

DESIGN APPLIED TO FAMILY AGRICULTURE AND AQUACULTURE BASED ON SOCIAL INNOVATION

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ABSTRACT

The design has gradually been considered by people as an important element for organizations, reinforcing their identities and consequently their image perceived by the society. The design assumes the compromise of intermediate the communication process producer-consumer, aggregating and highlighting the value of the products, in order to create a concept that reflects and increments their main characteristics. In this context, we listed and discussed the basic dimensions of the proposed model, identifying their influences and connections in the sector of agriculture and of aquaculture. In the case of the model of 7I's, it is possible to identify in the same context the need of opting for actions aimed to the integration of the areas as a way to ensure more comprehensive solutions, thus bringing in it innovations at different levels (basic incremental and radical, as well as the social innovations). Additionally there is an intervention process with proactive characteristics (preferentially) which may similarly potentialize the interaction of all involved at all levels, in an intelligent and articulated form. Besides, it generates a feedback process in an integral form. All this leads to the shaping of a systemic approach of the situation.

Social innovation and integration can be achieved through the implementation of actions of design. In this article we present cases occurring in sectors of agriculture and family aquaculture, in which, through of a suggestion of applied design management, it was possible to check positive results. The partnerships established between the government, university and other copartners, as well as with the producers themselves, have been resulting in concrete and evident actions of improvement on weaknesses detected in the sectors being studied. With systematic and planned procedures of management and design, it was possible to transform some actualities, by having them measured, quantitatively at points of sale, and qualitatively based on perception of consumers/users.

INITIAL CONSIDERATIONS

The design has gradually been considered by people as an important element for organizations, reinforcing their identities and consequently their image perceived by the society. Thus, the design assumes the compromise of intermediate the communication process producer-consumer, aggregating and highlighting the value of the products, in order to

create a concept that reflects and increments their main characteristics.

The incorporation of design in form of management has been held in Santa Catarina since the year of 2000 through the Nucleus of Design Management, of Universidade Federal de Santa Catarina, in various sectors. This article will present specifically the results reached by actions initially in family farming and in family aquaculture nowadays.

As a way to introduce the reader in the matter, we will present information on these sectors allowing a better understanding of the subject of discussion. According to the referential document of the Agro Industrialization of the Family Farmers Production Program (2003/2006), produced by Ministry of Agrarian Development (MDA), in Brazil the process of aggregation of value to agricultural products and livestock has historically been centered in large agroindustrial units. These units are located in medium and large urban center and the public policies in general have not supported the insertion of familiar farmers into the process of agro-industrialization of their production.

The MDA itself complements defining family farmer as being a person who holds or explore one or more rural establishments with his family. It can be as a "posseiro" owner (who has legal fruition of the land), settled, lessee, partner, as in commodate, asset, usufruct. He cannot possess, in any way, area of more than four tax modules, quantified according to the legislation in force. In addition, he should obtain at least 80% of the family income from farming and non-farming exploration of the land. He must maintain family labor as predominant in the exploitation of his establishment and may have up to two permanent employees; is also accepted the eventual resource of help from third parties when the seasonal nature of the activity requires [1]. In aquaculture, small producers are also responsible for a large part of the Brazilian production and the characteristics are very similar to those of the sector mentioned above.

We can see that both in agriculture and aquaculture small producers play a fundamental role in food safety, in the generation of employment and income as well as in the development of sustainable agriculture and aquaculture, both ecologically and socially just.

FAMILY AGRICULTURE AND MARICULTURE NUMBERS

Today there are five million farming establishments throughout Brazil. From this total, more than 4.1 million (84%) belong to family farmers. The sector is fundamental for agricultural production. A study done by FIPE (Foundation Institute of Economic Research) shows that only in 2003 the sector was responsible for 10.1% of national Gross family Product (GFP), moving R\$ 156.6 billion. Family farming also responds for more than two thirds of the employees in the field.

In Santa Catarina, in accordance with the criteria for classification of PRONAF (Program of Familiar Agriculture), the family agriculture represents a universe of 180 thousand families, involving more than 90% of the rural population. These families of farmers, although they occupy only 41% of rural area, are responsible for more than 70% of agricultural and fishery production of the state. In addition, they stand out in the production of 67% of beans, 70% of maize, 80% of swine and poultry, 83% of milk and 91% of onion. These data show the importance that they represent for the development of the state [17].

