ECONÓMICAS CUC

Arellano / Económicas CUC, vol. 43 no. 2, pp. 139–156, July – December, 2022

Green accounting in cotton white and its effect on agriculture. A documentary review

La contabilidad verde en lo blanco del algodón y su efecto en la agricultura. Una revisión documental

DOI: https://doi.org/10.17981/econcuc.43.2.2022.Econ.3

Reflection Article.
Date of reception: 08/11/2021
Return date: 11/01/2022
Date of acceptance: 22/04/2022
Date of publication: 30/04/2022

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To cite this article:
Arellano, J. (2022). Green accounting in cotton white and its effect on agriculture. A documentary review. *Económicas CUC*, 43(2), 139–156. DOI: https://doi.org/10.17981/econcuc.43.2.2022.Econ.3

Abstract

Agriculture, especially cotton farming, is an activity of numerous economic benefits, but also of special care that could negatively impact the environment, overlooking the quantification or remediation of such damage. The main idea focused on identifying the environmental impact, how to partially compensate for the damage caused and the responsibility of accounting in sustainability. Framing the research in a critical interpretative posture, technical elements were found that help to compensate the ecosystem for the damages attributed to the agricultural praxis, such as organic techniques less aggressive to the environment, it was also evidenced that accounting as a science is not by itself responsible for the commitment of the organizations to implement philanthropic actions to the ecosystem, it only records and informs for subsequent decision making. For the intention of sustainability to happen, the participation of other disciplines and ethical conduct in business management is required.
Keywords: Ambiental impact; sustainability; environmental accounting; costs; organic seeds; organic fertilizers

Resumen

La agricultura, en especial la del algodón, es una actividad de numerosos beneficios económicos, pero también de cuidados especiales que pudiesen impactar negativamente al ambiente, pasando por alto el cuantificar o subsanar esos daños. La idea principal se centró en identificar el impacto ambiental, la forma de compensar parte del daño causado y la responsabilidad de la contabilidad en la sostenibilidad. Enmarcando la investigación en una postura crítico interpretativa, se encontraron elementos técnicos que ayudan a compensar al ecosistema por los daños atribuidos a la praxis agrícola, como técnicas orgánicas menos agresivas al ambiente, igualmente se evidenció que la contabilidad como ciencia no es por si sola responsable del compromiso propio de las organizaciones de implementar acciones filántropas al ecosistema, esta solo registra e informa para la posterior toma de decisiones. Para que suceda la intención de sustentabilidad, se requiere de la participación de otras disciplinas y conductas éticas en las gerencias empresariales.
Palabras clave: Impacto ambiental; sostenibilidad; contabilidad ambiental; costos; semillas orgánicas; fertilizantes orgánicos

JEL: M19, M41, N50, Q56.

Introduction

Accounting and its beginnings date back to ancient times, as in ancient Babylon, where the need to keep records of these transactions on clay tablets arose from the hand of trade (Clason, 1926). Thus began, in an empirical and, if you will, rudimentary way, accounting; and after a natural evolution, it reached the state we known today.

In general terms, beyond a reductionist vision, and without ignoring the multiparadigmatic nature of accounting, it can be understood as a communication system for timely decision making. Environmental accounting, also known as sustainable, social and environmental accounting, corporate social reports, corporate social responsibility reports or non-financial reports, is a branch of this accounting, which reports on the environmental impact of the actions of a given organization, and also incorporates into the accounts of a company or organization, of a given region or country, elements that report and communicate the environmental impact on a society, due to the actions taken for the production of certain goods or services.

According to Morales (2012), at "the end of the twentieth century we began to talk about Environmental Accounting" (p. 6), where there was the "pre-birth" of an awareness of natural resources and their reduction with the passing of generations, the increase in population and therefore consumption, all this hand in hand with the rise of globalization. But it was not until the beginning of the 21st century, when international organizations such as the International Monetary Fund (IMF) or the United Nations (UN) decided to regulate this scourge, although already in the 90's in several countries such as Colombia, Chile and Venezuela, national legislation was passed in favor of ecology and the conservation of natural resources. In other words, the State in one way or another tries to coercively intervene in the macro-concern that the community might have about the sustainability of the planet and species.

The implementation of this sustainable accounting is not imposed by legislation, it is more linked to the will and desire of those involved (producer-consumer), rather than to the suspension of activities for not complying with it.

