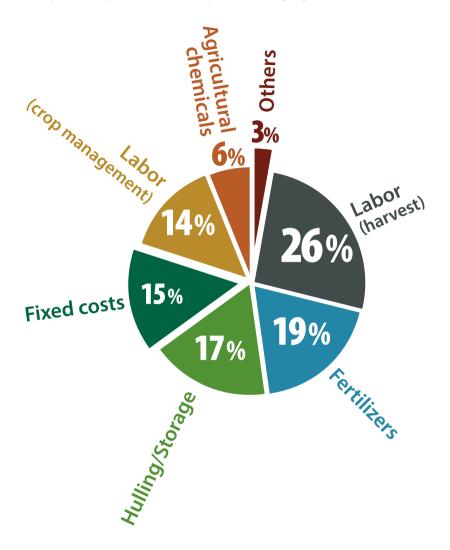
Table 2. Cost per hectare for establishing the crop, maintenance, and production of conilon coffee in the microregion of Cacoal - Rondônia, 2017

COST	YEAR	YEAR 0		YEAR I		YEAR II		YEAR III - XI	
COMPONENTS	(R\$/ha)	(Bag/ha)	(R\$/ha)	(Bag/ha)	(R\$/ha)	(Bag/ha)	(R\$/ha)	(Bag/ha	
1. EXPENDITURES ON INPUTS	R\$ 5,822.18	15.1	R\$ 4,592.41	11.9	R\$ 3,609.67	9.4	R\$ 3,609.67	9.4	
Clones	R\$ 2,545.45	6.6	-	-	-	-	-	-	
Coffee clones	R\$ 2,458.68	6.4	-	-	-	-	-	-	
Transport of clones	R\$ 86.78	0.2	-	-	-	-	-	-	
Fertilizers	R\$ 2,653.86	6.9	R\$ 3,564.19	9.3	R\$ 2,733.70	7.1	R\$ 2,733.70	7.1	
Organic fertillizer	R\$ 1,041.32	2.7	-	-	-	-	-	-	
Macronutrient	R\$ 1,612.53	4.2	R\$ 3,564.19	9.3	R\$ 2,733.70	7.1	R\$ 2,733.70	7.1	
Agricultural chemicals	R\$ 622.87	1.6	R\$ 1,028.23	2.7	R\$ 875.97	2.3	R\$ 875.97	2.3	
Fungicide	-	-	R\$ 285.73	0.7	R\$ 285.73	0.7	R\$ 285.73	0.7	
Herbicide	R\$ 622.87	1.6	R\$ 456.77	1.2	R\$ 304.51	0.8	R\$ 304.51	0.8	
Insecticide	-	-	R\$ 285.73	0.7	R\$ 285.73	0.7	R\$ 285.73	0.7	
2. OTHER CROP EXPENSES	R\$ 4,014.26	10.4	R\$ 1,991.01	5.2	R\$ 3,557.53	9.2	R\$ 5,765.58	15.0	
Labor	R\$ 1,859.50	4.8	R\$ 685.95	1.8	R\$ 512.40	1.3	\$ 1,781.20	4.6	
Pre-planting management	R\$ 1,092.57	2.8	-	-	-	-	-	-	
Planting	R\$ 595.04	1.5	-	-	-	-	-	-	
Spray applications	R\$ 467.15	1.2	R\$ 266.94	0.7	R\$ 177.96	0.5	R\$ 177.96	0.5	
Harvest	-	-	R\$ 1,038.11	2.7	R\$ 2,867.17	7.4	R\$ 3,806.41	9.9	
A - OPERATING COSTS (1 + 2)	R\$ 9,836.44	25.5	R\$ 6,583.42	17.1	R\$ 7,167.19	18.6	R\$ 9,375.24	24.4	
3 – OTHER EXPENSES	R\$ 6,462.83	16.8	R\$ 1,461.04	3.8	R\$ 2,208.56	5.7	R\$ 2,811.04	7.3	
Irrigation system	R\$ 6,462.83	16.8	-	-	-	-	-	-	
Hulling/storage	-	-	R\$ 1,050.00	2.7	R\$ 1,797.52	4.7	R\$ 2,400.00	6.2	
Administrative expenses	-	-	R\$ 411.04	1.1	R\$ 411.04	1.1	R\$ 411.04	1.1	
3 - VARIABLE COSTS (1 + 2 + 3)	R\$ 16,299.27	42.3	R\$ 8,044.46	20.9	R\$ 9,375.76	24.4	R\$ 12,186.28	31.7	
Depreciations	R\$ 843.91	2.2							
Insurance on fixed capital	R\$ 640.82	1.7	R\$ 470.30	1.2	R\$ 505.33	1.3	R\$ 637.81	1.7	
Land cost	R\$ 743.80	1.9							
- FIXED COSTS	R\$ 2,228.54	5.8	R\$ 2,058.02	5.3	R\$ 2,093.04	5.4	R\$ 2,225.53	5.8	
TOTAL COST (B+C)	R\$ 18,527.81	48.1	R\$ 10,102.48	26.2	R\$ 11,468.80	29.8	R\$ 14,411.81	37.4	

Note: Average yield estimated in year III - XI: 80 bag/ha; Price paid to producer: R\$ 385.00 (EMATER, 2107). Source: research data.

Labor expenses in growing the crop and in harvest are responsible for 40% of total costs. Fertilizer expenses are the second highest item in cost composition (19%), followed by hulling/storage of the crop produced (17%).





It should be noted that changes in yield, cost of inputs, labor, and other production factors determined for this study may change production costs. Another noteworthy aspect is that permanent crops require even more attention because the time of return on investment is longer. This increases the risks, because domestic and international scenarios may change, making the activity unprofitable in a certain period. This is especially true for coffee, which is one of the main worldwide agricultural commodities, and its prices are subject to the oscillations and speculations of the commodities markets.

It is important that the coffee grower know the costs involved. For that reason, he/she needs to make all the calculations to minimize losses, that is, to produce more from less, since coffee market prices are not directly in his/her hands.

Rondônia, a state of opportunities



Enrique Alves and Renata Silva, Embrapa Rondônia

From the town of Presidente Epitácio, SP, Basílio Leandro de Oliveira came to Rondônia in 1989. With a degree in Information Systems from the Federal University of Rondônia and graduate studies in Public Administration from the College of Education of Lapa, he has already served in various management positions. He was head of the colleges Uniron and Unijipa, Assistant Chief of Staff and State Tourism Director, and currently is head of the State of Rondônia Development Bureau (Superintendência do Desenvolvimento do Estado de Rondônia - Suder). In an interview with the magazine Cafés de Rondônia (CR), Basílio Oliveira highlights the potential of the state and governmental actions that spur development of agribusiness and coffee growing.

CR – What is your relationship with the State of Rondônia and when did your work as the head of the State of Rondônia Development Bureau (Suder) begin?

Basílio Oliveira - I have a father-son relationship with the State of Rondônia. I feel that I am a son of this land of blessing that I chose to live in nearly thirty years ago. I'm used to kidding those who were born in the state saying that I feel more Rondoniano than they do because I'm here because I chose to be here. I began work in Suder in January 2016, but I have been with the governor Confúcio Moura since Jan. 1, 2011, when he came into office.

CR – What is the role and the work philosophy of Suder?

Basílio Oliveira – Suder is active in numerous areas since it is responsible for all the property and assets of the state. It is responsible for rural and urban land title regularization; the Banco do Povo is also linked to Suder, just as the Port Authority (Sociedade de Portos e Hidrovias - SOPH) and the Board of Trade (Junta Comercial - JUCER). The industrial district is also under our responsibility, as well as the program for attracting investments to the state. Especially important is the work we do in supporting industries in

Rondônia and the effort to attract new manufacturers. mainly for agribusiness, which is our vocation. Suder still has the State of Rondônia Development Council (Conselho de Desenvolvimento do Estado de Rondônia - CONDER). which is responsible for granting or removing tax incentives. This council is also the administrator of the State of Rondônia Industrial Investment and Development Fund (Fundo de Investimento e de Desenvolvimento Industrial do Estado de Rondônia - FIDER), which promotes industrial development of the state. Our work philosophy is not to obstruct the businessperson in his/her business activity and to support business at least to ensure the equality of our companies in competing on a Brazilian and international level.

