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**2021**

# Observatory of food sovereignty and nutritional education in the innovative management of public administrations

## Observatorio de soberanía alimentaria y educación nutricional en la gestión innovadora de las administraciones públicas

## Observatório de soberania alimentar e educação nutricional na gestão inovadora das administrações públicas

**Maidelyn Díaz Pérez[1]; Pablo Ramón Brizuela Chirino[2]; Reinaldo Javier Rodríguez Font[3]; Raudel Giráldez Reyes[4]; Joovaim Blanco Borrego[5]**

[1] Universidad de Pinar del Río "Hermanos Saíz Montes de Oca". Editorial Universitaria. Grupo de investigación en Gestión de Información, Conocimiento y Tecnologías (proGINTEC). Pinar del Río, Cuba.

https://orcid.org/0000-0002-2029-0629

maidelyn@upr.edu.cu

[2] Universidad de Pinar del Río "Hermanos Saíz Montes de Oca". Editorial Universitaria. Grupo de investigación en Gestión de Información, Conocimiento y Tecnologías (proGINTEC). Pinar del Río, Cuba.

https://orcid.org/0000-0003-0851-5482

pablo.brizuela@upr.edu.cu

[3] Universidad de Pinar del Río "Hermanos Saíz Montes de Oca". Editorial Universitaria. Grupo de investigación en Gestión de Información, Conocimiento y Tecnologías (proGINTEC). Pinar del Río, Cuba.

https://orcid.org/0000-0003-0050-6709

rjfont@upr.edu.cu

*Translated from the original in Spanish*

[4] Universidad de Pinar del Río "Hermanos Saíz Montes de Oca". Editorial Universitaria. Grupo de investigación en Gestión de Información, Conocimiento y Tecnologías (proGINTEC). Pinar del Río, Cuba.

https://orcid.org/0000-0002-1313-3983

giraldez@upr.edu.cu

[5] Universidad de Pinar del Río "Hermanos Saíz Montes de Oca". Editorial Universitaria. Grupo de investigación en Gestión de Información, Conocimiento y Tecnologías (proGINTEC). Pinar del Río, Cuba.

https://orcid.org/0000-0002-8787-1292

joovaim.blanco@upr.edu.cu

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## ABSTRACT

Information and communication technologies, together with advances in information management, have had an impact on the strengthening of the technology-information-communication dimension of public administrations, causing profound transformations in their management, mainly in information governance. This approach requires data and information infrastructures with online services to manage the needs of both administrations and citizens. At the same time, the President of the Republic has encouraged the optimal use of information, knowledge and technologies in administrative decision-making, showing the State's recognition of this innovative form of management. This attitude is coherent with the orientation of the maximum direction of the country, of the need to build Observatories that support a better use of Science in food production. Given this threshold, the present research proposes to show some components of the Observatory of Food Sovereignty and Nutritional Education of Pinar del Río, Cuba, that contribute to the informational governance of public administrations as an innovative form of management for strengthening the application of science in food production. The study used a mixed research approach that systemically articulates

qualitative, quantitative, theoretical and empirical methods. Its result makes available to administrators, researchers, producers and citizens, an innovative form of management that has a high strategic, operational and functional value. This Observatory through its different services allows a better use of science in the different programs prioritized for food production in the country.

**Keywords:** public administration; innovative forms of public management; information governance; observatories; local food systems; municipal food systems; food sovereignty; food security; Pinar del Río

## RESUMEN

Las tecnologías de la información y las comunicaciones, junto a los avances de la gestión de información, han incidido en el fortalecimiento de la dimensión tecnología-información-comunicación de las administraciones públicas, provocando profundas transformaciones en su gestión, principalmente en la gobernanza informacional. Enfoque que exige infraestructuras de datos e información con servicios en línea que permitan gestionar necesidades, tanto de las administraciones como de la ciudadanía. En paralelo, el Presidente de la República ha incentivado el uso óptimo de la información, los conocimientos y las tecnologías en la toma de decisiones administrativas, manifestándose el reconocimiento del Estado a esta forma innovadora de gestión. Actitud coherente con la orientación de la máxima dirección del país, de la necesidad de construir Observatorios que apoyen un mejor uso de la Ciencia en la producción de alimentos. Ante este umbral, la presente investigación propone mostrar algunos componentes del Observatorio de Soberanía Alimentaria y Educación Nutricional de Pinar del Río, Cuba, que contribuyen a la gobernanza informacional de las administraciones públicas como forma innovadora de gestión para el fortalecimiento de la aplicación de la ciencia en la producción de alimentos. El estudio empleó un enfoque mixto de investigación que articula de forma sistémica métodos cualitativos, cuantitativos, teóricos y empíricos. Su resultado pone a disposición de administrativos, investigadores, productores y ciudadanía, de una innovadora forma de gestión que tiene un alto valor estratégico, operativo y funcional. Este Observatorio mediante sus diferentes servicios

permite hacer un mejor uso de la ciencia en los diferentes programas priorizados para la producción de alimentos en el país.