The agricultural sector, specifically the cotton sector, uses natural resources in the production of its crops, materializing through the depletion of existing minerals in the soil, as well as the use of chemical components during the seed germination process, all of which can have an impact on water, air and soil contamination. There is no method or procedure available to measure this environmental impact and, consequently, to find a way to remedy or at least compensate for this damage. This is the aspiration of a large part of the population, which is aware of the finite nature of natural resources. Having the support of the State to regulate the actions of companies, which, broadly speaking, are the ones that provide most of the basis for the concern about sustainability, has been a satisfactory progressiveness in recent decades.

The main idea of this article is to identify which are the environmental impacts attributable to this activity, the form of retribution of the companies through social responsibility, how to compensate this damage to the ecosystem in the production of cotton, and the responsibility of accounting as a science within sustainability; all this with the purpose of transcendence of natural resources, which according to the *Brundtland Report* (ONU, 1987), it is suggested that sustainable development is that which meets "the needs of the present without compromising the ability of future generations to meet their own needs" (Ch. 2, inc. 1).

Agricultural Activity

Agricultural activity belongs to the primary sector of the economy, in this regard Caballero and López (2016) point out that, "the primary sector includes all economic activities dedicated to the exploitation of natural resources, obtaining raw materials in exchange. These are destined for direct human consumption or for transformation by the secondary sector" (par. 1). This means that agricultural activity is the process that goes from sowing to harvesting in the fields, with the purpose of obtaining goods for the food sustenance of living beings, although there are productions which may be directed to some type of industry as raw material, where it will be transformed into various products, as in the case of cotton in the industrial textile sector.

The objectives or purposes of traditional agriculture, which according to Sánchez (2021) is defined as; "the main agricultural production model of different societies throughout history. It is characterized by its low technological influence and care for nature" (para. 1), for the sake of individual satisfaction, in terms of the production of food for their own consumption, or the sale of these products for the satisfaction of their own desires or needs.

With the evolution of human consciousness and the way of conceiving life in society, agricultural activity has taken a turn in its purpose, given that the search for collective well-being in the inhabitants of the present and the future is progressively becoming the premise of sustainability. Agricultural activity goes beyond food production; it also includes fodder, wood and even cotton, which provides the fibers used as the basis for the production of fabrics. Regarding this crop, according to Arellano (2019):

> The cultivation of cotton, goes through several processes ranging from soil preparation, planting the seed at the right time, monitoring growth by applying technical knowledge, and then harvesting. This evolutionary process goes through several stages, as different from each other as necessary. Each of them requires different care and investment (p. 36).

Although cotton is one of the most important vegetable fibers in the world, planting cotton is still harmful to the environment if it is not done in a conscious manner. The development of this line of business has shown signs of wanting to

contribute to minimize a little the collateral damage to the environment, with the implementation of the use of organic seeds and herbicides, which, although not applied in great magnitude, make the foundations of this progressiveness. According to Rawles (cited by Arellano, 2019) "the organic fiber traded in the international cotton market represents only 0.09% of the 24.8 million tons traded in the world" (p. 39).

How would the manifestations of environmental impact resulting from agricultural exploitation be linked to compensations to the ecosystem?

Unlike industries, agriculture, being a food production activity, which works with natural inputs such as soil, water and sunlight, had been seen as a work incapable of producing negative impacts or effects on the environment, especially in the 80's, when the massive application of pesticides was generally considered a revolution in agriculture, and they were relatively inexpensive and highly effective.

Over the years, with the technological revolution and the green revolution, the impact of agriculture on the environment and on human health has worsened, because it affects certain natural ecosystems to a greater or lesser degree. Since agriculture requires vast tracts of land, these used to belong to an ecosystem where animals, plants and microorganisms lived, with particular and natural reliefs, and when it came to cultivating crops, the entire ecosystem had to be removed, using logging or old techniques such as burning and rose.

In agriculture in general, fertilizers are used to increase the elements in the soil and pesticides are used to kill pests that threaten the integrity of crops, which according to the California Department of Pesticide Regulation (DPR, 2021), defines them as:

> A pesticide is any substance made to control, kill, repel or attract a pest. Such a pest can be any living organism that causes damage or economic loss or transmits or causes disease. Pests can be animals (such as insects or mice), unwanted plants (weeds) or microorganisms (such as plant diseases and viruses) (p. 1).