CR – Why is Rondônia a state of opportunities?

Basílio Oliveira – This is more than a maxim or slogan; this assertion translates the condition the state of Rondônia is passing through. In addition to much higher growth than the average of the other states (4.7% in 2016 and 3.8% in the first semester of 2017), Rondônia offers juridical security to its investors. The state is under a plan until

2030 through an instrument called the Sustainable State Development Plan (PDES -Plano de Desenvolvimento Estadual Sustentável). This Plan was written into law and ensures that the development that is being constructed with the business sector and society as a whole is not held hostage to political interests. Whatever governor is elected in 2018, to modify the path of development of the state, he/she will have to undertake public hearings to ratify these intentions and have them approved by the legislature. Indeed, it is important to highlight the harmony between the Executive and Legislative Branches, who have provided the opportunity to bring about important development projects. Thanks to the synergy of the governor Confúcio Moura, the head of the legislative assembly Maurão de Carvalho, and other representatives, we can be proud of a state that grows and honors its commitments, even in the face of a domestic crisis.

CR – Rondônia is in a region that holds the largest arable agricultural area still available in the world and contains a consumer market of more than 14 million inhabitants. This is apparently a large responsibility. What is the strategy in the state, through

Suder, for consolidation of sustainable agriculture in the midst of so much demand?

Basílio Oliveira - We have acted to bring technology and good production practices to producers, especially to small ones. We believe this is the most feasible route because we can no longer clear forests, yet we have to continue growing and increasing our production. Regularization of land titles, recovery of degraded areas, and production technologies are frequently discussed agendas; we have worked hard to undertake action in these directions. When I say we prioritize small producers, this is the fruit of policies instituted by the governor Confúcio Moura, because large producers do not need as much government support. In addition, the state of Rondônia has 245 thousand rural properties, and most of them are small properties. Thus, public policies of the state are directed toward this public.

CR – What are the main challenges you see in developing coffee growing in Rondônia? What are Suder's strategies in this respect?

Basílio Oliveira – Our first challenge is an increase in yield together with an increase in quality. We have already taken an important step through development of a high-yielding variety with excellent flavor,

which is BRS Ouro Preto. This variety was developed by Embrapa Rondônia, with support from Emater and other state agencies. We started at the level of 900 thousand bags, we have come up to nearly two million bags, and we are working to double that number. In 2016, we acquired three million coffee clone plantlets to replace low yield crops with better quality and higher yielding genetic material, with resources from Suder and Seagri. In 2017,

in a short time, we will announce our fertilizer industry.

we approved the purchase of another three million plantlets with resources from Suder alone. It is important to highlight that this program aims at strengthening family farmers and has the goal of strengthening the coffee industry in Rondônia. We have until now produced a *canephora* coffee only for blends. Now we will produce a gourmet coffee of exceptional flavor.

CR – Suder has sought to establish international

partnerships; what has been accomplished in this respect?

Basílio Oliveira - Our main focus of activity is the fishing trade and we have already been able to place our tambaqui (pacu) in Peruvian markets. In addition, we have interest formally expressed by Nigeria, Namibia, and Zimbabwe. We have conducted rounds of business talks bringing Bolivian business leaders to get to know the main industries of Rondônia, focusing on the food trade. We have been successful in this sector. The Rondônia Rural Show has been a very effective tool in publicizing and promoting the state of Rondônia. The Lieutenant Governor Daniel Pereira and the Secretary of Agriculture Evandro Padovani are ambassadors of the state of Rondônia and have gone with me on these trade missions and are also responsible for the great advance of our state.

CR – What has Suder done to carry coffees from Rondônia to other states and countries?

Basílio Oliveira -

Promotional work. We have attended Brazilian and international trade fairs showing what good things we have to offer. Coffee will always have a prominent place. We have quality, quantity, and the will to show our product and sell it well.

CR – Rondônia has established itself as the "entryway" of regional integration of access to Asian countries, the main logistical wager of agribusiness in Brazil. How might this affect the export potential of coffees from Rondônia?

Basílio Oliveira - I see this as a competitive advantage we have but do not use very much. This scenario is gradually changing. In the second week of July, we shipped the first load of soybean from Bolivia through the Port of Porto Velho (Soph). This is a sign of regional integration because it will allow us to work on return freight to Bolivia selling food or fertilizers. Actually, speaking of fertilizers, in a short time, we will announce our fertilizer industry.

CR - Rondônia is the fifth largest coffee producer in Brazil and the second in the canephora species - conilon and robusta - occupying a prominent position in the Brazilian scene. However, there are no coffee processing industries in the state - part of the coffee produced in Rondônia goes to other states for processing and ends up returning for local sale. Does the government have plans in place to encourage establishment of industries for transforming coffee in Rondônia?



Basílio Oliveira - We are sure that with this new clonal variety that is being disseminated in the state by means of public policies focused on this, industry will grow stronger as a natural consequence. Along with that, we have quite attractive tax incentive policies, with reduction of up to 85% of the ICMS (state tax on circulation of goods and services), as well as naturally being exempt from federal taxes since we are part of the Amazon administrative region (Amazônia Legal).

CR – Most consumers have preferences in choosing a product. And you, do you drink coffee? What guides your choice?

Basílio Oliveira - I love coffee, and I am truly surprised by the gourmet coffee produced in Rondônia. It is easy to sell a good product and that's why I believe our coffee will quickly occupy a prominent place in shelves throughout Brazil. To say that Columbian coffee is the best in the world is like saying team A, B, or C (in soccer) is the best. By that I mean that quality is dynamic, it changes constantly, and, at this time, we have coffee with potential to compete for a podium position in Brazil and in the world. Ah! My choice is always for coffee with a great deal of flavor, and that's why our coffee from Rondônia is my favorite.





Rondônia has consolidated its position as the largest coffee producer in the North region of Brazil, the fifth largest in Brazil, and the second largest for the canephora species ("conilon" and "robusta"). The government of Rondônia, through the State Department of Agriculture (Secretaria de Estado da Agricultura – Seagri), has made investments in the "Plant More" program, instituted in December 2016 to strengthen family agriculture, with the aim of leveraging and increasing the yield of coffee fields.

As part of the Program, 65 thousand metric tons of limestone and more than 3 million coffee clone plantlets were acquired for distribution by the end of 2017. All the plantlets acquired and distributed by the state government have followed the directives of government ordinance number 558 of Idaron (Agricultural Protection Agency) of Jan. 8, 2016, which establishes health standards in production of seeds, seedlings, propagative materials, and nursery certification. Plant nursery operators were also trained and qualified for direct participation in the sale of seedlings to public institutions.

In addition to investments in seedlings and limestone, various field days are being carried out through the intermediation of Seagri, in partnership with Embrapa Rondônia and Emater-RO, for the purpose of presenting producers with the best practices of planting and managing the coffee crop. "I did everything I could to be here today. After I got here, and I saw this crop, I really got excited. I'm going to go back home fired up to work more to make my crop produce this way," said Abílio Gaudêncio, a farmer from the municipality of Vilhena, upon attending a technical training interchange in good management practices for the coffee crop in the municipality of Alvorada d'Oeste.

Sharing knowledge and experience, whether through field days or technical visits, is fundamental for coffee producers. "The aim of these activities is to strengthen coffee growing in Rondonia, making it easier for producers to have access to quality genetic material and promoting the knowledge necessary for adopting technologies and good practices that will make coffee growing in the state achieve a new level," states the head of Seagri, Evandro Padovani.

The "Plante Mais" Program

The purpose of the state "Plante Mais" (Plant More)
Program is to distribute quality seeds, plantlets, and
propagative material to family producers in the state and
foster the development of agriculture. Administration,
organization, and execution of the program are
under the responsibility of the State Department of
Agriculture.

To be a direct beneficiary of the "Plante Mais" program, the producer needs to meet the following requirements: utilize a plot of land under the condition of owner, settler, landholder, tenant, partner, or sharecropper; not hold any title to an area greater than four specified standard land units (módulos fiscais); utilize predominantly family labor in the economic activities of the establishment or undertaking; have family income originating mainly from economic activities linked to the establishment or undertaking itself proven, through presentation of tax receipts; and have the Declaration of Qualification in the National Program for Promotion of Family Agriculture – DAP.