**Palabras clave:** administración pública; formas innovadoras de gestión pública; gobernanza de la información; observatorios; sistemas alimentarios locales; sistemas alimentarios municipales; soberanía alimentaria; seguridad alimentaria; Pinar del Río

## RESUMO

As tecnologias da informação e comunicação, juntamente com os avanços na gestão da informação, tiveram um impacto no fortalecimento da dimensão tecnologia-informação-comunicação das administrações públicas, gerando profundas transformações em sua gestão, principalmente na governança da informação. Esta abordagem requer infraestruturas de dados e informações com serviços on-line para gerenciar as necessidades tanto das administrações quanto dos cidadãos. Ao mesmo tempo, o Presidente da República tem incentivado o uso otimizado de informações, conhecimentos e tecnologias na tomada de decisões administrativas, e o reconhecimento pelo Estado desta forma inovadora de gestão é evidente. Esta atitude é coerente com a orientação da alta administração do país, da necessidade de construir Observatórios que apoiem uma melhor utilização da Ciência na produção de alimentos. Dado este limiar, a presente pesquisa propõe mostrar alguns componentes do Observatório de Soberania Alimentar e Educação Nutricional de Pinar del Río, em Cuba, que contribuem para a governança informacional das administrações públicas como forma inovadora de gestão para fortalecer a aplicação da ciência na produção de alimentos. O estudo empregou uma abordagem mista de pesquisa que articula sistematicamente métodos qualitativos, quantitativos, teóricos e empíricos. O resultado do estudo proporciona ao pessoal administrativo, pesquisadores, produtores e cidadãos uma forma inovadora de gestão que tem um alto valor estratégico, operacional e funcional. Este Observatório, através de seus diferentes serviços, permite uma melhor utilização da ciência nos diferentes programas priorizados para a produção de alimentos no país.

**Palavras-chave**: administração pública; formas inovadoras de gestão pública; governança da informação; observatórios; sistemas alimentares locais; sistemas alimentares municipais; soberania alimentar; segurança alimentar; Pinar del Río

## INTRODUCTION

The Economic Commission for Latin America and the Caribbean (Cepal in Spanish) considers that proper or effective public management refers to the effective and efficient administration of State resources to meet the needs of its citizens and promote the country's development (Cepal, 2019). Recent research corroborates that Public Administration (PA) involves the management of all State resources (financial, material and human) for the proper development of policies, procedures and public services that improve the quality of life of citizens and the sustainable and sustainable economic and social development of nations (Rodríguez Cruz, 2020).

However, although its performance may seem comprehensive, it has not been effective over time. Among the main limitations that have been recognized by researchers on the subject are the weak relationship between politicians and managers, weak combination between means and administrative functions, weak work of interest groups in public policies, weak recognition of administrative organizations, distancing between the citizen and political action, weak orientation towards efficiency, and not being able to provide an effective response to the need for flexibility (Arenilla Sáez, 2011). These limitations generated certain contradictions that gave rise to the so-called functional crisis of the PA.

The emergence of the so-called New Public Management (NPM), according to Aguilar Villanueva (2014), has as fundamental causes: influence of neoliberal currents in the PA, fiscal crisis of the State and little efficacy and efficiency in public management. This emerges as an adjustment policy which principle is to obtain maximum efficiency and efficacy of public programs and services and, from the political perspective, proposes a model of democratization of the political regime (democratic transition) that focuses its

bases on an institutionalized, controlled, representative government, open to citizen participation and accountable for its decisions and results (Aguilar Villanueva, 2014).

This new approach focuses more on meeting the needs of the citizen as part of the public management of the state and government (Arellano Gault, 2014; Ramilo Arujo, 2014; Salas Durazo & Murillo García, 2013).

Although the NPM overcame some stumbling blocks, it has continued to undergo continuous improvements, mainly in the areas focused on public service and the relationship with citizens (Rodríguez Cruz, 2020). According to this author, the most significant aspect of the New Public Administration (NPA) is the incorporation of the work objectives of the 2030 agenda, the 17 Sustainable Development Goals (SDGs) declared at the 70th General Assembly of the United Nations and a greater insertion of Information and Communication Technologies (ICT) in order to contribute to the Information Society.

It is shared the criterion that the Information Society is not only projected through the use of technologies, but rather in the dynamic management of its informational content, its format, data schema, access, as well as in its effective communication, all of which has a direct impact on the NPM (Cruz Meléndez,2016). From this perspective, the attention of the NPA uses the technological, informational and communicative dimension (technology-information-communication) to strengthen its citizen position, build more consolidated information products, offer more effective services, better document decisions, as well as maintain a more dialogic communication with citizens.

