Agrariae Liber

Ago 2020 a Jan 2021 - v.3 - n.1

ISSN: **2674-6476**

This article is also available online at:
www.sapientiae.com.br

Avaliação agronômica de três melões híbridos (Cucumis melo) (Gold Honey, Rina f1 e Ovation) e transferência de conhecimento de um manual didático na fazenda Bella Vista, aldeia Tranquita na região de Ariari, Meta, Colômbia

Na região de Ariari existe uma variedade de expoentes e adaptáveis aos cultivos tópicos, que têm permitido ao longo do tempo uma estabilidade econômica para os agricultores, com a implantação e comercialização do plantio, tais como: maracujá (Passiflora edulis), banana (Musa acuminata), mandioca (Manihot esculenta), goiaba (Psidium guajava), milho (Zea mays), arroz (Oriza sativa), fruta transitória, entre outras, permitindo posicionar a região como uma das mais importantes frutíferas do país. Gera a necessidade urgente de avançar nos processos de modernização e desenvolvimento de novos processos de produção agrícola, o que torna pertinente este processo de investigação, que se orientou para o conhecimento de alternativas na produção do melão (Cucumis melo), que é uma cultura que gera benefícios representados em adaptabilidade, rendimento produtivo, fluxo de caixa, estágios fenológicos curtos, lucratividade, entre outros. Isso foi feito por meio da realização de avaliação agronômica de três melões híbridos (mel Gold, Rina F1, Ovation) e transferência de conhecimento a partir de um manual didático na fazenda Bella Vista, aldeia Tranquitas do Ariari, onde a pesquisa experimental é enquadrada com enfoque educacional e social, onde a produtividade da safra foi avaliada pelo monitoramento fenológico de melão híbrido (mel dourado, Rina F1 e Ovation) por meio de estatística descritiva (média, mediana e desvio padrão) para interpretação e dados concisos que nos permitem distinguir o melhor híbrido da região, como um meio de potencializar os exercícios; A execução do processo permitiu contribuir com a formação pedagógica de agricultores e trabalhadores, por meio do desenvolvimento de estratégias de ensino e elaboração de um manual que possibilite a divulgação e transferência de tecnologia, para aumentar o número de produtores na região de Ariari.

Palavras-chave: Estágio fenológico melão; Educação não formal; Meio rural.

Agronomic evaluation of three hybrid melón (Cucumis melo) (Gold Honey, Rina f1 and Ovation) and knowledge transfer from a teaching manual on the Bella Vista farm, Tranquita village in the region of Ariari, Meta, Colombia

In the Ariari Region there exists a variety of exponents and adaptable to the topic cultivations, which have allowed through the time an economic stability for the farmers, with the implementation and planting commercialization, such as: passion fruit (Passiflora edulis), banana (Musa acuminata), cassava (Manihot esculenta), guava (Psidium guajava), corn (Zea mays), rice (Oriza sativa), transient fruit, among others, allowing position the region as one of the most important fruit pantries country. It generates the urgent need for progress in the processes of modernization and development of new agricultural production processes, which makes pertinent this research process, which was oriented towards the knowing of alternatives in the production of melon (Cucumis melo), which is a crop that generates benefits represented in adaptability, productive yield, cash flow, short phenological stages, profitability, among others. This was made by performing agronomic evaluation of three hybrid melon (Gold honey, Rina F1, Ovation) and knowledge transfer from a manual teaching in the Bella Vista farm, village Tranquitas of the Ariari, where experimental research is framed with educational and social approach, where the yield crop was evaluated by a phenological monitoring of hybrid melon (golden honey, Rina F1 and Ovation) through (mean, median and standard deviation) descriptive statistics for interpretation and concise data that allow us distinguish the best hybrid in the region, as a means to potentiate the exercises; process execution allowed contribute to pedagogical training of farmers and workers, through the development of teaching strategies and design a manual that allows the dissemination and technology transfer, to increase the number of producers in the Ariari region.

Keywords: Phenological stage melon; non-formal education; rural environment.

Topic: **Extensão e Desenvolvimento Rural**

Reviewed anonymously in the process of blind peer.