These products are generally applied in the open air, in the form of gases, causing their expansion through the air, contaminating land and nearby water reservoirs such as rivers and lakes. The excessive use of these chemical components, where 100% is not "used" by the crops, as this depends on the crop, topography, and situations specific to the crop. In this regard, according to Viana (2020), "it is estimated that the efficiency of applied nitrogen is 50%-70%, for phosphorus 10%-30% and for potassium, calcium and magnesium around 60%" (par. 3). This unused excess causes, in most situations, the dragging of chemical surpluses into the water of rivers and lakes, which contain the fresh water that living beings need to drink, being a risk for the health of human beings, and in the trophic relationships of the fauna that inhabits them.

There is a particularity with pesticides, they are not selective, that is, they kill all animals, both beneficial insects and pests themselves. Based on these experiences, many studies point to integrated pest management, which according to data from a study prepared for the UN by the Action Network on Pesticides and their Alternatives in Mexico-RAPAM (La Vanguardia, 2017), where it is argued that "the massive and inappropriate use of some insecticides and herbicides causes the death by poisoning of about 200 000 people a year, especially in developing countries" (par. 1). In addition to direct deaths, chronic exposure to pesticides has been linked to cancer, diseases such as Alzheimer's and Parkinson's, hormone disruption, developmental disorders and sterility. Agricultural workers, communities living near plantations, indigenous communities, pregnant women, and children are particularly vulnerable to pesticide exposure, and require special protection, says the UN-commissioned RAPAM study.

To grow all the vegetables, flowers and greens needed to feed living things, large tracts of land and other vital natural resources such as water are needed to grow them. This, according to the World Bank Group (2021), "on average, agriculture takes up 70% of the water withdrawn in the world, and agricultural activities account for an even higher proportion of "consumptive water use" due to crop evapotranspiration" (par. 1).

Cotton cultivation does not escape this reality of excessive consumption of vital water. A single T-shirt contains about 200 grams of cotton, which requires 2 000 liters of water. A denim jean requires 10 850 liters of water for its manufacture, according to calculations by the United Nations Educational, Scientific and Cultural Organization-UNESCO (Chapagain, Hoekstra, Savenije & Gautam, 2005), and a pair of sneakers, 4 400 liters.

It is easy to understand that in order to cultivate crops, abundant quantities of the precious liquid are needed, but not everything is aimed at hydrating the crops. There is water wastage attributed to deficient irrigation methods, either due to leaks or not being correctly adapted to the size of the crops. As well as plant crops, whose biological composition is not given to sprout in the climates where they are planted. An example would be to sow seeds of plants that need abundant water, such as rice, in sandy soils. This activity is one of the main causes of water wastage.

Continuing with the idea of the excessive consumption of fresh water during the practice of agriculture and, specifically in cotton production. Crops are classified according to the need or not of irrigation, in this regard, there are two types: the first, rainfed crops with natural irrigation through rain, and the second, irrigated crops. The rainfed crop is developed in areas with marked seasons of abundant rainfall without the possibility of another type of alternative irrigation. It is mainly grown in India, China and sub-Saharan Africa. Irrigated crop production is up to 300% higher than rainfed crops.

In the same vein, recent studies by the International Cotton Advisory Committee-ICAC (cited by Xicota, 2019) have determined that:

> [...] producing one kilogram of ginned cotton requires on average only 1 214 liters of artificial irrigation water worldwide. 41.3 percent of the total volume of cotton production does not require artificial irrigation. This relates to the 55 percent of the global cotton growing area that is irrigated exclusively by rainfall (par. 4).

Then you have, that for the particular conditions of cotton cultivation Mekonnen and Hoekstra of the Twente Water Center in the Netherlands also (cited by Xicota, 2019) state:

> [...] cotton consumes 3% of the water used in agriculture for artificial irrigation. [...] In recent years, cotton producers in many countries have used modern irrigation systems, which has led to a large increase in water use efficiency. Thus, it is now possible to produce significantly more cotton using less water (par. 5).

As can be seen, the cotton crop can be developed with a more rational water consumption, for example, a precision drip irrigation system, centralized, directed to bring water directly to the root of each plant, drastically decreasing, according to Irritec Corporate (2017), by at least 15% of consumption in less evaporation, less infiltration and, less runoff. All of this leads to less potable freshwater expenditure and the consequent decrease in excess water in the soil that washes away minerals and nutrients, accelerating soil erosion.

Not only the use of excess water which carries mineral matter and aggressive chemicals into rivers and lakes, but also when land is prepared for agriculture, and the previous ecosystem is removed, much fertile surface soil is exposed to the erosive action of wind and sun rays, losing its properties. This misuse, (among others), produces one of the most important negative impacts, erosion, which is produced naturally, by the action of geological agents, and by man's inadequate use of natural resources, such as the felling of forests, cultivation on steep slopes, the scarce use of soil conservation techniques, and organic fertilizers.