But the technology-information-communication dimension of the NPA has also caused profound transformations in the forms of management of the administration itself. The most innovative forms have emerged: e-government, open government, technological governance, informational governance and other innovative forms of management.

Among the different forms of innovative management of the NPA, this research will only refer to governance. The literature reflects that governance is associated with the generation of capacities for effective decision-making from the government-civil society-market relationship (Arellano Gault, 2014), also associating it with the involvement of

the administrative-governmental in society and citizenship (Aguilar Villanueva, 2014; Ramilo Arujo, 2014).

Among them, information governance has led to the enrichment of various approaches and models of public management from the imprint of ICT, articulated with information management.

Rodríguez Cruz's research (2020) coincides with multiple authors who consider that information governance establishes basic principles on the use and control of information, through policies, norms, rights, guidelines, rules, responsibilities, activities and practices on document and information management, as well as the forms of control over it (Donaldson & Walker, 2004; Kooper et al., 2011).

To which other authors add, the promotion of a culture that allows to evaluate/assess, generate/create, collect/capture, analyze, distribute, store, use, protect, control or eliminate information (Kooper et al., 2011); ensuring the value, quality and compliance of the same, thus improving the effectiveness and efficiency of decisions and processes to make maximum use of information in terms of value creation and risk reduction (Hagmann, 2013).

The NPA, under the governance approaches, requires an adequate institutionalization of information management because the satisfaction of the informational needs not only of the administration, but also of the citizenship and society will depend on it. This is the reason why information management plays a leading and decisive role in the information governance demanded by the NPA.

In this scenario, information management is a management process or activity of vital importance, not only for the purposes of the Information Society, responsible for the management and use of information, whether in organizational contexts or in social dynamics, but it is also essential for the NPA that focuses its target on the citizen and on the sustainable and sustainable socio-economic development of society. This approach requires the NPA to better manage the information of people's interests and those of the collective community of which they are a part.

From this point of view, citizens and communities require public information that allows them to satisfy their information needs through public services, mainly verifying the effectiveness and efficiency of the administration in this way.

But in order for the administration to fulfill this purpose and satisfy the information needs of its citizens, it has to understand the particularities of this type of information on the basis of duties and rights, and then be able to establish informational processes that allow satisfying, under the protection of the law and the existing standards, this type of citizen needs.

So, if information governance is interested in what information exists, what it is for, who needs it, how it will be used, how it will be offered, what needs it will satisfy among other latent needs, then information management is not only responsible for its identification, survey and description to design its services, but also for the management of its data flows and models together with other technological and strategic functions of information use. This research considers that information management is instituted as a capital process within the NPM, mediator between technologies and communication.

The institutionalization of information management as the main component of information governance in the NPA guarantees not only the decision making and the efficient and effective satisfaction of public citizen services, but also certifies the transparency, veracity, security and assertive behavior of its use and management by the administrations.

This innovative management imposes new challenges on countries, which they must know how to apply and take advantage of. Cuba has only recently joined this scenario, but even so, it already has some advances that indicate a revival. Among them is the policy approved for the conduction of the transformations required by the National

Agriculture System to be able to maneuver more successfully the Food Sovereignty and Nutritional Education Plan (Saen in Spanish)[1] that the nation needs.

At the first meeting of the Saen Plan, not only was the exhortation to improve the work management of the Cuban State in the organization of local, sovereign and sustainable food systems that integrate the production, processing, marketing and consumption of food made explicit. It was also expressed the great interest and commitment of the State to introduce on a larger scale and scope ICT as an innovative form of management, which underlies the necessary governance that must be imposed at all levels of administration.

The call of the country's top management for the optimal use of information, knowledge and technologies for administrative decision-making shows the recognition that the Cuban State is giving to this innovative form of management. In this regard, point seven of the guidelines that the President of the Republic issued as part of the Saen work system, in its first meeting, raised the need to create an Observatory in this branch of science. This indication reveals and shows the coherence that the country's leadership has in the articulation and interrelation of its strategic sectors from a more innovative management, relying on the Observatories.

In this regard, this research considers that the growing interest and demand of the Government and the State for the application of Science, Technology and Innovation together with the call to make a more optimal use of ICT in the food production sector, makes the Saen Observatories in the technological platform, par excellence, of the Saen Plan. The authors consider that these Observatories will boost the management of information, knowledge and technologies from science to the production sectors, as well as promote new forms of introduction and application of scientific results in each food program that has been prioritized. These Observatories will support, from a better

[1] Cuban News Agency article on the presentation of the Plan for Food Sovereignty and Nutritional Education. See: http://www.acn.cu/economia/62015-presentan-plan-de-soberania-alimentaria-y-educacionnutricional-en-cuba-fotos

management, use and application of science, the increase of productions, but in a sustainable way, thus guaranteeing the possible food sovereignty of each territory.