Received: **15/08/2020**
Approved: **23/11/2020**

Jorge Luis Triana Riveros
Universidade de Brasília, Brasil
http://lattes.cnpq.br/4993690941475419
https://orcid.org/0000-0002-2310-1256
jorge.triana@unillanos.edu.co

Juan David Triana Riveros
Universidad de los Llanos, Colômbia
http://lattes.cnpq.br/8700268193875334
juan.rvive@unillanos.edu.co

Monica del Pilar Rodriguez Rodriguez
Universidad de los Llanos, Colômbia
http://lattes.cnpq.br/5291604076387888
mrodriguez@unillanos.edu.co

Cesar Enrique Vera
Universidad de los Llanos, Colômbia
cvera@unillanos.edu.co

DOI: 10.6008/CBPC2674-6476.2021.001.0002

Referencing this:
RIVEROS, J. L. T.; RIVEROS, J. D. T.; RODRIGUEZ, M. P. R.; VERA, C. E.. Avaliação agronômica de três melões híbridos (Cucumis melo) (Gold Honey, Rina f1 e Ovation) e transferência de conhecimento de um manual didático na fazenda Bella Vista, aldeia Tranquita na região de Ariari, Meta, Colômbia.. **Agrariae Liber**, v.3, n.1, p.7-15, 2021. DOI: http://doi.org/10.6008/CBPC2674-6476.2021.001.0002

INTRODUÇÃO

The Aríari region materializes as a peasant model, where colonization is the triggering factor in the process of occupation of the regional space and for decades its development and population growth are due to waves of migration from the interior of the country, and for economic reasons, when, amidst poverty, people arrived in the territory seeking to occupy uncultivated land to cultivate and thus the region was constituted (TRIANA, 2019).

In the Ariari region there is a diversity of crops adapted to the tropics, which have allowed over time economic stability for the farmer, with the implementation and commercialization of the crops of these cultivations, allowing to position the Ariari region as one of the most important fruit pantries in the country, which generates the urgent need to advance in the processes of technification, technology transfer and establishment of new agricultural production processes, which made this Research process opportune, which was oriented to investigate alternatives in the melon production for evaluating the best hybrid to be implemented in the Ariari Region through an experimental process and with these advantages were generated for farmers represented in adaptation represented in adaptation, productive yield, short phenological conditions and profitability.

The experimental research is framed with a pedagogical and social approach, where crop yield was evaluated by means of a phenological follow-up of melon hybrids (honey gold, Rina F1 and Ovation) to potentiate the rural development of the region through implementation of this crop. On the other hand, the research was carried out in the Bella Vista farm of the Tranquitas village, where it has been cultivated a year ago. The research ends with the design of a pedagogical manual that will allow the diffusion and technological transfer for increasing the number of producers in the Ariari Region.

MATERIALS AND METHODS

Study location

The work was carried out in the Bella Vista Farm, located on trial 11, on the road that leads from Granada to San Juan de Arama at an average altitude of 582 meters above sea level, temperature of 26.3 ° C, annual rainfall of 5062 mm and relative humidity of 83%., having as coordinates 3 ° 22'52.0 "N 73 ° 44'06.1" W.

Application of survey questionnaire to farmers in the region

At the beginning there was a first approach to the group of actors involved in the process and an initial survey was applied to evaluate the preexisting knowledge about melon crop management., in order to create training strategies (theoretical and practical classrooms), where activities of design, planning, execution, management of specialized tools and equipment (irrigation, venturi, fertigation, mulch). The investigation was produced from sessions to pedagogically base the operators of the bella vista farm, this process was carried out in 8 sessions (theoretical - practical). Subsequently, an evaluation of the knowledge

acquired during the education training process was carried out, and a qualification to the promoters of the degree work was finalized.

Collection of phenological data of the three varieties of melon

The collection of the phenological data was carried out with the experimental design of randomized blocks of three treatments and one control (commercial culture), each treatment has three repetitions (Figure 1). Treatment 1: Honey gold. Treatment 2: Rina F1. Treatment 3: Ovation. Witness: Valentino F1 (commercial cultivation).