The relationship that has been established between the government and institutions to help the development of the small agro-industrial business are object of investments and – as a way to better understand this subject – it's necessary to define some concepts, and among them the one of the small agro-industrial business. In accordance with Prezotto [16], we can conceptualize small agro-industrial business as a industrial unit that transforms and/or benefits farming products, is located in rural areas and is managed by the farmers themselves in a different scale from those of traditional industries (of large agro-industrial business).

As well as agriculture, aquaculture plays in Brazil an important role in all its aspects as an effective instrument of social inclusion, of food and income production in family scale, and of instrument in the organization through associations and cooperatives [14].

Within the importance attributed to aquaculture, we emphasize malacoculture (cultivation of mollusks). This activity is highly attractive for various countries (developed and developing countries) since the cost of production is considered less high than that of other activities in this sector. This happens because the mollusks are fed by aquatic organisms found in their habitat and do not require special feeding as in the case of fish farming [4].

Brazil today is the second country in aquatic production in South America, behind of Chile.

Within the national ranking and regarding to the production by states, Santa Catarina occupies the second position with 35.4 thousand tones. Specifically in the sector of malacoculture (cultivation of mollusks), in the year 2004, the state of Santa Catarina stood out as national leader in the cultivation of mussels, oysters and scallops [14].

Regarding the techniques used in the cultivation of oysters and mussels, they are relatively handmade and employ family labor. It is common to see the producer acting at all stages of the productive chain. He produces, benefits, distributes and markets the products. With these general information it's possible to have an overview of the sectors studied and we will present now considerations concerning the management of design applied to both

INTEGRATION AND INNOVATION: A PROPOSAL FOR THE MANAGEMENT OF DESIGN

As common points, the two sectors present weaknesses among which stand out: difficulties with marketing, trouble in the organization of the sectors, as well as in the productive process and legal requirements. We are going to discuss these and others hereinafter.

Due the fact the state of Santa Catarina was characterized as an estate of family agriculture, with its almost 200 thousand properties [1], one of the big problems that occurs is competitiveness. Here there is predominance of contest, which produces the low prices practiced. In this sense, one of the possible solutions is in the union of efforts. This point is expressed in this work with the inter-relationship between the Government and institutions of teaching and research to provide that the agricultural productions of these properties become increasingly competitive.

There are many difficulties for small agro-industrial businesses to have access to design. Be the lack of knowledge or physical distance from the centers with professionals acting in the area. Moreover, the predominant factor – the budgetary cost [15]. In order to minimize these problems, some actions have been taken, among them those that are being described in this article.

The Institute of Agricultural Research and Rural Extension of Santa Catarina Santa Catarina Agricultural Research and Rural Extension Institute (EPAGRI), through CEPA (Center for Studies on Harvest and Markets) made a partnership with the Universidade Federal de

Santa Catarina, specifically through the Nucleus of Design Management, and is developing researches and projects in the area of AgroDesign. The goal is to find out solutions to problems found in the products of family agriculture, such as labeling/packaging, apparent quality, updating of the normative aspects, modernization and monitoring of technology trends, among other aspects. These problems occur repeatedly in current researches being done by the same nucleus at the sector family aquaculture.

There was the understanding, within the businesses of the State, specifically in the matter of agriculture that the competences in the area of design were still insufficient to act with farmers and at agro-industrial businesses. Thus, in 2002 it was done an agreement of partnership with the government of the state of Santa Catarina (Brazil), through the Centro de Estudos de Safras e Mercados, an organ of EPAGRI which is joined to the Secretaria de Estado da Agricultura e Política Rural do Estado de Santa Catarina. The goal is the development of projects in the area of worth of products from family agriculture, with a focus on social innovation. In the partnership, the Nucleus of Design Management of Universidade Federal de Santa Catarina was responsible for the actions of Design Management, both operational as bound strategies; the differential was cost zero for the producers. The resources were made viable from the government of Santa Catarina and organs of research fomentation.