This research considers that the Saen Observatories are instances capable of managing more effectively and efficiently the information of the different processes, actors, productive sectors and technologies that need to be articulated to promote the innovative, economic and social development of the territories.

So, the call of the President of the Republic on the need to build Saen Observatories links the developments of the NPM (in the dimension related to technology-information-communication that promotes governance), with the strategic sector of food sovereignty of the country. But why is this interrelation so necessary in this sector? Because food sovereignty is a State responsibility, but, at the same time, no country can completely subsidize it. For its proper management, countries require scientific and technological information from multiple areas of knowledge, coordinated efforts from different sectors, active participation of all its actors and of society with the support of governments. Only in this way can administrations guarantee food security for their citizens (Díaz Pérez et al., 2021).

These relationships of dependence between the two sectors must be directly proportional in order to achieve an equitable state of growth and development. This study also considers that one of the instances that can support in this sense, that is, that can channel the information coming from research, the productive sectors, the administrations, the actors and society, are the Observatories.

Given this threshold, the present research proposes to show some components of the Observatory of Food Sovereignty and Nutritional Education of Pinar del Río that contribute to the informational governance of public administrations as an innovative form of management for the strengthening of the application of science in food production.

## MATERIALS AND METHODS

The study by its nature used a mixed approach to research, articulated in a systemic way qualitative and quantitative methods. As theoretical methods, it used the historical-logical in the recovery of the information of the domain under study, as well as its retrospective analysis and evolution through time; the modeling method was applied for the conceptual, graphic, functional and strategic design of the informational architecture of the different systems, as well as for the respective *software* engineering of the technological platform of the Saen+C Pinar Observatory; together with the structural systemic method that allowed the design and development of the different components of the Saen+C Pinar Observatory, from a holistic, epistemological and ontological vision.

As empirical level methods, measurement was used for the use of certain statistical and metric indicators. Direct observation yielded many circumstantial elements that enriched the functionalities and value-added services of the Saen+C Pinar Observatory, together with the experiences of good practices shared through the participatory action research method.

The methodology used for the development of the Saen+C Pinar Observatory platform combines different technologies, techniques and procedures developed by the Information, Knowledge and Technology Management Research Group (Progintec in Spanish) of the University of Pinar del Río, validated in multiple research related to the subject (Díaz Pérez, 2017, 2018, 2021; Díaz Pérez & Giráldez Reyes, 2020; Giráldez Reyes et al., 2008, 2020).

Progintec technology combines methods from different scientific disciplines that transversalize and empower information sciences. The developed methodology allows to optimize the retrieval, compilation, processing, measurement, analysis and interpretation of large volumes of data, information and knowledge.

## RESULTS AND DISCUSSION

In previous research, Díaz Pérez et al. (2021) proposed that modeling the ways of facing such a complex and hybrid phenomenon as food sovereignty demands new ways of thinking, doing and knowing how to do, in accordance with the paradigm of the science of sustainability; to which are added the new management approaches of public administration, mainly focused on informational governance.

In order to comply with these guidelines, not only a multidisciplinary, multifactorial and multilevel vision is required, as proposed by Díaz Pérez et al. (2021); from the theoretical point of view, the observatory must also be able to integrate each epistemological dimension with the more specific levels of its ontological dimension; only in this way, this order of relations can be materialized in a systemic and holistic way.

A Saen Observatory, in addition, has to make an adequate, transversal and proportional use of information (contents), technologies (the medium) and its forms of communication (channel). It is considered that the success or failure of the main management systems that support the different processes involved in the production of food with more science will largely depend on this interrelationship (Díaz Pérez et al., 2021).

From these premises and from the informative-technological-communicative dimension that is part of the governance of information in the new approaches of the NPA, part of the scientific-technological conception of the Observatory of the province of Pinar del Río is developed, which supports, from a more efficient management of information, knowledge and technologies, the use and application of science in the sector of food production, as a way to achieve greater sustainability in the productions that the province needs to ensure food sovereignty of its population.

### Case study: Saen+C Pinar Observatory

Previous studies (Díaz Pérez et al., 2021; Triana Velázquez et al., 2018, 2021) corroborate that in the functional framework of this research there are multiple irregularities present in the province of Pinar del Río that hinder the proper management

of information, knowledge and innovations that exist to operate with greater efficiency, relevance and proactivity in the proper use of science.

Therefore, this provincial scenario, together with the growing interest and demand of the Government and the State in the processes of informatization of society and electronic government to strengthen the actions of public administrations, together with the introduction of more innovative forms of management in the different strategic sectors of the country and, mainly, in the food production sector, show the need to build an Observatory.