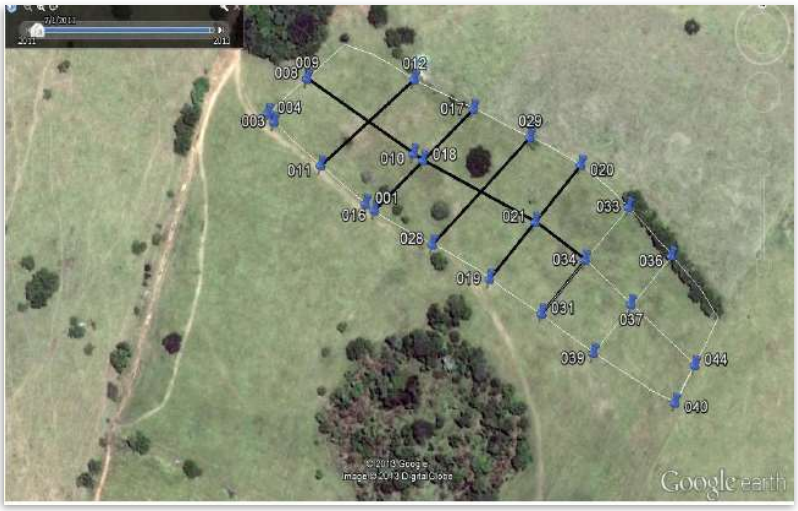


Figure 1: Current location of the Bella Vista farm lot. Image taken from Google Earth, lot of melon with treatments and repetitions.

Vegetative data were taken in 20 plants for each repetition, the variables evaluated are being: leaf length and width, stem height, number of open flowers, number of fruits set and production (grams / fruit and kilograms / hectare), the process was performed from week 2 to week 10. On the other hand, all treatments and the control were handled agronomically the same.

Statistical analysis

The applied surveys and phenological data were examined through descriptive statistics. Data are presented as mean ± SEM, and standard deviation DS. The data performed were parametric analyzes of the data.

RESULTS

Social part

In the present investigation the workers of the Bella Vista farm were linked in the cultivation of melon to form and train, forming sensitization through theoretical-practical learning units during the melon cultivation cycle.

The training process consists of various work meetings applied to 6 operators and farmers close to

the farm. It is observed that the operators of the Bella Vista farm are native to the Ariari region (71%), where they have worked more frequently in banana plantations (16%), followed by cassava, rice and passion fruit (13%), melon (11%), citrus, watermelon and corn (8%), and in the last place is pineapple with 5%.

On the other hand, 51% of the respondents have worked in the cultivation of melon in the 11th track (67%) and in the verandah of the Andes (33%); Also 75% of the operators are clear that the sowing of melon is carried out according to the variation of the climate, 100% of them know that the fertilization of the melon crop is done by fertigation and 50% of the respondents think that the main Mulch function is weed control.

In general, innovators will always be successful actors, but it is perceived that some family producers are more receptive than others and for this reason they are the first to adopt novelties, while other producers wait until the uncertainties associated with new adoptions (RIVEROS et al., 2021) are minimized. Figure 2 shows the interest of trainers to improve knowledge in the eight sessions applied, reflected in the attendance that was never less than 62.5%.

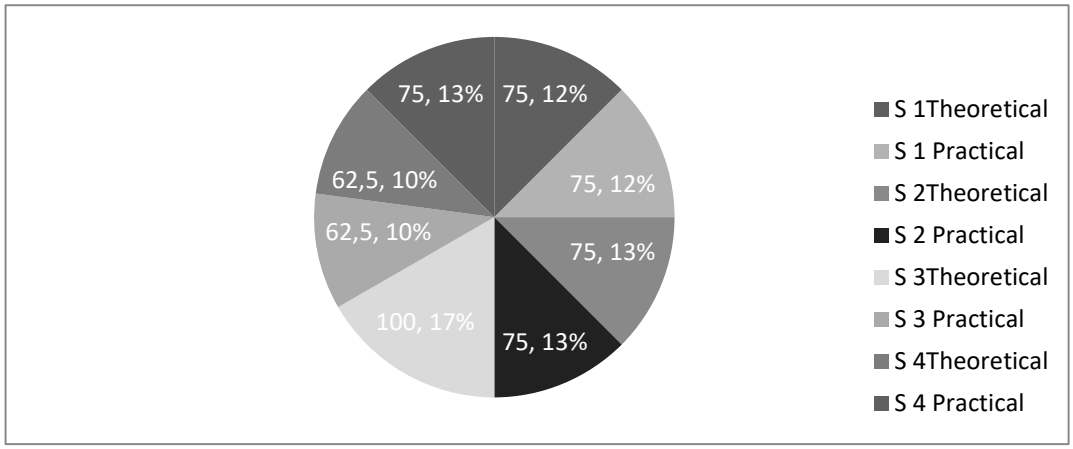
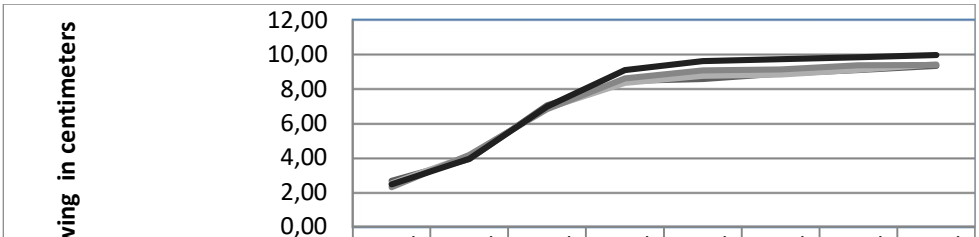


Figure 2: Percentage of assistance of operators and farmers to the eight sections carried out.