Sustainability in coffee growing is a worldwide demand, and in Rondônia, this matter has been addressed in a very serious way; 2970 producers have already been assisted by Emater-RO, adopting some practices recommended by the Coffee Sustainability Curriculum (CSC) of the Global Coffee Platform (GCP). The content of the CSC indicates what the coffee producer should do to make his/her property sustainable.

Producing coffee in Rondônia carries the responsibility of adopting sustainable strategies with a view toward the need to preserve the Amazon biome. For that reason, new areas are not being opened but, rather, coffee growing is being introduced in areas already under human use, mostly in degraded pasture areas, even as a way to recover them.

Among the range of practices foreseen in the CSC, the 150 rural extension agents of Emater-RO who attended the "Trainer Trainings" of the GCP have dedicated their orientation mainly to care in establishing the canephora ("conilon" and "robusta") coffee crop, respecting the minimum number of clones, preparing well the plant hole, using soil acidity correction and fertilization based on soil analyses, calculating the need for irrigation water in an efficient and rational manner, and always following legislation.

Controlling production costs in this activity was one of the first practices adopted on the model properties assisted by Emater-RO. Another initiative that is already being put in practice on various properties is weed management between the coffee rows by maintaining soil cover or planting brachiaria grass for the same purpose. Some benefits of these techniques are assistance in protection from erosion, conservation of moisture, and recycling of nutrients. Notably, there is a need for studies on intercropping coffee with Brachiaria brizantha, the main grass species used in the state. This forage grass has rapid development and good biomass production; however, it is aggressive and requires a great deal of labor to manage it between the rows in the coffee field.

After having inserted orientation on sustainability in the routine of Rural Extension and Technical Assistance (Assistência Técnica e Extensão Rural - ATER) for coffee producers, the state has sought strategies to publicize and value the efforts of producers that have adopted the recommended practices. Thus, the sustainability category was inserted in the Coffee Quality and Sustainability Contest (Concafé) of Rondônia, an innovation that will serve as an example for other states. Partnership with the Brazil Coffee Export Council (Conselho dos Exportadores de Café do Brasil -Cecafé) advances with training of coffee growers in the "Informed Producer" course, which involves classes in information technology and sustainability. By the end of 2017, around 260 coffee growers from

20 municipalities in Rondônia benefitted from this course.

Collective Technical Assistance Model for Rondônia

One of the bottlenecks in developing coffee growing is limitation in the public ATER service. In Rondônia, for example, little more than 50% of the coffee growers are directly assisted by Emater-RO. Therefore, alternatives for expanding the reach of the technical assistance service in an efficient manner is a goal of the state government.

In this context, Rondônia relies on the Collective Technical Assistance Model (Modelo de Assistência Técnica Coletiva – MATC), developed by the Hanns Neumann Association of Brazil. The state is a pioneer in working with this methodology in a public ATER entity. Results of this program indicate that the method increases the efficiency and effectiveness of the service provided and the use of public resources, proving to be one more strategy on the way toward sustainability in coffee growing.

MATC stands out as an alternative for expanding and refining technical assistance services. After getting to know the method, which is being spread throughout Brazil by the Global Coffee Platform, Emater-RO signed a Technical Cooperation Agreement with the Hanns Neumann Association and is working with a pilot project in Rondônia, including the municipalities of Alto Alegre dos Parecis, Alvorada d' Oeste, and Cacoal.

In the traditional ATER service, Emater-RO assists 105 farm families per technician in a broad way in various activities. In MATC, each technician assists 210 specific families in coffee growing. Another notable aspect is that the conventional system averages 3 assistance calls per family/year, whereas in the MATC, there are 11 assistance calls per family/year. The MATC makes it possible to expand capacity to assist producers using the same current team of extension agents.

The Global Coffee Platform: a new era of sustainability for the coffee sector

Annette Pensel,

Global Coffee Platform

This is a new international platform of sustainability that aligns the activities of a broad network of members and partners to create a prosperous and sustainable coffee sector, fulfilling the global commitments assumed through Vision 2030 and in alignment with the Sustainable Development Goals of the United Nations (UN).

The GCP acts as a bottom-up approach, joining public and private agents in creating a common vision of the most critical challenges of sustainability in producer countries and sending these national priorities to create a global agenda. The GCP offers all agents of the coffee sector, large and small, the opportunity for involvement in this global agenda. Upon dealing with the most pressing challenges, we have the goal of improving the effectiveness of sustainability programs and contributing to a greater impact on developing coffee producer communities and on preservation of the natural resources of coffee production areas throughout the world.

In Brazil, the Platform supports the spread and application of the Coffee Sustainability Curriculum (CSC) created by and for the coffee production chain in the country, and of its 18 Fundamental Items, which create a reference for sustainable coffee production. Partnership and continual collaboration are basic pillars of our work, and the Extension Services, here highlighting Emater-RO, contribute greatly to sustainability of the small producer, the focus of GCP work.

Brazil is a world reference among the programs of the Platform in eight producer countries (Colombia, Vietnam, Indonesia, Tanzania, Uganda, Honduras, and Peru), and the state of Rondônia is a point of pride for the GCP in the way it is advancing in production combined with sustainability.

Global Coffee Platform:

http://www.globalcoffeeplatform.org/pt/









From the advent of the Green Revolution, the expansion of agriculture, and growth in the use of agricultural pesticides throughout the world, raising grain production to more than 200 million tons in Brazil alone, the already recognized problems caused to human health by some agricultural chemicals generate a dialectic that continually increases the demand for organic food and beverages. Coffee is one of these beverages.

In spite of being the beverage most consumed in the world after water, coffee still has a small share in markets directed toward organic products. And that share is nearly completely occupied by arabica coffee varieties. Rondônia, a state that produces preeminently robusta coffee, can have a greater share in this segment through cooperatives.

Rondônia, within the Amazon biome, has soil and climate conditions favorable to growing robusta coffees, and has a unique opportunity to take its place in the organic coffee market.

There is currently a wide variety of coffee production systems in the state. In addition to conventional systems, areas of coffee intercropped with trees, organic systems, and agroforest systems can be found. However, it is in the north of the state that the greatest number of coffee fields with a profile for organic coffee production can be found. The region includes many areas planted with coffee seeds of robusta and conilon coffee hybrids in which agricultural chemicals are practically not used, or are used on a low scale. Although this production has a nearly organic profile and is from family-based coffee growers, its introduction in sales of differentiated coffee, in market niches, is incipient. This occurs because of the low level of technology and of producers' knowledge regarding management of coffee fields with technologies for fertilization and pest and disease control. Yield is consequently limited, which, together with high costs of certification, often ends up making projects for organic coffee production in Rondônia unfeasible.

The "Amazon" name can be better utilized by coffee producers in Rondônia within a commercial strategy. Since it is within this biome, coffee growing in Rondônia should not evade this debate. Coffee growing must be taken on as a means of preserving the forest through allowing high yield per area, and the producer will not have the need to seek to open new lands to ensure economic



sustenance. Moreover, coffee growing, when managed correctly, leads to good soil cover and protection, nutrient cycling, and carbon capture. Since it is a perennial crop, it is closely related to macro- and microfauna, creating environments favorable to conservation of birds, small mammals, and insects. There are even coffees that have become famous and are highly appreciated and valued in the market through having passed through the digestive tract of wild animals.

This interaction between the Amazon environment, conscientious management, and sustainable production with the coffee genetic material adapted to the region has generated coffees with special and differentiated beverages that can spark interest in the most diverse market niches, in Brazil and internationally. They are coffees that take into consideration the environment, the way the coffee beans are produced, and the rich history of those who produce the coffee.

Thus, a center of organic coffee production may be an important strategy for adding value to coffee from Rondônia, avoiding the oscillations of prices and manipulations of the extremely commoditized Brazilian coffee market. Important producer countries, like Colombia, are increasingly avoiding the commodity coffee market, aiming to work through concepts of traceability, history, and origin. The Amazon is a geographic reference known throughout the world.