From this background, the Observatory that supports the Food Sovereignty and Nutritional Education Plan for Food Production with more Science in the country, in the province of Pinar del Río, is called Saen+C Pinar Observatory. These acronyms correspond to the objective to which this instance is devoted, to support from the most efficient use of science in food production to achieve food sovereignty and nutritional education that each territory needs.

The Technological Observatory of Food Sovereignty and Nutrition Education (Saen+C Pinar) is a platform that establishes a framework for the management of data, information, knowledge and technologies in the food sector to support, from the use and introduction of different scientific results, innovative and strategic decision making in the food production sector, with transparency in public data from multidisciplinary, multi-actor and multi-level collaboration, mediated by citizen intervention.

The Saen+C Pinar Observatory has among its purposes to extend to farmers, producers, entrepreneurs and managers enough knowledge and technologies that allow them to make better use of scientific results in order to improve their performance in food production in a more sustainable way, constituting a support route, in the chimera of achieving food sovereignty needed by the population of the province.

Based on this vision and on what was established in the state of the art, a set of stages was defined for the construction and development of the Saen+C Pinar Observatory, as part of the Saen Plan. The stages are associated with certain objectives that have systematic actions (in a parallel and non-linear way) and that generate specific results

that contribute to the different components that are part of the Observatory. Below is an explanation of the progress made to date in each stage, presenting its main results.

**System for the management of scientific publications related to the prioritized programs for food production: InfoSaen**

In the first workshop for the production of food with more science, the President of the Republic guided the search for national and international scientific information on a set of priority issues for the country, which he classified into different programs. Since then, some of the main information gaps that exist in the nation were identified according to the criteria of experts and specialists in each of the different prioritized programs. In these working sessions, the technological gaps that the country has in each program, the strengths and restrictions were also identified, along with the most immediate projections to be achieved among other issues.

From this background and indications, together with a deep and exhaustive study of the art and technique of the domain under study, the critical thematic axes of search, monitoring and surveillance of the Scientific Publications Management System of the food production sector, named InfoSaen, were built.

InfoSaen manages different national and international scientific results, related to the prioritized programs of the sector: *Rice, Poultry, Animal Feed, Beekeeping, Aquaculture and Fisheries, Sustainable Agriculture, Bioproducts, Coffee and Cocoa, Citrus and Fruit, Canned Fruits and Vegetables, Mini-Industries, Dairy and Meat Industry, Agricultural Engineering, Nutritional Education, Major and Minor Livestock, Grains, Vegetables, Agricultural Engineering, Animal Medicine, Swine, Soils and Viands.*

This system allows to customize the search, retrieval, compilation, export, socialization, analysis and visualization of different scientific publications for each program (Fig. 1).

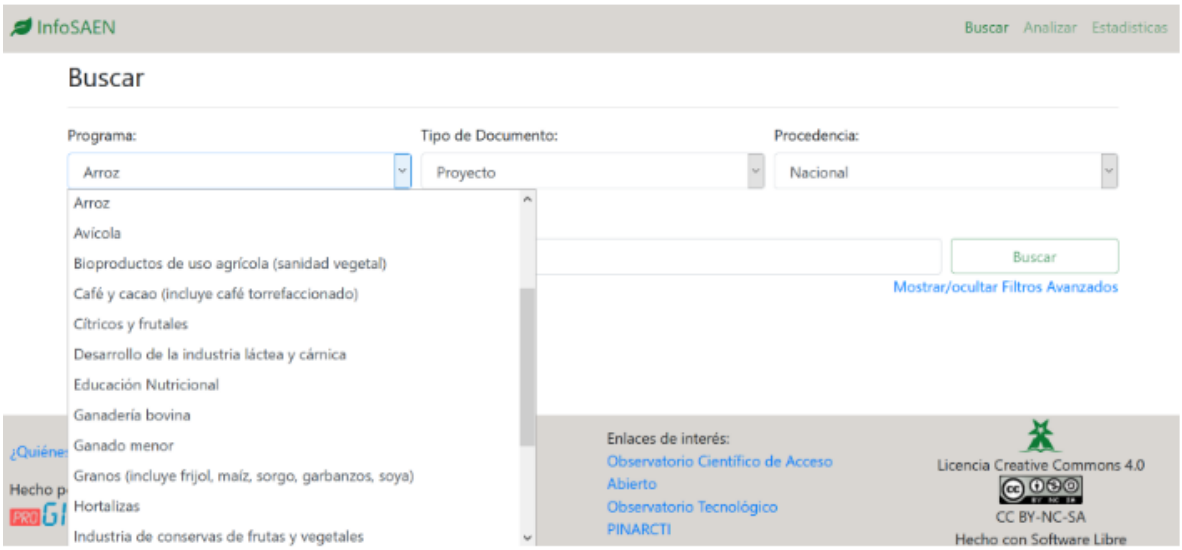


**Fig. 1** - Search and retrieval of scientific publications by prioritized programs
Source: Saen+C Pinar Observatory (version 1.0)

The design of InfoSaen services is based on the information-technological-communication dimension of information governance and includes elements of the NPA approaches for the definition of the needs of the different actors and sectors, together with the needs of society, productive structures and the State. To this end, this system offers access to a wide range of scientific publications classified by source: articles, patents, theses, books, papers, manuals, brands and projects (Fig. 2).