Agronomic part

In the field evaluation phase, the following results were obtained, taking into account the following dependent variables. Permanent monitoring of the phenological changes (leaf area, stem length, number of flowers, fruit set and production) in each of the hybrids, monitoring the phenological stages of the crop, showing the performance in each of the hybrids (Honey gold, Rina F1, Ovation, Valentino F1). Derived effects in each of the hybrids in equal conditions of agronomic management, within these effects are growths of leaf area, stem length, consumption of fertilizer and water, MIPE (Integrated management of pests and diseases).

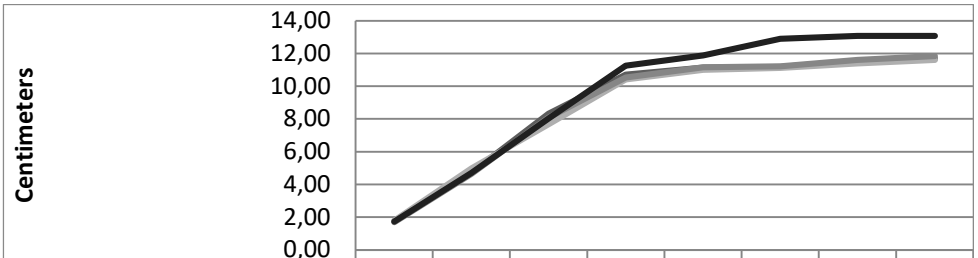
The field evaluation phase (Figure 1) confirmed that the length of the leaf had tiny growth from week 2 to week 9, at week 10 the melon plant presented natural senescence due to the fulfillment of its vegetative cycle. With these data, the investigation of Ribas et al. (2000) is confirmed that the increase in leaf area is invisible until the female-fruit set of the first, subsequently there was a fast growth.



	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9
Treatment 1 (Honey gold)	2,66	3,91	7,05	8,47	8,58	8,90	9,10	9,36
Treatment 2 (Rina F1)	2,51	4,13	6,88	8,36	8,77	8,84	9,12	9,45
Treatment 3 (Ovation)	2,28	4,17	6,83	8,62	9,09	9,14	9,39	9,41
Witness (Valentino F1)	2,45	3,95	6,98	9,11	9,62	9,73	9,85	9,99

Hibryd	Mean	Median	SD/ SEM
Honey gold	7,25	8,53	2,57/0,33
Rina F1	7,26	8,57	2,58/0,33
Ovation	7,37	8,85	2,73/0,35
Witness. Valentino F1	7,71	9,37	2,97/0,38

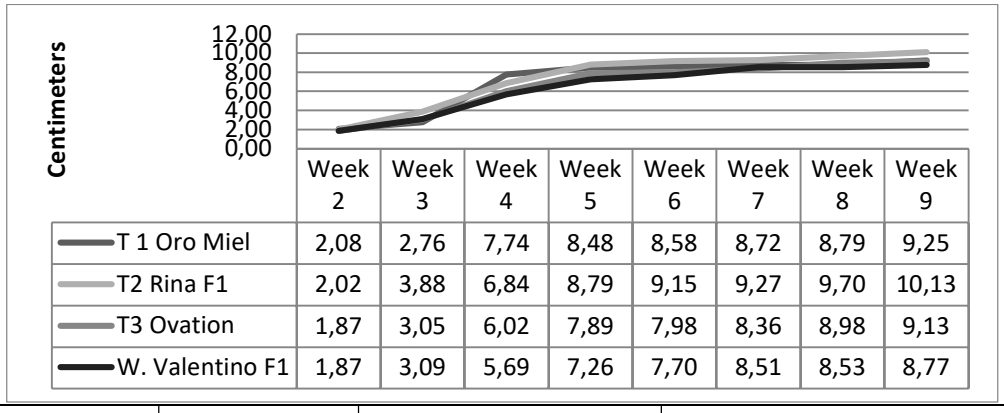
Figure 3: Measurement of the leaf area (leaf length) in the proposed treatments.