Some experiences have already been developed, such as cooperatives, specifically Lacoop – the Cooperative of Family Farmers of the Amazon, in the town of Rolim de Moura, RO, which is in the final phase of formalization. The philosophy of this cooperative is to work more on the concept of specialty coffees, including organic coffee, always within the context of family agriculture (history and origin), sustainable production, coffee quality, and rural life. For the 2017 crop season, the first year of pre-operation of the cooperative, around one thousand bags of coffee were produced under these concepts, and the strategy is to expand, avoiding the traditional commodity markets.

Thus, with the aim of taking part in the highly disputed worldwide coffee market, it is essential that projects for production of organic coffee of Amazon origin have a good marketing proposal with appreciation for regional differences and quality that constitute a genuine product.

Women in coffee in Rondônia

The strength and subtlety that make a difference in the field

Renata Kelly da Silva, Embrapa Rondônia



Fearless pioneers made Rondônia their new home and planted the first coffee crops with the love they brought for the coffee bean from their states of origin. This dedication passed from generation to generation and made these pioneers and their descendants stand out in the coffee growing scene in the state. They are mainly people that moved from Minas Gerais, Parana, and Espírito Santo, and now make history in Rondônia. It is not only men, but also women that inherited the taste for coffee and soon learned the importance of working with the land and taking responsibility for building a better future.

Official data regarding the situation and activity

of women in society are still incomplete. Some information was made available in 2010 through the publication "Gender Statistics: an analysis of the results of the Demographic Census of 2010" ("Estatísticas de Gênero: uma análise dos resultados do Censo Demográfico 2010"), made by the Geography and Statistics Institute of Brazil (Instituto Brasileiro de Geografia e Estatística - IBGE), within the sphere of the National System of Gender Information (Sistema Nacional de Informações de Gênero - SNIG). One of the findings indicates that women active in the rural area contribute more to family income (42.4%) than those that live in urban areas (40.7%). Also, according to the IBGE, in 2000, women were head

of 24.9% of the 44.8 million private households. In 2010, this proportion rose to 38.7% of the 57.3 million households. This is an increase of 13.7 percentage points.

In the absence of studies directed to the activity of women in the coffee sector in Rondônia, the purpose of this text is to present the activity of some women in diverse segments, seeking to manifest the work they have developed and the challenges faced.

In spite of being in different areas of coffee growing, their love for coffee is a point they have in common, as well as the diverse roles they play over the course of a day – woman, mother, homemaker – and the struggles faced from gender barriers, which affect credibility, income, and access to decision-making processes in the production chain.

All the profiles are of women pioneering in coffee growing in the state, or their daughters, and of women who come from the main coffee production regions of Brazil. They have been dedicated to coffee since childhood and are continuing the work begun by their parents.

SUZI APARECIDA DA SILVA

Coffee grower, housekeeper, and head of the family

Her relationship with coffee began with her grandparents, who worked in coffee fields in Minas Gerais and in Paraná. Then, in the 1980s, they arrived in Rondônia, bringing what they learned from other crop fields. At six years of age, she took her first steps in the coffee fields and never left. After separation, this young woman faced the challenges of raising children and the crop, and supporting her family. She seeks to expand her knowledge through courses and lectures, which have already made it possible to improve the crop, obtain more resources, and, especially, open her eyes to sustainable management of the crop. She cares for 5 thousand canephora coffee plants (conilon and robusta). According to her, she has greatly reduced expenses on agricultural chemicals; in 2017 alone, she achieved savings of R\$2,000. Suzi puts all expenses down on paper. To add to her income, she also works as a housekeeper three times a week, and if neighbors have coffee to harvest or services in the crop field, she does not refuse.

VILMA SCHMIDT

Coffee grower, mother, and trailblazer

This woman from Espírito Santo does not hide her esteem for coffee. "It goes back many generations," she comments. Since the time she was nine, in Espírito Santo, she helped her parents in the crop field. Her husband, Ademar Schmidt, also a coffee grower, reinforced this over the years. From Espírito Santo to Rondônia in 1985, the direction of her life and of the family changed. She came together with her husband to open new lands. They spent nine days and nine nights under a canvas in the back of a truck. Her oldest daughter, Ruth, was one year and 11 months. "A great deal of suffering!" remembers Vilma. They bought around 45 hectares in Alta Floresta d'Oeste (RO), 20 kilometers from town. In the beginning, Vilma got up in the morning, put morning lunch in a bag, and went to the fields, carrying her daughter who was still a baby. She worked until 11:00, went back home, made lunch, and went back to the coffee field. Now that she is nearly 60, she still helps her husband with coffee, in preparing food for workers in the fields, and in spreading the coffee on the drying patio at harvest time. The sacrifices and battles at the beginning provided good return, allowing investments. The greatest return, according to her, was to offer her two daughters, Raquel and Ruth, the opportunity to study.



SUZI

"I can't imagine
myself doing
anything except
working with
coffee. My dream
is to be able to
provide a better life
for my children, a
more comfortable
life than I had".



Coffee is
everything
to us. We are
from Espírito
Santo and what
we really like
is coffee. We
have always
worked with it
and we know
the rewards that
come from it".



RAQUEL SCHMIDT

Love from mother to daughter

The younger child of Vilma, this 27-year-old woman is passionate about coffee. She is an agronomist and acts as a consultant, working directly with coffee. A descendant of parents from Espírito Santo, this woman from Rondônia has coffee in her DNA. She grew up in a crop field environment and at 17 she began an Agronomy course; in graduate studies she worked in the line of nutrients for coffee; and now she travels across the state of Rondônia acting directly in the field with producers. In regard to her activity in a sector like coffee, she relates that it was a little difficult in the beginning, both through her being a woman and also through being young. However, she was not intimidated and developed her place. In the beginning, she used her surname Schmidt to present herself because it "did not show gender", she emphasizes. Then, when she went personally, the producer was surprised, probably not expecting Schmidt to be a woman and so young. For Raquel, one of the main differentials of a woman in this work in the field is attention to details.

MARIA HELENA OLIVEIRA (DONA LENA) Calloused hands and an easy smile

She is one of those people that always have a smile on their face, even in hard work under the burning sun of the Brazilian Amazon. The battle waged day after day in the field is to sustain the family. She began in the fields when she was young, ten years of age, with her father, in the municipality of Goioerê, Paraná. The family planted a little of everything on the small farm they had. Without fear, in 1981 at 18 years of age, Dona Lena left her land of origin and went to an unknown and distant land – the new state of Rondônia. She traveled for several long days with her family on the back of a truck with precarious structure, the well-known flatbed truck with upright supports to throw a canvas over. She carried the few belongings she had and dreams of a better life. As she never had the opportunity to study, she was illiterate, and her life was always one of work. In spite of two marriages that didn't work out, she was able to raise her five children nearly alone. Her achievement was to offer them the chance for education and development that she never had. For her, the main challenge was to deal with hunger when she was a child, and later when she was a mother. It was through work in the fields of others that she overcame hunger and poverty. She now has her own house and, at 55, continues to work in the field. In the field, she says there is no difference between a man and a woman; they work as equals. But she is the one who wakes up earlier, makes the coffee, and prepares what she and her current companion will eat in the field. Then, after hard work in the crop field, when she gets home at night, work continues: washing clothes, taking care of the house, and making food for the family, and then the next day, the battle begins again, at 5:00 in the morning. Dona Lena has spent her life in the field. She loves agriculture, but it's coffee that drives her passion. For her, it's a point of pride.



RAQUEL

"We go to the crop field and are attentive in all the steps; the producer trusts our work and we are able to provide a differentiated service," explains the agronomist.



MARIA HELENA

"The coffee we harvest with all our dedication goes to the city, to the table of the rich and the poor, of everybody".