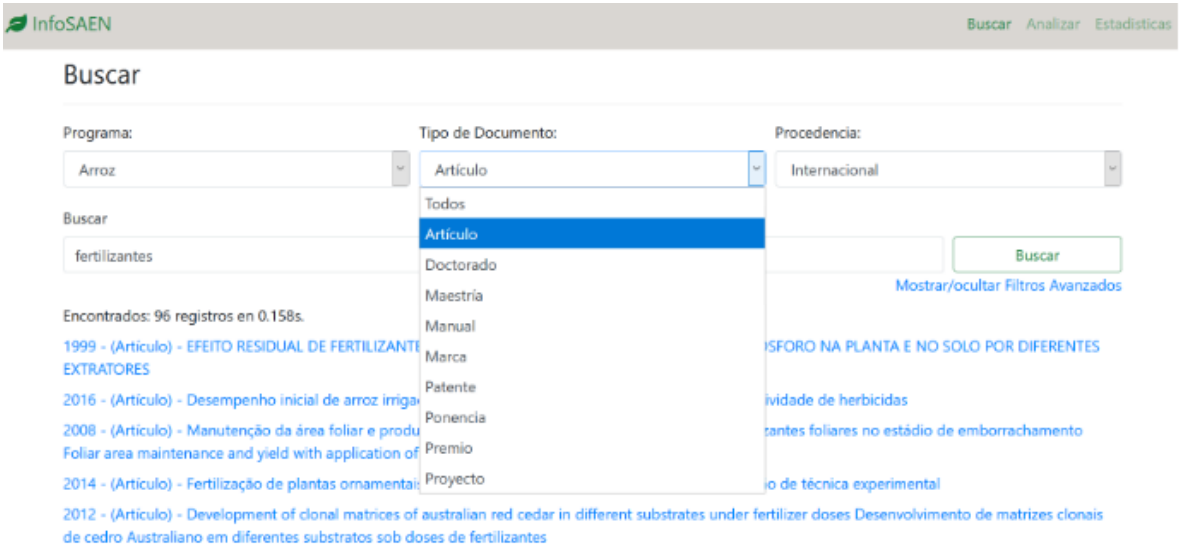


**Fig. 2** - Search and retrieval of scientific publications by document type
Source: Saen+C Pinar Observatory (version 1.0)

This system also offers other value-added services tailored to the information needs of each actor and sector. For example, the application of certain metric indicators (Fig. 3) allows infoSaen users to analyze large volumes of data, providing this interpretation with new states of knowledge that support scientific decision-making. This added value makes it a strategic tool for monitoring and technological surveillance of the Saen Plan in the country.