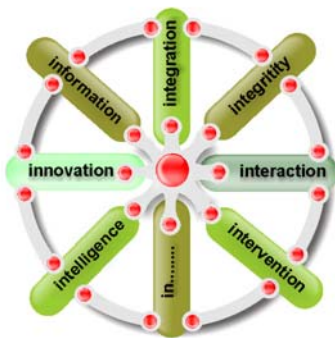
Throughout these years, the partnership attended many counties and, consequentially, their producers. Actions were carried out at various levels and among them has been prominent the development of labels and packaging for a large number of products. Among them, we can highlight honey, homemade biscuits, pickles, colonial chicken, juices, jams, tomato sauce, cachaças and wines. More than 400 families were attended by the project, thus helping to improve the competitiveness, differentiation and support of the sector.

By this form oriented by theorist references and by practices coming from various areas of knowledge (marketing, nutrition, computing, journalism, food, advertising, design, among others) it was possible all over these years to develop and validate a series of procedures, both in practice as in theory. The validation has been verified by research in point of sale and by researching the apparent quality in each of the projects. We are characterizing the Integration

and the Innovation arising from the incorporation of Design Management in the sector.

The proposal of integration and innovation – 2I's – was originally presented in the year 2000 and contained as structural elements for the process of design management constant innovation of the products together with an effective integration of all areas involved - Merino[12]. It has its support on the fundamentals put forward by the Centro Português de Design, which differentiates the operational design from the strategic one as different components of the process, but complementary [3]. That proposal has evolved as time goes by and mainly with the practical application and theoretical reflection of the matter. Now it has 7I's characterizing in this way one of the specific purposes of this research, which is about the analysis based on the model mentioned, to validate and contribute for the consolidation of diagnosis.

In order to have implemented the management procedure in the best way we proposed the model of 7I's (integration, innovation, interaction, intervention, integrity, intelligence and information). Acting in this articulated, flexible and versatile form constitutes a scenario proper to incorporation and utilization of the competencies and abilities of all people involved. There is a constant change, adjusting to the inner reality and the scope is flexibility to incorporate new parameters and exclude reasonably the need.



Model of 7I's

In this context, we listed and discussed the basic dimensions of the proposed model, identifying their influences and connections in the sector of agriculture and of aquaculture. In the case of the model of 7I's, it is possible to identify in the same context the need of opting for actions aimed to the integration of the areas as a way to ensure more comprehensive solutions,

thus bringing in it innovations at different levels (basic incremental and radical, as well as the social innovations). Additionally there is an intervention process with proactive characteristics (preferentially) which may similarly potentialize the interaction of all involved at all levels, in an intelligent and articulated form. Besides, it generates a feedback process in an integral form. All this leads to the shaping of a systemic approach of the situation.

Complementing, a general appearance of an innovation implies that it should have been implemented. In this sense we would believe that the actions carried out and those in progress at the agriculture and aquaculture can be considered as social innovations. A new product or an improved one is implemented when introduced in the market. An innovative social project needs to be put into practice. Only by this way, it is assessed about its potentiality of transforming the society [5].

Summed up to this referential, Gimeno[7] consider that the design may be used as an instrument of competitiveness for organizations, which can constantly innovate and aggregate value to their products and to the company itself, facing in the best way the increased competitiveness of the globalized market. Yet, the same author comments that the design can allow that consumer's needs are better satisfied, as well as it can reduce costs and increase the income. This implies clearly in a higher value of use; in short, it is constantly adapting the requirements. All of it can still be complemented with the product differentiation by a series of symbolic values obtained from the integrated work of the various areas involved in the process. "An innovation is the implementation of a new or significantly improved product (good or service). The same is valid for a process, a new method of marketing, or a new organizational method in business practices, as well as in the organization of the local of work, or in external relationships".

So, the innovation in this type of projects is manifested with the reformulation of the market research, to turn it in research based on solutions. The objective is to uncover what direct and indirect customers would expect the product or service do for them. In this sense, the proposal for basic innovation (small improvements in the product or service) and for concerning innovation (innovations aimed to new markets), as well as for the conceptual innovation (products and services with a new concept, proposal of value, etc), were the basis of this applied researches [2].

We also can observe the possibility of inquiring how the design can provide a greater emphasis to the product, especially through the packaging, which manifest its quality and result as consequence the strengthening of its competitiveness and differentiation. This can be better understood when we verify some aspects like geographical indication, which includes the indication of source and the designation of origin; also the nutrition information, normative aspects (laws), visual (colors, texts, materials) and compulsory labeling, among others. These aspects are not being correctly exploited and not correctly submitted, otherwise originating a significant loss of the possible degree of competitiveness that the products could get in their marketing. In such case, an item that is not being exploited is about the family origin of the production, and is a topic of very much value nowadays.