	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9
Treatment 1 (Honey gold)	1,76	4,72	8,32	10,71	11,13	11,18	11,54	11,70
Treatment 2 (Rina F1)	1,81	4,98	7,67	10,42	10,99	11,12	11,38	11,60
Treatment 3 (Ovation)	1,71	4,64	8,09	10,52	11,15	11,21	11,61	11,85
Witness (Valentino F1)	1,74	4,69	8,03	11,26	11,87	12,89	13,09	13,07

Hibryd	Mean	Median	SD/SEM
Honey gold	8,88	10,92	3,72403406/0,48
Rina F1	8,75	10,71	3,62722061/0,47
Ovation	8,85	10,83	3,77089312/0,49
Witness. Valentino F1	9,58	11,56	4,33025752/0,56

Figure 4 Foliar area measurement (leaf width).

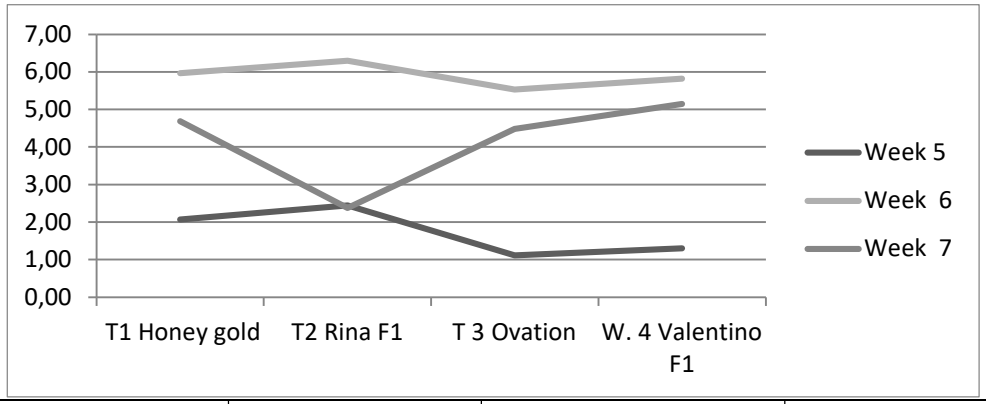


	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9
T 1 Oro Miel	2,08	2,76	7,74	8,48	8,58	8,72	8,79	9,25
T2 Rina F1	2,02	3,88	6,84	8,79	9,15	9,27	9,70	10,13
T3 Ovation	1,87	3,05	6,02	7,89	7,98	8,36	8,98	9,13
W. Valentino F1	1,87	3,09	5,69	7,26	7,70	8,51	8,53	8,77

Hibryd	Mean	Median	SD/ SEM
Honey gold	7,05	8,53	2,89450369/0,37
Rina F1	7,47	8,97	2,99674148/ 0,39

Ovation	6,66	7,93	2,77803341/ 0,36
W Valentino F1	6,43	7,48	2,64523771/ 0,34

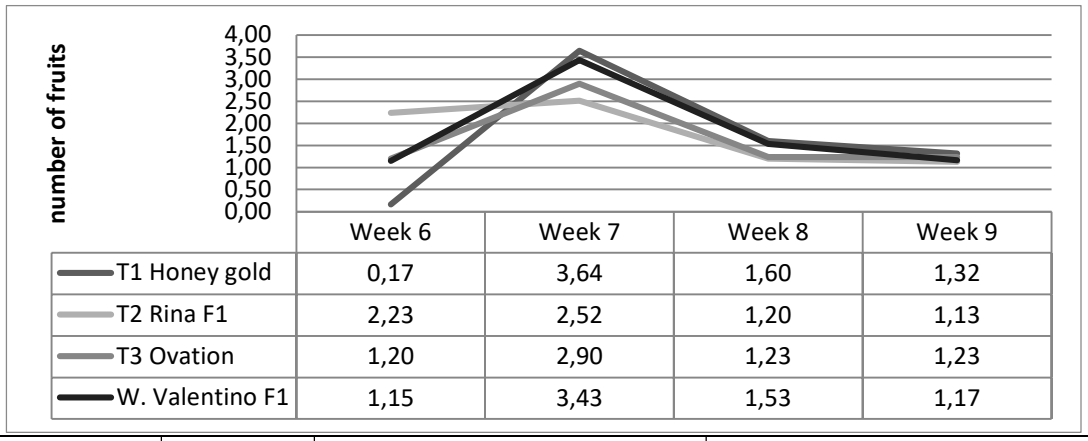
Figure 5: Measurement of stem length (cm).