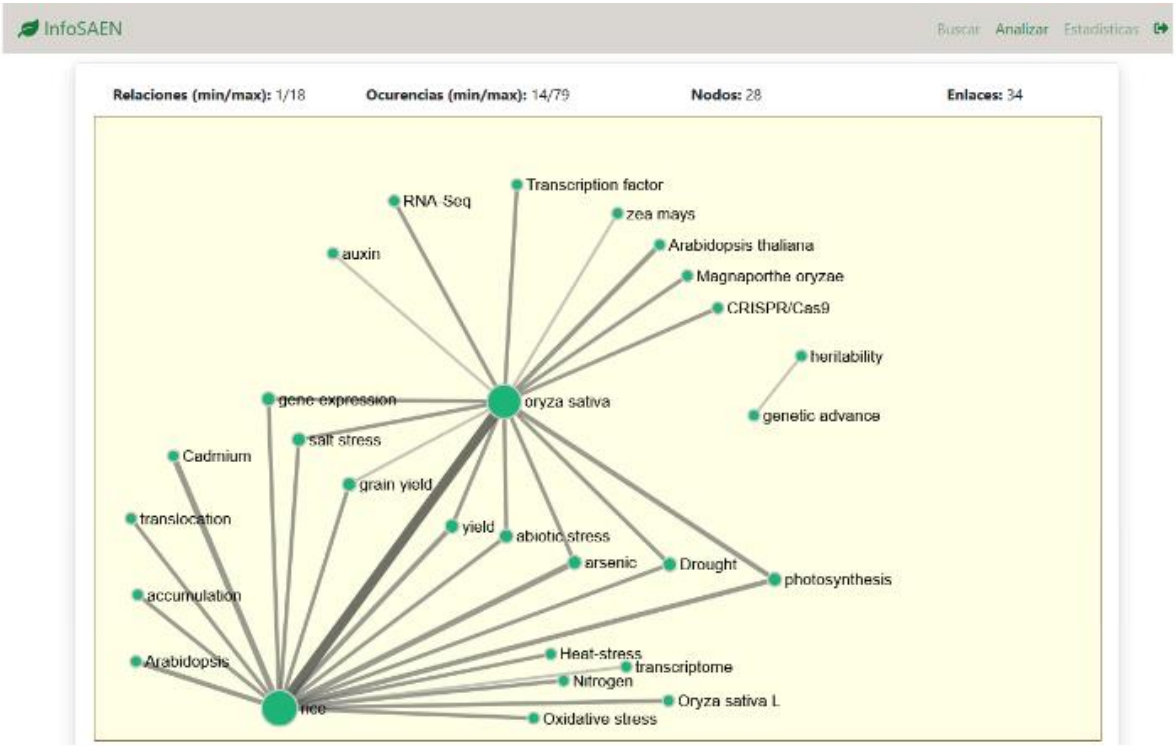


**Fig. 3** - infoSaen: metric analysis of a map of co-occurrences
Source: Saen+C Pinar Observatory (version 1.0)

The methodology applied by InfoSaen corresponds to principles of information governance by managing the typologies of scientific publications needed by administrations to document the research, strategic and operational decision-making required for a more innovative management in the food production sector and, on the other hand, it also meets the information needs of researchers, academics, specialists, technologists and technicians, together with the needs of producers, farmers and any other citizen who needs information related to this sector.

**Information management system of actors and sectors in the food production: Pinar Directory**

The Pinar Directory was built on the basis of the guidelines issued by the President of the country on the need to work on the human dimension of the Saen Plan in each territory. This system resolves the need to know the composition of the human and

scientific capital that exists, as well as its socio-demographic characteristics and the productive structures to which they are associated, also including other forms of innovative management for the sector.

Through this system, it is possible to manage the demand for qualified technical force needed to plan new actions, as well as to better understand and manage the functions of the human resources of each productive structure in order to improve the performance and yields of each unit, among other value-added services that provide information with a high value for decision-making (Fig. 4).

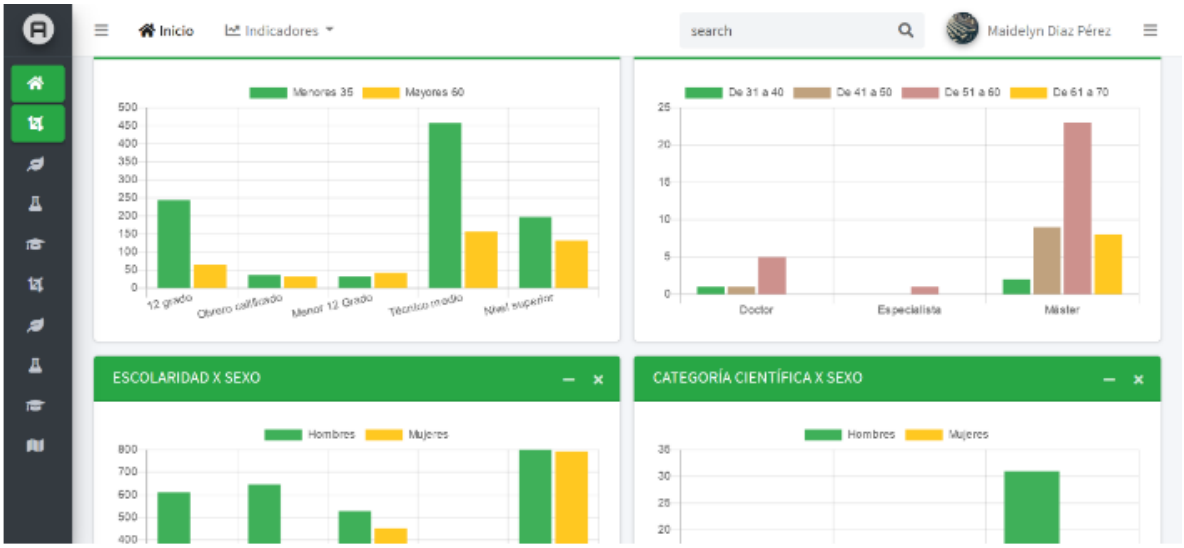


**Fig. 4** - Pinar Directory
Source: Saen+C Pinar Observatory (version 1.0)

Having a Directory containing detailed information on the human resources that make up each of the productive structures of the ministries related to food production is a priority not only for the different prioritized programs, but also for the public administrative structures of the sector and the province.