Because of the new technologies and the increasing innovations, the small producer – that often does not have financial conditions to invest in technology – needs new resources that enable a differential. Among the reasons for this problem, we can mention the lack of resources in these sectors, as well as the widespread lack of awareness about the target of action and contribution of design, therefore preventing a more concrete relationship. Is in such context that the projects and researches here presented reinforce their characteristics of social innovation.

According with Farfus et al[5]: “Social innovation can be defined as a set of processes, products and methodologies that enables the improvement in the quality of life of the other and reduces the inequalities. In other words, it is the contribution to the sustainability of the community and of the country.”

The Design Management, through innovation, has been pointed as a key element in the process of development and is considered as one of the pillars of competitiveness. It will be able to generate potential and to aggregate value to the products and processes of family origin.

PROCEDURES UTILIZED

The procedures used in these projects are based on the strategic aspects of the design management. Therefore, we followed the following steps: diagnosis, definition, determination and integration [12].

In the diagnosis step, we carry out an analysis of the situation, investigating the problem that gave rise to the demand. For this, we use tools

and techniques of setting up the information. This first sight, in fact, it is essential to know the variables, the direct and indirect actors as well as their capabilities and limitations, their expectations and projections, among other factors.

In the definition, we formalize the ways we pass through to reach the goals set out in the previous stage.

The determination counts for the strength and weak points highlighted in previous stages and which allowed defining criteria that helped the process of bringing alternatives.

Finally, we have the integration, which in practice permeates all the stages proposed and encourages the interrelationship among the various areas involved. We do this with the purpose of making the project more effective and efficient.

In the operational part, the process is based on participatory management of all the actors involved. In this sense, the visits to the places of production and to the head office of cooperatives and/or associations are fundamental, so much as the setting up carried out in the points of sale. They are appropriate for the study of the behavior of the products of producers and the products of competitors.

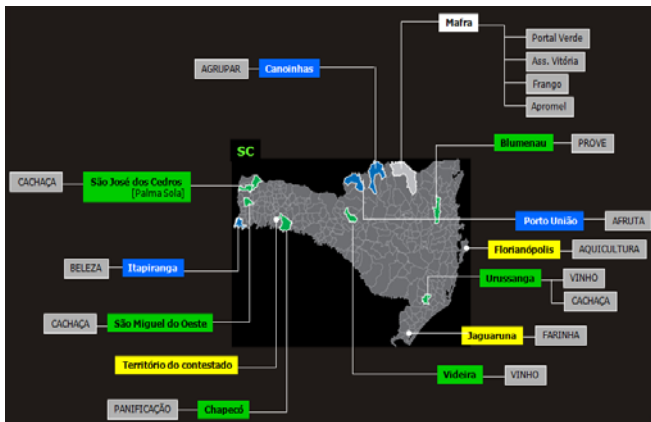
The design process is based in the information collected and in the parameters of project defined by the producers, as well as in the limitations imposed. Consequently, the factor cost is always present. After the generation of alternatives by the team of project, they are presented to the producers that discuss the subject with the team of project and choose the best alternative. To the alternatives, prototypes are elaborated with the labels/packaging developed. Summed to bidimensional images and photographic record they serve as basis for the decision.

The procedures followed in the process of design were based on proposal of Vidales[20], which presents the following steps: analytical, creative and executive; and on the proposal of Mestriner[13], in which he considers issues relating to the process, utilization, interrelationship with other areas, among other questions.

PRACTICAL RESULTS OF THE INTEGRATION AND INNOVATION

The integration and innovation rooted in the theories of the design management and in a strategic vision resulted in a series of studies and projects over the years 2002 to 2006 on family

farming and, in the years 2007 and 2008, on family aquaculture. In the first case, it is possible to visualize the places and the products developed; they are scattered practically throughout the state of Santa Catarina.



Map: summary of the localities attended in the estate of SC, in the sector of family farming.

The locality Mafra was the first place to be attended by the project of reinforcement in the year 2002. There, we monitored four associations of producers that marketed their products in a grouped form and through the local BNAF. They were trading their products in supermarket and fairs of the region. Labels and packaging were developed for products such as pickles, colonial chicken, honey and homemade biscuits. After the conclusion of the design project, a pilot research for value of new products was carried out in point of sale and the results were very positive. Among the obtained results, we may mention a high index of acceptance by consumers related to the products with new appearance. The research showed that in all cases the receptiveness was positive ranging in media 90% [15]. These results were confirmed through the recognition in the Management of Citizenship Concourse sponsored by Fundação Getúlio Vargas. The project received honors in the year 2003.