ÂNGELA BERGER

From the town to the coffee field

Unlike most of those interviewed, she did not have contact with the field when she was a child. But, just as the others, coffee is now her way of life and she would have it no other way. She lived in Curitiba, Paraná, before coming to the municipality of Rolim de Moura, Rondônia, when still a child. She had not been in coffee fields and was not at all interested. But that changed 16 years ago when she met her husband; they fell in love and, with him, came another passion, coffee. With her determination, Angela always wanted to invest in studies. She finished high school at the Youth and Adult State Education Center (Centro Estadual de Educação de Jovens e Adultos - CEEJA) when she was 17. At that time, she already helped her husband in coffee processing, working in support capacity in use of the coffee dryer. As she had no financial resources, she asked her father-in-law for a small piece of land to plant coffee, and her wishes were answered. With this farming activity, she achieved resources to pay for college in Accounting. Her plan was to use the knowledge she gained in the course to assist in the administrative duties of the coffee processing company. And that is what happened. Challenges of being at the head of coffee negotiations in the company were many. In the beginning, producers came to talk business with her and were apprehensive, but her husband always directed customers/clients to Angela. "They didn't have a choice," she says. It was important to earn the confidence of the producers. Moreover, she says that over the years, she has seen an increase in the number of women dealing coffee. "Now the women come and want to know how much their coffee brought in, and they are always following the situation," she highlights.

ALICE RECH

From the coffee field to coffee trade

She has been in Rondônia since she was 12; she came from the region of Cascavel in Paraná in 1979 with her parents and siblings. First, her father went to the new state, bought an area of land, and then returned to get the family. Alice remembers that they went from Paraná to Ariquemes (RO) in a "Rural" – a strong, rugged vehicle used in the most varied situations. When they arrived, six months after her father had left, the purchased area had been invaded, and the family had to look for other land. They started from scratch. "A hard struggle!", she remembers. She grew up with the routine of farm labor, and was used to seeing her father harvest coffee, roast it, grind it, and do the whole process at home. They drank the coffee that they themselves produced. "I learned to really like coffee from my father," says Alice, who keeps the grinder that her father, now deceased, used, as a remembrance. Alice is used to saying she knows coffee from the field to the cup. She says she loves the coffee bean and everything connected with it. After having worked in the lumber sector and in other activities, in 2009, Alice returned to her origins and came to be active in a company that works directly with coffee, in rental of multibeverage machines - hot beverages, derived from coffee - and with the sale of coffee beans of the Três Barras brand as sales representative in the state of Rondônia. She had great appreciation for good coffee and, at a certain time in Rondônia, she did not find good options. She saw this as an opportunity. Along with her husband, she attended trade fairs with coffee machines, tried different brands, and chose Três Barras coffee as her brand. Currently, she and her husband work in the company with two more employees. In regard to women in the coffee sector, Alice realizes that a feminine presence is not yet prominent.



ÂNGELA

"Coffee is
everything for
me! I got to be
what I am today
from coffee; I
wouldn't trade
it for anything. I
want to continue
working with
coffee".



ALICE

"When talking about coffee, people think of men; a woman is thought of more for filtering the coffee in the kitchen. But I respectfully try to achieve my place. And in the coffee sector, which is quite sexist, we have earned our place little by little."



Rondônia advances in coffee growing and places its bets on semi-mechanized harvest

Adopting this technology goes beyond reducing costs because it incorporates technologies for greater yield and quality

Enrique Alves, Embrapa Rondônia





In spite of the evolution in recent years, there are still many challenges to be overcome in coffee production in the state of Rondônia. The main bottlenecks are the constant need for improvement in the quality of coffee beans and the lack of labor resources in the field, especially in the harvest period.

Harvest is a crucial step, and it represents approximately 40% of production costs. That means that any positive action achieved in this phase may have a big impact on the life of the coffee grower. In addition to the issues involving cost, the harvest and post-harvest phases are directly responsible for maintaining coffee quality and, consequently, gaining new consumer markets, beyond simply maintaining traditional markets as a commodity crop.

The evolution occurring in the field is highly dynamic and should be part of all the stages of production. This involves questions such as the ideal time for harvest and the search for alternatives to manual laborers. This is the context in which semi-mechanized harvest can be considered a new achievement of producers in the state of Rondônia, as has occurred in other regions. This technology has everything required to provide the support coffee growers need to reduce costs and improve the quality of their product. Semi-mechanized harvest adapts well to crop fields already in production and is based on the principle of scheduled or cyclical pruning, which is already recommended and performed in growing canephora coffees.

From the economic perspective of the harvest operation, in the surveys performed with producers and in experimental trials, cost reduction may range from 50% to 70% of the costs generated from traditional manual harvest in the state. This variation depends on set-up or adjustment of the machines and on the characteristics of the coffee crop, such as yield, plant architecture, and spatial arrangement, among other factors.

Semi-mechanized harvest: a reality in Rondônia

Although Embrapa Rondônia began research studies on semi-mechanized harvest of coffee in 2013, with research that involves plant breeding, pruning techniques, and new spatial arrangements, the first machine acquired for use in a commercial field only occurred at the end of the 2015 crop season. However, the number of adherents has only grown since then. Currently, around 20 semi-mechanized harvesting machines are in operation in the state. It is consensus among users that it is a technology that has come to stay. These machines are considered as accessible pricewise, ranging from 80 to 150 thousand reals, according to the model. And since the machines do not require prior adaptation of the crop field, the technology can be used immediately.

There are around 22 thousand coffeeproducing families in Rondônia, who have an average planted area of 4 hectares and an average estimated yield for the 2017 crop season of 22 bags/ ha, according to data from the National Food Supply Agency (Companhia Nacional de Abastecimento - Conab). The use of semi-mechanized harvest requires a producer with a more technological profile, which likely is the case of only 10% of coffee producers in the state. Nevertheless, producers could outsource this harvest technology or even arrange collective purchase through cooperatives, municipal governments, and trade associations.



Evolution that goes beyond reducing production costs

Gains from acquisition and use of technology go beyond reducing costs and are part of the continual evolution of agriculture in the search for efficiency, quality, and sustainability. It is a change in life for the producer by allowing better time management and encouraging the rise of new profiles of rural workers that hitherto were not part of the day-to-day life of family agriculture, such as mechanics, machine operators, and others. The crop mechanization process on various levels is a catalyzer of farm evolution and of the effort to create quality of life in the rural area. It does not reduce the number of jobs; it generates new possibilities.

Although mechanized harvest in Rondônia is still in the initial phase of adoption, the transformation it has caused can already be seen in the rural area. From the perspective of scientific research, since 2013, Embrapa Rondônia has been evaluating new spatial arrangements (plant density and spacing) to provide greater yield and efficiency in the use of harvest machinery. These harvest systems have also affected the criteria in selecting new clones, such as plant architecture, size, force required to detach fruit, and fruit maturation profiles.

Crops grown at high density spacings have been set up in production fields that are in partnership with Embrapa Rondônia, and preliminary results have been quite promising, with yield greater than 140 bags/ha in the first commercial harvest season. In practical terms, coffee growers are more attentive to the use of new spacings in their recent crop fields. The distance between rows has increased to allow the passage of machines for harvest and management. However, the spacing between plants has decreased considerably, increasing the number of plants/ha.

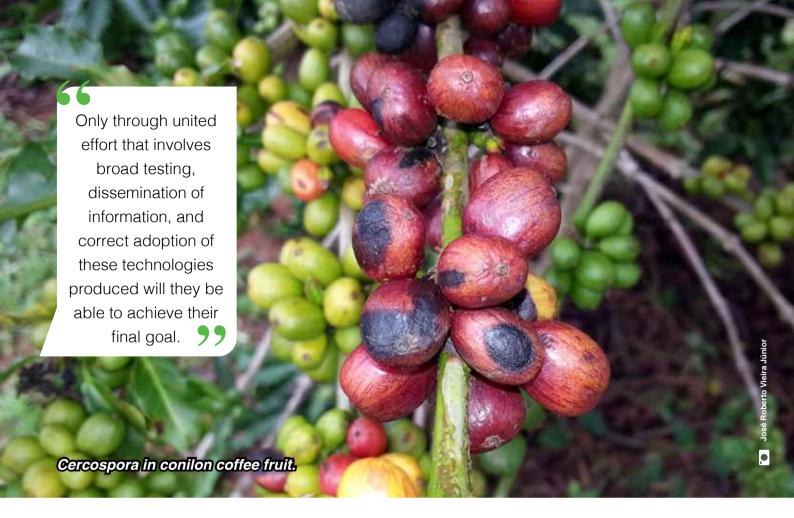
Undoubtedly, mechanization of harvest in the coffee crop, whether in Rondônia or in other states, has come to stay. Together with it has come a technological package that provides everything required to reduce costs, increase yield, and improve coffee quality.