In this regard, the excessive use of water on crops deteriorates the soil by exposing minerals and other soil nutrients, and once the flooding ceases, it facilitates erosion by dragging and the subsequent loss of its productive capacity. To control this situation, the agricultural producer must know the water requirements of each crop and provide only what is necessary. Similarly, to prevent sliding and loss of topsoil, it is recommended that the soil be strengthened by planting trees along the crop boundary.

Another negative aspect attributed to agriculture is the salinization and waterlogging of highly irrigated soils. According to the Food and Agriculture Organization of the United Nations-FAO (2021), "soils affected by salinity have a concentration of salts more soluble than calcium carbonate and gypsum, affecting plant growth" (para. 1). In other words, when irrigated soils do not drain with sufficient water turnover, the surface becomes muddy, and when the water evaporates, the salts contained in the soil are extracted to the surface.

The above, gives context of the impacts when working the land, in any crop, including cotton, since for this, it is necessary to prepare the soil, either tradition-

ally (oxen) or mechanically, then the planting of the seed incorporating a chemical component in order to protect the seed from pests in the first days, and then apply know-how during germination, where you must have an irrigation system, herbicides to control unwanted microorganisms, and finally the harvest. According to Arellano (2019):

> This is the final stage of the cultivation process, where the success or failure of the entire agricultural activity is seen. Cotton is an arborescent perennial plant that has been domesticated for development as an annual crop. [...] Conventional cotton is harvested mechanically in many places. This leads to a loss of leaves. The plants are sprayed with chemical herbicides that cause the leaves to dry and fall off before harvest (p. 38).

For every problem there is a solution, and if it is not in sight, it is created. The environmental problems attributable to agriculture, which threaten sustainability, exist, and some of them have already been evidenced. The use of natural resources for the sustenance of living beings, whether employed by family organizations or large companies, must find a way to compensate for this damage to the ecosystem.

If the order of ideas is followed, the use of chemical fertilizers, which pollute the soil, air and water, is not prohibited, because in many cases they are considered "necessary", a situation refuted by stating that, "it is time to demolish the myth that pesticides are necessary to feed the world" (La Vanguardia, 2017, par. 1). Thing that, thanks to the palpable negative effects and the progressive awareness of farmers, many are taking the initiative to change the use of harsh chemicals, for less aggressive methods.

In this regard, there are some alternatives to replace the toxicity of chemical fertilizers or pesticides with ones that do not threaten the sustainability of the ecosystem, nor that of the human beings directly or collaterally involved. Some of the methods could be:

The EPA (United States Environmental Protection Agency), located in the United States of America, is registering a greater amount of low-risk pesticides, which in some ways is positive. However, there are alternatives to pesticides that include cultivation methods using biological controls, such as pheromones or microbial pesticides, as well as methods of disruption, alteration or interruption of insects or pests, methods that are very popular because they are healthy and effective.

Another technique is the release of other pest-fighting organisms, such as predators or natural parasites, as well as biological pesticides, such as pathogenic fungi, bacteria and viruses. It is also possible to alter the biological cycle of the insect pest by sterilizing males, which are then released to mate with the females, which will not be able to produce offspring, thus putting an end to the generation of this pest. This technique was used with the screwworm, present in animals and humans. This according to a publication by the Media

Unit-Unimedios (Universidad Nacional de Colombia, 2009). Other alternatives for not using pesticides are polycultures, that is, growing different plants in a single crop.

> However, it was not until 1953 that a method was found capable of performing this function in millions of screwworm flies without causing harmful side effects: ionizing radiation emitted by X-rays or Cesium-137 would generate dominant lethal mutations in the sperm of the males. Thus, when the fertile female mates only once with a sterile male, the developed larva will never hatch and, therefore, the progeny would not be viable (par. 2).

By reducing the need for tillage and machinery, it helps to compact water and reduce soil moisture loss, retaining roots and soil, allows for better distribution of labor and improves marketability.

Crop rotation, is a very effective method according to the Rodale Institute (2018), who notes that, "to interrupt pest and disease cycles, improve soil health by increasing the biomass of root structures of different crops and increasing biodiversity" (para. 7). Also use the so-called trap crops, which from the point of view of Martínez (2010), "consists of practicing a small sowing before or simultaneously to the main sowing, to attract insects or keep them away. Generally these small sowings are preferred by pests and are usually infested before the main crop" (p. 79).