The second research aimed the localities of Canoinhas, Porto União and Itapiranga, in which we attended producers of juices, jams and food in general (in the two first localities), as well as farmers with products derived from sugar cane (third locality). They were attended by the project. In this second project it was possible improve the procedures used in the first one and systematize the actions. In technical terms, the results have been very positive and they were accepted and applied by the producers in general. The group of fair dealers in Canoinhas, called

Agropar, showed since the beginning a very great interest in the project, and a clever notion on the need to improve the apparent quality of their products and services. In this sense, the need to get an applied identity to all levels of the organization has been expressed by them and the team of project developed from the uniform till the labels of packages.



Fair dealers from Agropar in Canoinhas (SC), before and then.

A research of opinion on the apparent quality of new products was carried out in points of marketing in the localities of Canoinhas and Porto União. It is important to clarify that this research intended to verify the behavior of local consumers regarding the new appearance of the products, without trying to generalize. The results were considered satisfactory and were cited in the comment of one of the producers of Agropar: "... it has improved too much the sales and the recognition for us as farmers..." - Luna and Yamada[19]. In the case of the group in the locality of Itapiranga, called Beleza, it was very clear since the beginning the conscience of the producers about the need of improving the apparent quality of their products in order to improve, too, their commercial performance. The results showed positive ranks again with the developing of identification and labels, as well as a "premium" packaging for the product cachaça, which was very well accepted and recognized through the award received in the concourse Design Catarina MPE 2005. In this event, the

project Agrupar was also object of recognition, with honorable mention [11].



Meeting with producers. Labels and the "Premium" package. Group Beleza.

These results were fundamental to the maintenance of the partnership; it gave continuity to the projects, attending this time a family agroindustrial business located in Palma Sola, where we focused the product cachaça. By this project, it was verified that the proper partner (EPAGRI) did not have an appropriate identification of their own products, and, consequently, it became a bad example to all those producers who was seeking aid in it. About this, one of justifications presented at the beginning of this work remains: "... there is the understanding that there is not knowledge or apt professionals within the companies of the State to act in the area of Design attending farmers and agro-industrial businesses. The fact restricts to partner companies of the project. Thus, we started a project with EPAGRI aiming at the creation of a "family" of products that could be recognized in any place of the state as pertaining to them.



Meeting in the agroindustrial business in Palma Sola. Products and producers assembling packaging and labels.

The localities attended and their products were Videira (wines), Chapecó (bread making), Urussanga (wines and cachaças), and São Miguel do Oeste (cachaças). The results obtained allowed to confirm that the development of a project of this nature is possible and gives to products of particular business graphical elements of identification and enable their correct recognition.



Presenting study and project in different localities where EPAGRI/SC is.

Currently, with the conclusion of all the projects mentioned above, new groups are being examined in different localities, and strategies for attraction of resources are being defined in order to continue improving the total project; to do this we are aggregating new values in it.

In the year 2007, it was carried out preliminary studies with the purpose of exploring possibilities for researches on the sector of aquaculture. These studies showed the existence of weaknesses in the area of design, specifically as regards the visual identity, packaging, forms of communication and divulgation. In the same year, by means of a research project, supported

by the Federal Government of Brazil, we were able de facto to start studies more concrete in the sector. The initial researches indicated the great economic dependence in the production, a great difficulty in marketing and, among small producers, we detected a predominance of family work and reduced mechanization.

Based on these initial considerations, we tried to develop a project of Design Management applied to a small productive group in the sector of aquaculture. We opted for one with family characteristics. With the orientation of EPAGRI, we chose AMPROSUL (Association of Professional Fishermen Maricultures and South Island–Florianópolis – SC). The following information refers to this research and it takes as reference Garcia et al[6].

AMPROSUL is composed of 27 members; it is located in Riberão da Ilha, in the south of the Santa Catarina's Island; AMPROSUL was founded in 2005 by a group of mussel producers and it has family characteristics. The predominant product in the activities of the association is the mussel *Perna perna*, better known in the region as *marisco*. Its production starts with the achievement of the seeds in the sea; they use proper collectors for that. The strong point which maintains these associates incorporated is the motto "... plant together..", in the sense that the associates meet themselves to install the collectors in water and, after some months, meet themselves again to withdraw the collectors and share the seeds.