Certainly you've seen this scene - a coffee field with green leaves fluttering in the breeze, the red of the trees laden with fruit in an immense unending expanse. Very peaceful, don't you think?! Yet it is well to know that a struggle of epic proportions is going on before your eyes. Hordes of microscopic enemies are hurled incessantly and relentlessly against the plants to destroy their defenses. The enemy? Fungi, bacteria, nematodes, and viruses! Thus, the coffee crop becomes a battlefield. These events become even more dramatic when they occur in an Amazon environment, where the climate is a strong ally of these microorganisms, with high temperature and humidity for long periods. In addition, the strong technological changes that have been transforming coffee growing in the region, with the adoption of irrigation, clonal cultivars, high-density planting, and mechanized harvest, create a scenario conducive to high yield losses. However, if, on the one hand, the microbial pathogens are equipped with diverse mechanisms and strategies to invade and colonize plant tissues,

on the other, plants have their natural defenses and powerful allies: science and technology!

In the current context of the health of the coffee crop, traditional diseases have been prominent, such as rust, as well as the rise of new challenges, such as root knot nematode, bacterial blight, and coffee leaf scorch*. In this respect, Embrapa Rondônia has been investigating management alternatives that are technically effective, environmentally safe, and economically viable for adoption by coffee growers.

Among the most important research studies underway are those focused on characterizing resistant cultivars, since this is technology that is easily adopted in virtue of its low cost, and it can be provided to the rural producer through seedlings or seeds. Embrapa Rondônia recently characterized part of its coffee plant germplasm bank and identified dozens of clonal plants with resistance to *Meloidogyne incognita*, *Hemileia vastatrix*, and



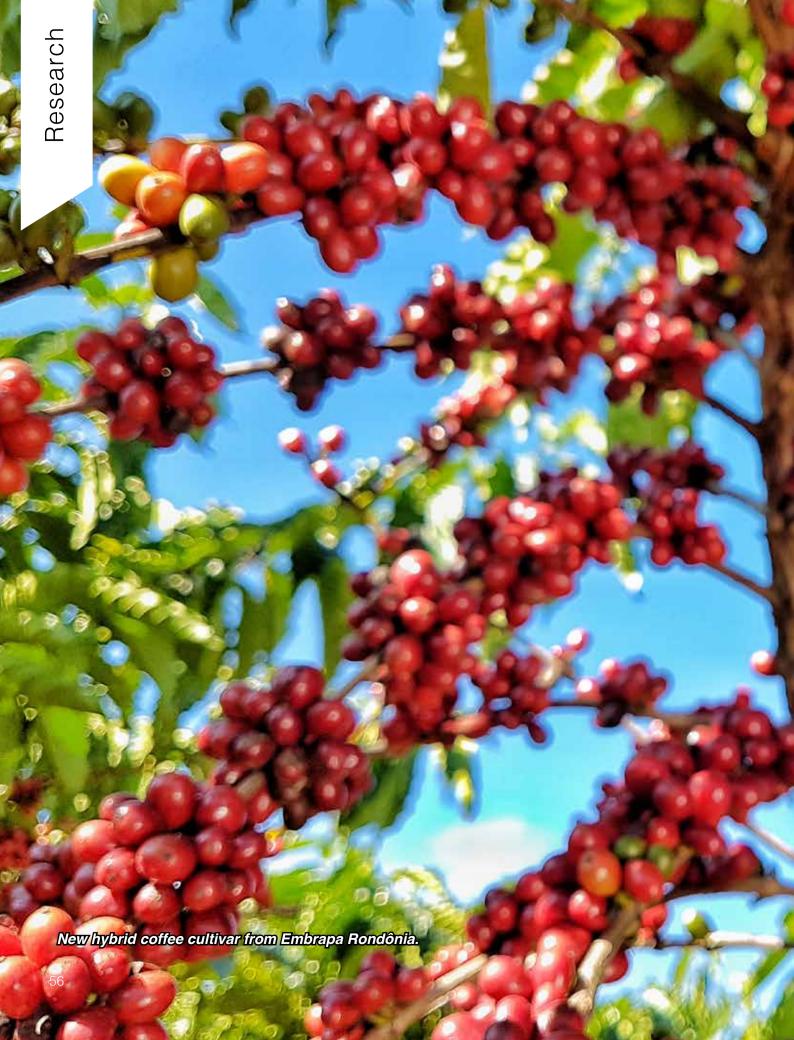
Cescospora coffeicola, among other pathogens. These superior clones are in the final phase of evaluation, and the best will certainly be among the future cultivars of conilon and 'Robusta' coffee, which will be made available to agribusiness and family-based coffee growers in coming years. This work has already been successful for the conilon coffee cultivar BRS Ouro Preto, released in 2012 by Embrapa.

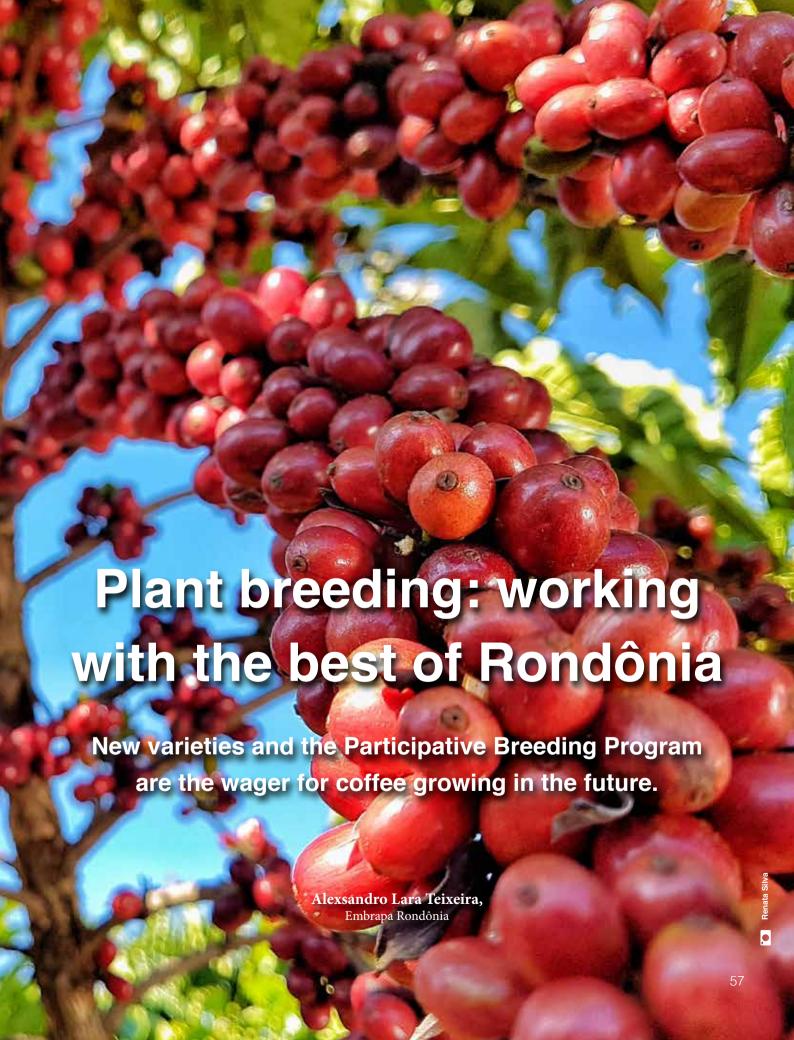
Parallel to this, studies involving substrate treatment methods for production of seedlings free of nematodes without the use of agricultural chemicals are in process. Among these studies, adaptation tests of the "substrate solarization device" stand out. This device uses solar energy to pasteurize soil, eliminating microorganisms harmful to coffee plants, while preserving benefits. "Biofumigation" is also under testing. This is a process whereby plants are incorporated in a chopped-up form in the planting substrate and, upon decomposing, these plants release toxic

compounds with nematicide properties. Extracts based on the active ingredients of these same plants are produced for application in the substrate, aiming to eradicate the pathogen.