Hibryd	Mean	Median	SD/SEM
Honey gold	4,24	4,68	1,98762374/0,26
Rina F1	3,71	2,45	2,24229132/0,29
Ovation	3,71	4,48	2,30737545/0,30
T. Valentino F1	4,09	5,15	2,43814213/0,32

Figure 6: Measurement of open flowers in melon crop.

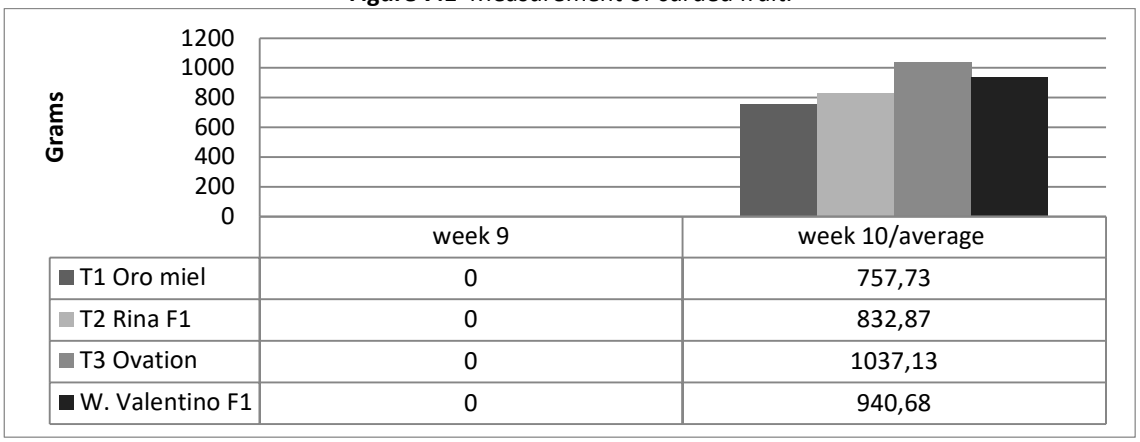
Measurement of curded fruit



	Week 6	Week 7	Week 8	Week 9
T1 Honey gold	0,17	3,64	1,60	1,32
T2 Rina F1	2,23	2,52	1,20	1,13
T3 Ovation	1,20	2,90	1,23	1,23
W. Valentino F1	1,15	3,43	1,53	1,17

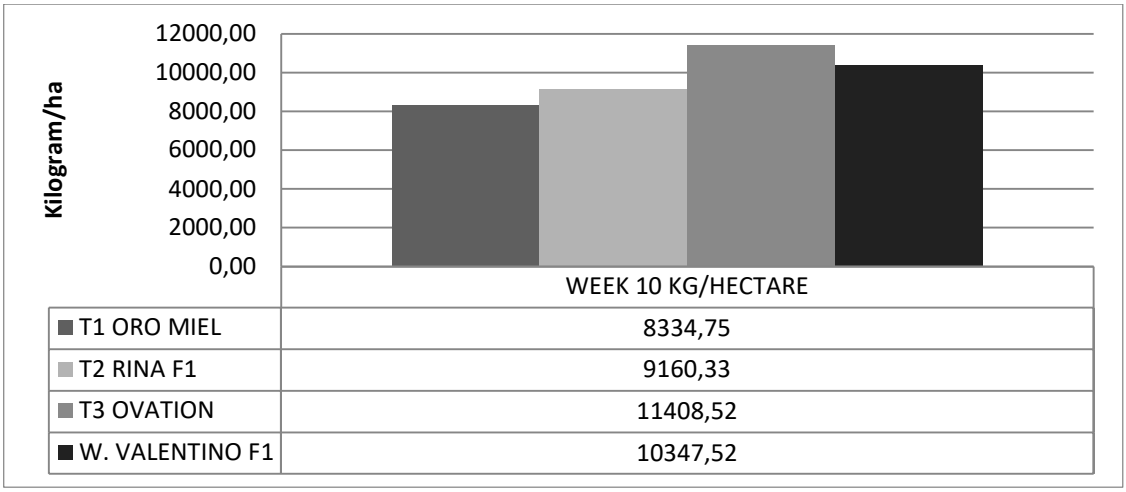
Hibryd	Mean	Median	SD/SEM
Honey gold	1,68	1,46	1,45/0,19
Rina F1	1,77	1,72	0,71/0,09
Ovation	1,64	1,23	0,84/0,11
W. Valentino F1	1,82	1,35	1,09/0,14

Figure 7:1 Measurement of curded fruit.



	week 9	week 10/average
T1 Oro miel	0	757,73
T2 Rina F1	0	832,87
T3 Ovation	0	1037,13
W. Valentino F1	0	940,68

Figure 8: Production measurement in the melon crop in week 10, units / grams.