In summary, the use of pesticides is not prohibited, because in some cases they are considered necessary, what is recommended is the responsible and reasonable use of pesticides. Always choosing the least toxic or harmful, both for human beings and for the environment. Currently, there are alternative systems for pest control, which further reinforces this ecological culture, which has been gaining strength in recent times, to have healthier crops and a healthier environment, preserving natural physical spaces for future generations.

According to the above arguments, the soil is considered the passive element of the agricultural process, by the use or abuse, loses its nutrients and minerals and receives the chemicals which in many times by excess or malpractice contaminate the soil itself, the water and the surrounding air. For the sake of a sustainable and environmentally friendly production process, farmers should migrate towards the use of organic herbicides, pesticides and fungicides, as well as organic fertilizers. In this sense, the use of vermiculture is an integral organic praxis both for fertilization and for the control of pests and diseases associated with crops; through its compost, nutrients and minerals are replenished (fertilization) and with its humus, diseases associated with fungi, bacteria and viruses are prevented and treated; it also favors soil aeration due to its spongy consistency.

The purpose of the logbook on the negative impact on natural resources and the possible ways to remedy it, attributable to cotton production, is to learn about the processes and risks of contamination, given that a holistic view of the processes to be recorded, measured and reported is needed for accounting purposes.

How is the environmental cost archetype externalized in accounting, finance and corporate social responsibility?

The environmental cost could be defined as the achievement of devoting efforts only to economic benefits, without being oriented to the non-impact on natural resources and quality of life. According to Scavone (cited by Reinosa, 2009), one of the areas of environmental accounting with more projection is environmental costs:

> [...] consist of the assessment of the rational application of environmental factors necessary to obtain a product, carry out a process or provide a service, and the assimilation by the natural environment of the wastes from human production and consumption activities (p. 234).

Green accounting, which was generated approximately 20 years ago and is considered a subcategory of financial accounting, is where the environmental costs of the use of any natural resource are sought. As Galindo (2018) states: "For this reason, the objective of companies has expanded, since now they must not only generate wealth and value for their shareholders, but also show their responsibility towards the environment" (para. 1).

In the opinion of Escárate (2014), "accounting and communication are some of the information systems within a company" (p. 1). Environmental accounting, is a dimension of accounting, where the environmental impact of the actions of a company or country is reported. It is said to be a dimension because there is economic accounting, social accounting, and environmental accounting. It is a matter of incorporating into the accounts of the company, country or locality, elements that inform and communicate the environmental impact.

From the theoretical point of view of duty to be, sustainability accounting in management accounting, contrasts with financial accounting, where management accounting is used for internal decision making and the creation of new policies, which will have an effect on the performance of the organization at the economic, ecological and social level (known as triple bottom line or Triple P: People, Planet, Silver.), which according to Elkington (1994), "is a term related to sustainable business that refers to the impact that a company's activity has on the three dimensions: social, economic and environmental" (p. 10). Sustainability accounting is often used to generate value creation within an organization. In contrast to financial accounting, which focuses its efforts on preparing financial statements based on historical information that is useful to external and internal users for decision making.

When talking about green accounting, the Sustainable Accounting Organization (Accounting for Sustainability, 2016):

> [...] is a tool used by organizations to become more sustainable. The most widely used metrics are Corporate Sustainability Reporting (CSR) and triple bottom line accounting. These recognize the role of financial reporting and show how they extend traditional accounting by improving transparency and accountability in reporting on the Triple Ps (par. 2).

In financial reporting, clear numbers are what everyone who has a stake in a company is after. According to Cooper and Annissete (2005):

> It has been said more than once that if one seeks to solve the world's problems, one is unlikely to choose accounting as a starting point. However, if we are to consider sustainability narratives at the organizational level, then it is accounts-in the broadest sense of the term-at the organizational level that we need to embrace (p. 1).

It is important to know that green accounting can be implemented at the global level, in relation to the entire planetary system ecological footprint (Wackernagel & Rees, 1996), measuring environmental impacts at the general level, as well as at the state level, which refers to indicators, for example, of gas emissions and consumption of energy generation resources, while corporately, it tries to involve elements that measure the consumption of resources, controlling the responsibility of companies on the resources they manage. Here, social ecological awareness plays an important role, as well as the actions of the company in terms of measuring the environmental ecological impact of its activities.