Members of AMPROSUL removing boat of the association and during the meetings.

In the first visit to the association, the proposal was presented to its president. From that time on we started the process called preliminary diagnosis of the situation, in which it was possible to obtain some important information, among which we highlighted the lack of a visual identity (brand), short awareness of the existing association, irregularities in the legal registration and lack of resources for the production. Otherwise, we detected some very positive aspects in the group: it is a conjoint

group and with common purposes, willingness of growing and with a promising future.

During the general meetings, it was possible to have the perception from the own people involved about the current situation. They say, "Show the quality of the product and the benefit it brings" (Max); "You talk about an idea, I introduce other one; we gather the ideas and do the better" (Ademir); "Our group is small, but it is tasty, we are here to sum!" (Eva); "We like this activity and we are fine when our friends are too" (Ademir); "Mariculture has been helping us too much" (Marilei and Joel); "You don't need too much things to do it correctly" (Fernando); "I will buy your product because I know it!" (Zezinho).

As a synthesis of the points raised after the individual visit to each producer, we can point that some ranchos (name given to the places of production) did not have toilets. There are difficulties in the classification of mussels, problems with finding a destiny for the waste shell, faulty workbench for the work (problems with the material, with hygiene and with posture). They also have problems with chucking (withdrawal of the mussel from collectors or bunches). There are lacking of packaging and labels to the marketing. Some people suffer from physical problems (column, hands, varicose veins), as results from the activity; the divulgation of the product (advertising) is practically inexistent. They confront with the red tide (natural contamination of the sea) and concern about their future generations, mainly about the possibility of exodus for the lack of expectations.

It has been shown as evident that there are various problems. Some of them are directly related to design, others are related to the management process, to production and to physical and health aspect, among others. Even in this phase, we deepened the field researches, including mainly the detailed survey on the associations, productive groups, marketing and other relevant items.

In the case of ongoing research and until the present moment some actions of design have already been implemented counting with the active participation of producers. As example, we can cite the creation of a visual identity as well as various applications, a web site (www.amprosul.ufsc.br) and an institutional video, among other issues. Additionally, the people were allowed to settle legal aspects like municipal registration and received guidelines on how to organize themselves into an association. We consider these aspects as basic in the

management process; so, consequently, they bring increase in value.

The reached results up to this moment allow the glimmering of a very promising future on the ongoing research, which is characterized as applied, for it searches and proposes solutions to the difficulties encountered.

In addition to the contribution to the development of the design, the research shows how much important this knowledge area can be for sectors such as mariculture. It allows a better recognition of small productive groups and creates marks that would meet their requirements. Also, and mainly, it converges in some of the principal factors for business of the current days, research and development. In the presented cases, we think it can be affecting the social status of those groups.

CONCLUSIONS

Innovation and integration applied to family agriculture and aquaculture in the state of Santa Catarina demonstrated over the examples above submitted that it is possible to execute a series of actions taking as basis the Design as a strategic tool.

Again and again it become more evident the need to work with multidisciplinary teams. They must be integrated in a harmonious and balanced form into a serious and responsible work, which can translate into positive results. Additionally to this point, the possibilities of improving aspects like the marketing create important changes, to the extent that the products start to fight in equal conditions with competitors.

The contributions of the communities, in these cases represented by family producers of sectors of agriculture and aquaculture, make evident that it is possible to approximate research institutions to social realities and economic problems these sectors have. Through planned and, mainly, integrated actions it is possible to obtain a good degree of participation. The results can be considered as being of social innovation.

The researches and projects presented have been improving a method quite appropriate. This may be corroborated by the results achieved up to now. The next steps are going to be the continuity of new studies and projects, in a partnership way, as well as the divulgation and systematization of the procedures used, which may open new opportunities for all those who are interested in the theme.

Finally, we believe that it is possible to make a design easy for everybody and that can integrate the different actors in the society.

** Brazilian National Council for Scientific and Technological Development (CNPq), Coordination for the Improvement of Higher Education Personnel (CAPES), Agricultural Research and Rural Extension Institute of Santa Catarina (EAPGRI) and the Federal University of Santa Catarina (UFSC).

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