	WEEK 10 KG/HECTARE
T1 ORO MIEL	8334,75
T2 RINA F1	9160,33
T3 OVATION	11408,52
W. VALENTINO F1	10347,52

Figure 9:2 Production measurement in week 10, taken to kilograms / hectare.

DISCUSSION

Social part

The operators of the Bella Vista farm had clear basic concepts such as cultural work; being empirical knowledge that was acquired during the different works in previous years, from the different trainings were executed to realize a non-formal learning. The final evaluation of the knowledge acquired during the learning process was executed, the clarity of the operators about the origin of the melon and the hybrids used in the grade work resulting in 100%.

On the other hand, in the evaluation of the knowledge acquired during the learning process, a notable advance in specific knowledge in melon cultivation was analyzed, due to the high interest of the operators to know why the different cultural tasks are carried out (Figure 1), with the purpose of being the pioneers and specialists of this crop in the Ariari region. In the same way feedback was made of the different topics seen that were: geographical distribution, varieties, edaphoclimatic requirements, management practices (preparation of the land, planting densities, irrigation, planting, cultural work), MIPE (Integrated management of pests and diseases), MIRFE (Integrated management of irrigation and fertilization) and last harvest and post-harvest. This process generated training sessions with the farmers and operators of the quiet sidewalk. As a result of the design, dissemination and evaluation of a pedagogical and technology transfer manual allows to establish. in a guided way the cultivation with the Cantalupe hybrid hybrid ovation in the different properties of the participants.

The operators of the bella vista farm and some farmers of the village manifested quality in practical applications and we got positive results in the research. These trainings must be carried out constantly to reinforce the different knowledge, using the practice and repeat achieving efficiency in the management of melon cultivation.

Agronomic part

In the hybrids evaluated in Figure 3 and 4 the highest growth is the Valentino F1 control and the

lowest is the honey gold hybrid and Rina F1 according to the statistical data obtained in the weekly evaluation. According to the SD, it shows that the hybrid of greatest variability in leaf length growth was Valentino F1, and in uniform growth it was Honey Gold, these results show that Valentino F1 material is not uniform due to edaphoclimatic conditions, seed quality and adaptability in the beautiful view of the Ariari region. It coincides with the investigation of Cabello et al. (2000) that the primary requirements of melon production are agronomic resources throughout its vegetative cycle, it is also important to avoid water stress, because it intervenes in cracking of the fruits and absolutely attacks the foliar development limiting the final production. In Figure 5, it is observed that the Rina F1 hybrid had greater stem development, expanding in the beds, observing a better control of weeds, lowering production costs due to poor control of weeds. Already the hybrid Valentino F1 was the one that obtained the lowest stem growth. In references to the SD, the hybrid that most dispersed was the Honey Gold in reference to the average of the distribution, in a nutshell it is the hybrid that most dispersed. It is observed that the materials presented natural senescence due to the fulfillment of their vegetative cycle in week 10; in the hybrids evaluated, no favorable or unfavorable indicator was diagnosed with respect to vegetative growth.

The results obtained in Figure 6, indicates that the Gold Honey hybrid is the highest number of flowers open, from week 5 to 7, as for the application of the standard deviation it indicates that the hybrid of greatest variability was the Valentino F1 and the one with and the largest flower buds uniform was the honey gold hybrid, this is due to the type of material and adaptability to the tropics of the Ariari area, also to the pollinators where Sousa et al. (2009) states that it is one to reach high initial vegetation levels and yield in reference to the weight of the fruit and number of seeds per fruit.

In Figure 6, it is also analyzed that the Rina F1 and Ovation hybrids presented a similar average which is the same number of flowers during the flowering circle. From week 6 to 7 there was a decrease in the number of open flowers due to the lack of pollination and unviable flowers to give the fertilization step. This was observed in Treatments 1, 2 and 3 while in the control the floral abortion was lower (according to statistical data).