One of the questions of the companies is whether the implementation of equipment or devices for measuring environmental impact would be too costly and in turn would exceed the operational profits. Under the financial conception of the cost-benefit ratio, it is not very attractive to implement measures focused on reducing the negative environmental or ecological impact. In the event that such an impact is unavoidable, the measurement costs should not obstruct the economic development of companies, or the implementation of less harmful measures.

The financial objective of a green accounting, theoretically speaking, is a sustainability of both the economic activity and the social community and the environment where the company operates and, why not, a stability of its own economic activity. As any organization, its goals are directed to increase its income with the lowest possible cost, but to increase profits, and before this model of sustainability, it begins with will, if the costs and actions that reduce the environmental impact of the company are going to be generated, the benefit to be obtained must go beyond the profits, directed to a sustainability, to a respect for the environment and the environment in which the organization develops.

The implementation of green accounting has its costs, and when only a cost-benefit perspective is taken into account, it could discourage the incurring of those costs. In the same vein, green seals are a worldwide trend, organizations that certify companies whose products and goods they offer, have the guarantee of caring and being responsible with the environment, and that in many cases, makes them preferred by the consumer. So, in this context, in any case, the benefit that they will obtain is in their sales, to those consumers also conscious of the care that should be taken with the environment. According to Olivares (2015), a global trend for the consumption of more natural and fresh products is observed in an applied survey:

> The survey, which was carried out between August 13 and September 5 last year, interviewed more than 30 thousand consumers in 60 countries in Asia Pacific, Europe, North America, Middle East, Africa and Latin America, where the consumption of an important group of Colombians was emphasized, with the following results.
>
> The most desirable aspects for the nationals who were consulted are around the natural and the freshest, 72% indicate as very important that the food has all natural ingredients. For 79%, it is very important that the flavors are natural, and 61% considered it very important that they are made from vegetables and fruits (par. 1; 2).

However, logistically speaking, perhaps it all comes down to social responsibility on the part of companies, and how they give back to the environment. One of the actions that can be taken is that of reverse logistics, where, according to Richey, Chen, Genchev and Daugherty (2005), "it can be considered a forward chain redesigned to manage the backward flow of products from customers to manufacturing for refurbishment and reproduction" (p. 830). It can be presented in a joint, closed-loop or outsourced form.

Jointly, reverse logistics refers to the horizontal alliance between companies in an industry that perform reverse supply chain operations, such as the establishment of a recycling center, collaborative transportation and joint quality control. While that of Closed Circle (C.C), for Lai, Wu and Wong (2013): "C.C can be considered a capability that allows manufacturers to use existing resources in an alternative, yet cost-effective and environmentally friendly way, extending the product's useful life beyond its traditional use" (p. 106).

Another alternative of a reverse logistics, within a sustainability, in that of outsourcing activities (Espino-Rodriguez & Padrón-Robaina, 2006): "It is a strategic decision that involves contracting non-strategic activities to third parties, which are companies better able to perform reverse logistics activities" (p. 49). In this regard, companies must free up resources and capital, in order to focus on core competence.

When contrasting these reverse logistics, it can be deduced that any company that has the need to apply it, brings economic benefits for it, since in a certain way it impacts on the estimation of costs attributable to the activity developed.

If we speak of environmental costs in accounting, the intention is to record in separate accounts the quantified effect of the damage to the ecosystem caused by agricultural activity. The term "sustainability" can be disguised as social responsibility or environmental management and, since they are not mandatory, it does not become a threat to companies.

Based on this idea, Gray (2010) states:

> This has the effect of foreshadowing an increasingly pervasive set of sustainability narratives/stories comprising a relatively good, win-win cocktail of economic achievement, management excellence, environmental probity and social responsibility. This encouraging recipe has all the makings of populating business and management discourse — and probably political discourse— largely unopposed (p. 47).

Companies, which, broadly speaking, are the ones that provide most of the basis for the concern about sustainability, are the same ones that, with their speeches, which seem rhetoric, manifest with sustainability reports and responsible productivity, a world of harmony and consumption. Gray (2010) describes sustainability as an accounting project which "aims to integrate notions of social and environmental probity into the organization with a focus on the company as an initial step on the way to some unspecified but clearly desirable outcome. It does not explore any links to planetary or social sustainability" (p. 47). Attempts to provide reports explicitly linked to some idea of sustainability can be conveniently categorized as those that focus on indicators, financial narrative, and other non-financial quantitative narratives.