Crop and livestock research, however, cannot work in isolation. It depends on the support of rural extension agents and coffee growers. Only through united effort that involves broad testing, dissemination of information, and correct adoption of these technologies produced will they be able to achieve their final goal, which is maximum yield with the lowest costs and risks to rural producer families and to the urban consumer, aiming at more sustainable production.

*Author's note: rust, root-knot nematode, and bacterial blight are diseases of the coffee plant, caused by the fungus *Hemileia vastatrix*, by the *nematode Meloidogyne spp.*, and by the bacteria *Pseudomonas syringae pv. Garcae*, respectively. *Cercospora coffeicola* is the fungus that causes the disease cercospora leaf spot of coffee. Coffee leaf scorch is an abiotic disease, of relatively unknown causes.





Coffee growing in Rondônia has gone through positive transformations over the past decade, with an increase in efficiency. Yield has increased nearly 100%, with 43% reduction in planted area, according to data from the National Food Supply Agency (Companhia Nacional de Abastecimento - Conab). The challenge now faced by 22,000 producers is improvement in quality and gaining new markets.

Differential features of Rondônia for the coffee crop are not only the edaphoclimatic (soil, topographic, and climate) characteristics favorable to full development of canephora coffee (conilon and robusta), but also the tradition of the producer and differentiated genetic material. Rondônia stands out through the presence of new hybrid clones of robusta and conilon coffees in its crop fields that have high yield potential and beverage quality. Although conilon type coffees also produce quality beans, robustas are recognized as having higher vigor plants, larger beans or high sieve yield, and beverages with flavor and aroma that are held in high regard by specialists. These hybrids have potential not only for meeting the demands of industry, but also of customers who are more demanding and eager to try new flavors and differentiated products.

Proof of this is that Rondônia has one of the few coffee shops in the world specialized in preparation and sale of Fine Robusta coffees. The raw material is the best coffees produced in the state, which are selected by the coffee shop owners. According to them, public approval has been extraordinary inside and outside the state, and the coffee has been referred to as a strong beverage with velvety body.

In this context, Embrapa has worked on new directions in canephora coffee breeding, with the adoption of clone selection criteria based on beverage quality and on new systems of mechanized planting. Embrapa seeks to develop clones that not only have high yield and tolerance to pests and diseases, but also that adapt to new plant spacing arrangements and have plant architecture favorable to mechanization and beverage quality.

The coffee breeding program of Embrapa Rondônia has invested in making crosses between conilon and robusta with the aim of joining various characteristics of interest in the same plant. After four years of evaluation, it was possible to select shorter plants with high yield (more than 100 bags per hectare) that have larger coffee beans, excellent beverage quality, and rust resistance. These hybrid clones are expected to be released in 2018, with recommendation for planting in the entire Amazon region.

Another innovative line of research is development of an arabica cultivar adapted to the climate conditions of the Amazon, a study that has been conducted for more than 12 years. The aim of this study is to meet the demand for this type of coffee bean in the region, both for production of specialty coffees and for use in blends – a mixture of beans made by the coffee industry. In addition to increasing demand, coffee growing can also be benefitted by the extensive flat areas that cover the entire region, making mechanized harvest feasible and significantly reducing production costs.

The selection process is still under way and initial results have already shown good potential of arabica coffee for the region. In some growing areas with altitudes above 300 meters, average yield was 40 bags/ha. Moreover, these coffees achieved scores above 80 points on the scale of the Specialty Coffee Association of America (SCAA), classifying them as specialty coffees. A cultivar recommended for planting under the climate conditions of the Amazon is also foreseen for 2018.



Coffee Participative Breeding Program

With a focus on coffee growing in the future, Embrapa is in an advanced phase of discussion and implementation of the Coffee Participative Breeding Program. This type of breeding can be considered daring because the program not only sees the producer as a user of clonal technology, but also takes into account the knowledge and insight of the coffee grower, who, over years, has selected the materials that adapted best to the management and production conditions on his property.

This participative process can potentially reduce time and cost, expand the genetic base, and improve the activity of Embrapa with the producer. This favors the adoption of technologies and consequent development of coffee growing. Currently, the state has more than half of its coffee grown from seed, with great genetic variability. This richness must not be lost with the advance in use of clones, which, although they are considered an advance in the field, lead to a narrower genetic base, due to the preference of coffee growers for a few clones with specific characteristics. This would greatly restrict selection of materials based on future demands, whether they are health related or market related.

In this Participative Program, the rural property is no longer seen only as a location for validation of technology, but as place that holds large potential of genetic richness, which Embrapa intends to reveal and share with the whole coffee productive sector.





Robustas of Rondônia, on the way to quality

Coffees from the Amazon have all it takes to ride this wave of recognition of canephora

Enrique Alves, Embrapa Rondônia

That the state of Rondônia is the second largest producer of canephora coffees (robusta and conilon), you surely know. What has escaped notice is the large potential of the state and the Amazon region to be a center for production of Fine Robustas. You may be wondering – aren't robusta and conilon the same thing? Actually, no! Even though no commercial distinction is made and both belong to the same species, Coffea canephora, they are different! Robusta and conilon have plant and fruit characteristics and organoleptic properties - color, flavor, and aroma - that make them distinct from each other.

Brazil, as influenced by Espírito Santo, the largest canephora producer in Brazil, agreed to call all canephora coffees "Conilon", while the rest of the world uses the term "Robusta". So far, no problem; and the consumer market gets along well with the two terminologies. But canephora coffees, until a short time ago relegated to a supporting role and used to lower product cost in blends with arabica or otherwise used in the instant (soluble) coffee industry, are little by little changing status. Now the distinction between robusta and conilon, as subtle as it may seem, becomes noteworthy.

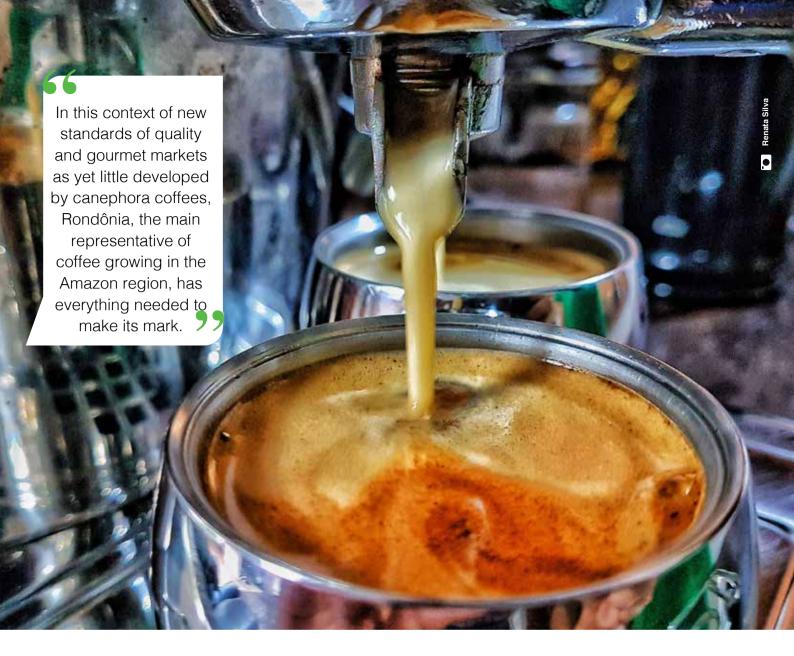




A new view of conilon and robusta coffees in the market

High yield for industry, higher caffeine content, and the neutral and full-bodied beverage will always be important characteristics in canephora. Nevertheless, even the coffee industry has recognized the potential that improving its quality can bring. This improvement would not only increase coffee bean yield, but would also make it possible to increase the percentage of canephora in blends. Even so, the big change is in regard to production of Fine Robustas. These are coffees in which sensory characteristics go beyond body and neutrality.

The robustas and hybrids (crosses of robusta and conilon) that are now in the field have nuances, such as pleasant acidity, sweetness, aromas, and flavors similar to chocolate, nuts, and fruit. This is all a consequence of a new sensory perspective within a specific and characteristic range of canephora coffees. This is the opinion of specialists in coffee cupping, the Q-graders, who also base their evaluation on the Fine Robusta Cupping Protocol (Protocolo de Degustação de Robustas Finos - PDRF), issued in 2010 by the Coffee Quality Institute (CQI).