In Figure 7, curded fruit was early in the plants in reference to the literature of Trinidad et al. (2005) and Cantamutto et al. (2015) climatic factors such as temperature of 25 to 30 º C, relative humidity of 75% and with a solar brightness of 6 to 7 hours of light a day (summer), which caused acceleration in the development of the plant, in week 6 the hybrid that obtained more fruit set / plant was the Valentino F1, followed by the Rina hybrid F1 due to the incidence of *Aphis millifera* in the area. In the SD, the highest uniformity was the Rina F1 hybrid, therefore it presented the same number of fruits / plants, the highest variability was the Honey Gold hybrid, which indicates that the plant can house 1 to 2 melons, therefore, may be smaller. From week 7 to 8 it is observed in the fruit Abortion hybrids, this is natural due to thinning to obtain a better size (caliber).

In Figure 8 it was evidenced that fruits of greater weight are the hybrid Ovation (1037.13 grams / fruit), followed by the Valentino F1 material (940.68 grs / fruit) where it generated good foliar growth, which

made greater production of photosynthesis therefore photo assimilated carried throughout the plant providing energy. However it is still inferior in production (kg / hectare) to the ovation due to adaptation issues in the Ariari region (resistance to pests, diseases, etc); The Rina F1 hybrid obtained a weighted 832.87 grams, due to the low leaf growth and physiopathic problems, and finally we found the Gold Honey hybrid with a weight of 753.73 grams, this value is normal because the variety was designed to obtain higher quality fruits in reference to brix grades (soluble solids) and have a personal size, being desired in specialized markets (ice cream shops, chain stores, restaurants).

In Figure 9, shows that the Ovation Hybrid (11408 kg / ha) in the Ariari region is not far from the reality of national statistical data. It is a relevant fact as a model for the farmer, operators and field professionals that the ovation hybrid remains the pioneer in kilogram / hectare profitability due to its adaptability in the region.

In general, the vegetative cycle for all the materials evaluated it was until week 10. The flowering and harvest of the fruit had no difference in days due to agronomic (equal) management, except for the Rina F1 hybrid that proved to be early before edaphoclimatic conditions (high temperatures therefore accelerating its growth "production of photo assimilates") of the region. This statement was reached because the fruit was ripening ¾ one week before the other materials and it could have percussion if it were a commercial crop in the Bogotá market. Tt is necessary to develop different marketing methods from the perspective of family farming that provide farmers with economic stability (TRIANA et al., 2020).

Finally, it is suggested that hybrids preliminary identified as promising (Rina F1, Ovation, Honey Gold, Valentino F1) be taken to semi-commercial evaluations, mainly analyzing their marketing, examining the costs / benefits incurred for their exploitation.

REFERÊNCIAS

CABELLO, M. J.; BELLIDO, L. L.; ELCOROBARRUTIA, F. R.; MORENO, M. M.; CASERO. A. M. M.. Respuesta fisiológica de un cultivo de melón (Cucumis Melo L.) a distintas dosis de riego. **Investigación Agraria**, v.15, n.3, p.195-212, 2000.

CANTAMUTTO, M. A.; AYASTUY, M. E.; KROEGER, I.; ELISEI, V.; PABLO, M.. Efecto del sistema de iniciación y del acolchado del suelo sobre la producción de melón en el sur de la provincia de Buenos Aires, Argen. **Revista de la Facultad de Agronomía**, La Plata, v.104, n.2, p.157-162, 2015.

RIVEROS, J. L. T.; THOMÉ, K. M.. Adopción de innovaciones en la agricultura familiar latinoamericana. **Pensamiento Actual**, v.21, n.36, 2021.

SOUSA, R. M. AGUIAR, O. S.; SILVEIRA, A. A. S. N.; PEREIRA, T. F. C.. Requerimentos de polinização do meloeiro (Cucumis melo l.) no município de Acaraú–CE-Brasil. **Revista Caatinga**, v.22, n.1, 2009.

TRINIDAD, R. R.; RODRÍGUEZ, J. .; MARTÍNEZ, J.. Desarrollo vegetativo de melón (Cucumis melo l.) establecido por trasplante, con guiado vertical y acolchado plástico en la comarca lagunera. **Revista Chapingo Serie Zonas Áridas**, v.4, n.1, p.15-20, 2005.

TRIANA, J.; BRISOLA, M. V.; LIMA, S. M. V.. Evolución de la permanencia y educación de la juventud rural en Brasil y Colombia. **Cooperativismo & Desarrollo**, v.28, n.118, p.1-19, 2020.

TRIANA, J. L. R.. Campo ou cidade: influências sobre a escolha dos jovens rurais granadinos no estado do Meta, Colômbia. Dissertação (Mestrado em Agronegócios) – Universidade de Brasília, Brasília, 2019.