In making accounting estimates, in the agricultural sector, based on indicators, they project difficulty in genuinely integrating the economic, social and environmental, since each of these elements has a unique independence and conception. And when trying to give financial accounts to the organizations of their sustainability or unsustainability, it seems that they are oriented only to understand them through a simplified numerical representation.

When trying to contextualize the term sustainability in the organization, several edges emerge, sustainability is an ecological and social concept, which hardly coincides with corporate or organizational limits. That is, one can speak of equity within societies and of ecological support capacity at a general or even regional level. Its projection at a corporate level is complicated and may, in a number of particular ways, be unreliable. As evidenced, sustainability can have various connotations from politics, preferences, knowledge, religion, spirituality, understanding of planetary ecology and morality, among others. These are scenarios where any sustainable solution is presented, so that the chosen notion of sustainability is the collective result of all these value judgments.

And this is where Immanuel Kant's aesthetic judgment and sensory intuition come into play. That is, one comes to know something as good and/or true by appealing to one's own sense of intuitive harmony, rightness, coherence, even authenticity in the existentialist sense.

Kant (2013) defines:

> (Sensible) intuition and concept constitute the two elements of all our knowledge, so that neither concepts without a corresponding intuition, nor intuition without concepts can give us knowledge, [...] without sensibility no object would be given to us and without the understanding, no object would be thought. Thoughts without contents are empty, intuitions without concepts are blind (p. 62).

He also argues:

> It is therefore as necessary to make sensible concepts (i.e., to add the object to them in intuition) as it is to make intelligible intuitions (i.e., to subject them to concepts). The two faculties cannot change their functions. The understanding cannot intuit anything, nor can the senses think anything. Only from their union can knowledge emerge (Kant, 2013, p. 62).

In this way, it is possible to think that sustainability, as a rigid figure does not exist, perhaps it is conditioned to satisfy aspirations and to become more flexible according to the needs and/or collective or individual good pursued. It is left to the best judgment and understanding of those involved.

When we speak of "satisfying aspirations", perhaps it is the same sustainability of companies, which, as part of an extra benefit, for the ecological contribution to the planet, design their own remuneration and measurement plans, reflecting them in their financial statements, creating a world of sustainable companies, in a world that aspires to have that sustainability. According to Gray (2010), "it has been argued that there is no basis for suggesting that sustainability can be approximated by reporting on an entity's economic, social and environmental activities" (p. 47).

It is also true, however romantic the idea of 100 percent sustainable accounting and ecosystem may seem, that the intentions are good, and for the collective good. But it is the companies that dominate the dynamics of the markets, since they are the ones that provide the inputs, and cutting off this flow in transactions, by not carrying out an activity without environmental impact, would generate another series of problems, such as scarcity.

For this reason, when talking about flexibilization, the idea of compensating for ecological wear and tear with actions that contribute in other ways is emerging. For example, to grow cotton, the land must be used, fertilizers must be applied and abundant water must be used. This activity is unsustainable, because to some extent it affects the ecosystem. But, crop residues such as husks (Miniño, 2018)[1], bring some kind of benefit to another element of the ecosystem. This compensatory effect could be taken as sustainable for some organization. Consequently, Gray (2010) states that "requiring all entities to be so sustainable is unnecessary and probably overly restrictive" (p. 47).

With the above evidenced, the channel of this research was directed to discuss the existence of a sustainable accounting (properly speaking), to measure the environmental impact quantitatively in a reliable way is a utopia, it is a simplistic way to see something complex, since the discussions raised by the accounting of recognition and measurement are necessary, but not sufficient, because the commitment is greater. Although due to the technological advances imputed to modernity, it is possible to know the green environmental surface, and to inventory it, this is not enough, since giving value to the ecosystem, no matter how many artifices, methods and systems are achieved, will be subject to an individualistic appreciation, built from the belief of being able to measure the damage to natural elements, on which the life of all living beings depend.

[1] For Miniño (2018), the fiber is separated from the seed. From this process, one product is obtained (the fiber), and three by-products: seed, fibril and husk. by-products: seed, fibril and husk. The nutritive value of the husk is low, but in ruminants it represents a good effective fiber. represents a good effective fiber. Several studies have shown that its use by substituting part of the corn silage part of the corn silage, produces increases in dry matter intake and fat content in milk.

This is not to say that we are against the idea of preserving the environment for future generations through responsible agricultural activity. However, this preservation does not depend on accounting as a science. It only records, measures and reports quantitatively, the steps in the production process, for subsequent decision making, which will be subject to the ethical conscience of a management.