An opening for Fine Robustas from Rondônia

In this context of new standards of quality and gourmet markets as yet little developed by canephora coffees, Rondônia, the main representative of coffee growing in the Amazon region, has everything needed to make its mark. The state has a natural vocation for production of Fine Robustas, considered as pure robustas or hybrids. The soils are flat and arable, and the climate is favorable. These coffees develop rapidly under an average rainfall that can exceed 2000 mm and high temperatures throughout the year. A visit to the coffee growing area of the state shows that the main commercial clones planted are hybrids, with robusta characteristics predominating.

Known for increased vigor, plant height, and water and soil fertility requirements, hybrids have come out well with the changes coffee growing has gone through in the past decade. This evolution involves the use of superior clones, scheduled pruning, irrigation, and mechanized harvest. The effect can be seen in the increase in average yield in the state, which surged from 9 bags/ha to 22 bags/ha in the last seven years, and is also beginning to appear in improvement in coffee bean quality.





Recognition of the quality of Robustas from Rondônia

Robustas tend to have larger beans and higher sieve yield compared to conilons and also stand out as coffees with pleasant body and a tendency toward sensory nuances that go beyond neutrality. Already in the 1980s, experiments for characterizing quality performed by researchers of Embrapa Rondônia, in partnership with the Instituto Agronômico de Campinas (IAC), observed superior sensory characteristics in robustas. More recently, based on the PDRF, a broad genetic study was performed on the elite canephora clone collection of Embrapa Rondônia, and it showed, once more, a tendency toward production of fine coffees in robustas and hybrids.

These research results have already been confirmed in practice. An example of this is that Rondônia is one of the few locations in the world with a coffee shop that has specialized in serving Fine Robustas. Another example can be seen in the International Coffee Week that took place in Belo Horizonte, MG, in 2016, in which Fine Robusta coffees from Rondônia were prominent. Specialists compared them to the famous "Indian Robustas" and they generated enthusiasm and surprise in visitors to the stand. Lay and professional coffee cuppers and tasters highlighted the mild, aromatic, and full-bodied characteristics of the Fine Robustas from Rondônia. These coffees were sold at prices comparable to the best coffees exhibited.

This shows the potential of quality robustas that has not yet been developed. It portrays the environmental, social, and commercial appeal that coffees produced in the Amazon can have, and that this region has all it takes to ride this wave of recognition of the sensory quality of canephora coffees.

So, full speed ahead! We await the "Robustas from Rondônia"! Flavor and quality from the Amazon.

More flavor, please!

The family business develops quality from the field to the cup and presents robustas from Rondônia to new markets

> Renata Silva, Embrapa Rondônia

The entrepreneur Bruno Assis proudly comments, "We are the only coffee shop in the world that works with robusta." An exclusive distinction that did not happen by chance and that is wrapped up in the dream of a family from the state of São Paulo that is passionate about coffee and spares no effort in changing paradigms, overcoming challenges, and producing the best coffee possible. The route taken by this family and its business in Rondônia moved from unawareness and disregard of coffee from the state to development of a standard of quality from the field to the cup, and then to success and recognition of the flavor of robusta from Rondônia. "We brought coffee from Rondônia for Brazil and the world to try," explains Bruno Assis.

Born in Fernandópolis, SP, the 25-year-old Bruno Assis is in charge of the coffee shop Juninho Soft Café and of Amazônia Coffee, the first gourmet coffee of the Brazilian Amazon, with 100% robusta beans and a high level of quality. His father and mother join in the family business. His sister takes her own path as a student. Bruno's role in the companies is in management of beverage quality, roasting, and marketing of the coffee. As a barista, specialized in high quality coffees, he works to create new beverages based on the bean and to carry the product from Rondônia to the four corners of the world. He is self-taught and continues to develop his understanding. "I like to be well informed and I always bring new things from the world of coffee to Rondônia," the businessman comments.



Discovery of the quality of robusta from Rondônia

He came from São Paulo when he was 17 and, at 19, he established Juninho Soft Café with his family, in Cacoal, the first coffee shop in the midst of Rondônia. The coffee shop was also an ice cream parlor and, in the beginning, they used only arabica coffee from Minas Gerais. They worked for three years that way, but in the fourth year, Bruno decided they needed to roast the bean to have their own brand of coffee. "We were in the capital of coffee and we did not have local coffee; our customers didn't request it," says Bruno.

In a conversation with the well-known technician of Emater-RO, Benedito Alves, who works with coffee classification, the businessman was also asked why he did not work with beans from Rondônia. Bruno said at the time that he had always heard that coffee from Rondônia was not good. Benedito replied that there is good coffee and bad coffee anywhere in the country. "If you make a selection, you'll find excellent coffees here," Bruno remembers as the words of the technician that motivated the search for quality coffees in Rondônia. He picked up the information for contact with producers and went after quality raw material.

They found very good crop fields and perceived that what was missing was to work better with the harvest and post-harvest of the coffee; the producer only needed some direction. So, it was provided. They began to buy coffee from some selected producers, roast the coffee (with a borrowed roaster), and they were able to find good flavor. "In the beginning, it was half and half robusta with arabica and, little by little, we reduced the amount of arabica until we got to 100% robusta," he remembers.

They broke paradigms and left behind disregard for coffee from Rondônia for surprise from the flavor they found. "At the time, they called us crazy because we made coffees that were contrary to what everybody was used to drinking. Well, we decided not to pay attention to what others said but rather to what our customers said," stresses Bruno. And the customers praised the coffee – flavorful, aromatic, delicious. After that, news that the robusta beverage from Rondônia was really good made its way around the state and partnerships began with Emater-RO, Embrapa Rondônia, Sebrae, and other institutions.

From then on, robusta from the state was taken to regional, Brazilian, and international trade fairs, representing quality coffee from Rondônia. It drew attention and continues to draw attention wherever it goes, attracting those who are curious and specialists that have high praise for the coffee. "I go to different places in Brazil and the world, make our coffee, and people approve it," says Bruno.

From Rondônia to the world

That coffee from Rondônia has a differentiated and pleasing flavor has already been demonstrated. Now, according to Bruno Assis, it is necessary to follow some steps so that coffee from Rondônia gains new markets and establishes itself. It is necessary to care for the quality of the coffee fruit in the field, following technical recommendations in the harvest and post-harvest processes. "We still receive coffee samples with many broken beans, with defects, bore holes, and many green and poorly dried beans. These coffees don't have quality, they aren't valuable," Bruno cautions.

The businessman also highlights the need for coffee from Rondônia to have certification, indicating what the aromatic and sensory scores of the beans are. "When coffee is well cared for, it will have unique aromas, and this production tends to have value. Nobody buys something that doesn't exist. First we need to make quality coffee from Rondônia exist and have a sufficient amount to supply the market", he emphasizes, adding that a certificate of origin, traceability, and classification of the coffees are essential points for competing in the market. In addition to quality, it is necessary to have quantity. He stresses that buyers must be assured



that producers from Rondônia are sufficiently aware and organized to deliver coffees with quality and at a volume to supply international markets throughout the year. According to him, creating a mixed cooperative would be a good alternative, involving the production chain in an organized manner.

For Bruno Assis, the first steps are being taken and the quality of coffee from Rondônia has improved. The Quality of Coffee from Rondônia contest – ConCafé has motivated the producer. "There isn't another option, only the way of quality", he concludes.

The future

In the family business, Bruno expects to place roasted coffees from Rondônia on the coffee market on a greater scale. He also intends to create more space for arabica produced in the state. "It's also

necessary to invest in arabica in Rondônia," he comments. Embrapa already has studies showing feasibility of this in the state.

For Bruno, the future is already happening, and youth are preparing the way. Young people are in the crop fields and in the roasters and innovate in the coffee shops. As consumers, they demand more practicality in preparing coffee, with more flavor, traceability, certification, and sustainability. In ten years, he believes coffee-based beverages will have a bigger market than pure coffee. "Coffee is a concept. It will leave glamour behind to be more practical," he concludes.

"God's part was done, with good climate conditions to produce a genuine coffee. Now it's our turn. Each one of those who work in the coffee production chain need to do their best. Then the future will certainly be very prosperous for coffee from Rondônia," he foresees.