At the beginning of this research, some natural elements that are negatively impacted by the agricultural activity of cotton (soil, water and air) were evidenced and in turn, possible solutions to mitigate the environmental impact were outlined. The intention of this paper is to implement these ideas of environmental compensation, and everything executed in order to contribute to dilute the corrosiveness of traditional agricultural practices, will be quantifiable within a green accounting.

Although its use is not mandatory, national legislations by constitutional mandate and application standards such as IFRS for SMEs (International Accounting Standards Board-IASB, 2015, sect. 34) and IAS 41 (IASB, 2006) (full), are driving users to implement it in their activities. Perhaps it would be beneficial for the State to intervene directly in those organizations that, by their own decision, decide to invest in this type of philanthropy, granting economic and tax benefits.

Methodology

The development of this research focused on the detailed documentary review of the agricultural praxis of cotton cultivation and the accounting of the ecological impact of this agricultural process. The ideas or positions of several authors were presented and contrasted in relation to the subject, exposing the agricultural procedures developed and, from a theoretical perspective, the risks to which the environment (soil, water, air) is exposed and alternatives to mitigate such impact; Similarly, from a theoretical position, an approach to a green accounting structure is presented, which throughout the development of the research is strengthened (or refuted) from a critical interpretative position, in line with Chua (1986), who argues that the researcher must be immersed in the context; thus some conclusions and recommendations emerged that are considered relevant at this time and in line with the level reached by sustainable accounting.

Results

Before talking about green accounting, we find a green management, a management that works for sustainability, changing some practices considered aggressive, for others not so much. Where man's need for clothing, among other things, makes it imperative to grow cotton as an excellent fiber for the development of textiles, since it lends itself to apply "friendlier" practices with the ecosystem, such as drip irrigation, the use of organic seeds, the use of herbicides, pesticides and organic fungicides such as worm humus.

When referring to sustainable accounting, ecologically speaking, its responsibility is to measure, record and report the investment cost incurred to compensate the damage to the ecosystem; and not to estimate the damage directly done to the natural elements (water, land, air), since its quantification may represent disproportionate costs and efforts, and no matter how many methods are created to respond to something that does not have a reasonable and reliable initial value, it is not possible to estimate its economic value attributable to the production alone.

Discussion of Results

The term green accounting, or sustainable, serves as a propellant for some companies to generate impact on consumers, where perhaps they do not meet the intentionality of the same, only accounting adjusted to meet the aspirations of management not committed to the green, but with the financial results, and that is where the raison d'être of accounting to record the quantifiable and report, has no transcendence. That is to say, sustainability does not depend only on accounting as a science, it would only work under a coupling of this with other disciplines.

After illustrating the situations that merit recognition and special treatment, with a view to better management of green accounting and damage to the ecosystem, it is recommended that agricultural entities should consider the use of more environmentally friendly practices, where they seek the conservation of ecosystems, under the premise of the finite nature of resources and aware of the need to contribute to meeting the needs of future generations.

Conclusions

Agricultural management should lean towards practices that are less aggressive with the ecosystem, whether they are chemical or physical, even if from a cost point of view, these are more onerous. The system for calculating and recording the costs associated with a harvest should measure, record and report the costs, including those incurred to compensate for environmental damage, in order for management to make timely decisions.

The existence of a sustainable green accounting that allows measuring the environmental impact quantitatively in a reliable way, through the use of magnitudes, is a simplistic way of looking at something complex and will always be subject to a subjective appreciation under the idea of pretending to measure the damage to natural elements on which the life of all living beings depends.

Ethics as a figure of coercion in business management is an important figure in the search for teamwork to determine in a more reasonable way the environmental impact of aggressive agricultural practices, accounting alone cannot be attributed this task, it is necessary the collaboration of other areas affected by the environment.

It is considered appropriate to propose inter-institutional cooperation between government agencies, banks and cotton farmers to stimulate this activity.

ACKNOWLEDGMENTS AND THANKS

This article is a derivative product of the research project entitled "*Emerging accounting processes in relation to an incentive financing model for agricultural production. Under the philosophical approach of Immanuel Kant*".

The author wishes to give special thanks to his thesis tutor and friend Dr. Pedro Pablo Escalante Duque, for his encouragement, support and wise words.

To engineer Yuliana Karelia Márquez for her valuable collaboration in the revision of the article's formalities, and her contribution in the presentation image.

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