Monitoring and analyzing the different physical, structural and productive capacity facilities of the province is an essential function of the NPA, as well as facilitating their

management, a characteristic of the informational governance required by the new innovative forms of management in the country.

**Local Information Management System for Municipal Food Systems: GSAM** (In Spanish)

This system works on information management at the local level with the purpose of supporting decision-making in municipal food systems from different dimensions. In the first instance, GSAM is oriented to the observation of the potentialities and restrictions that each municipality has regarding the Saen Plan, in terms of: geographical location, extension and climate (Fig. 5), soil types and land use by agro-productive destinations (Fig. 6), including, in addition, information on its population, popular councils, productive structures, productions and main risks to which they may be exposed in the municipality, among other information of high added value for decision making in the different programs prioritized at the local level.

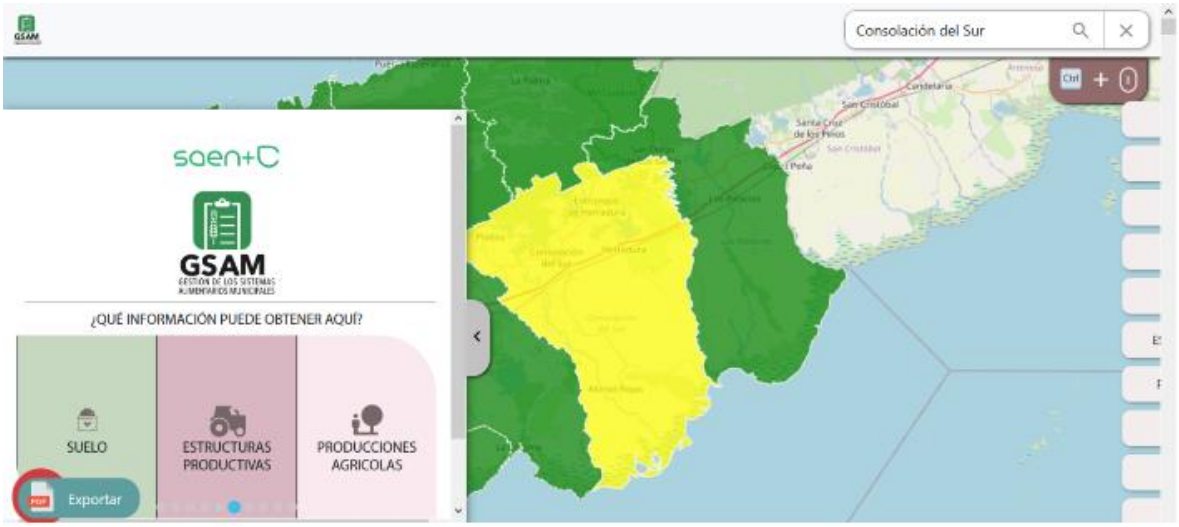


**Fig. 5** - GSAM: Consolación del Sur municipality
Source: Saen+C Pinar Observatory (version 1.0)

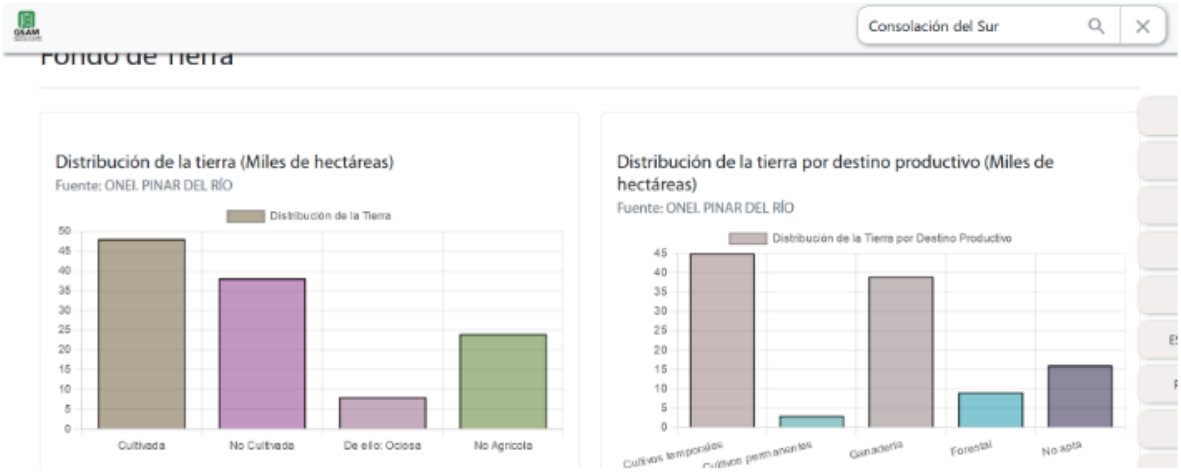


**Fig. 6** - GSAM: land fund by productive destinations in Consolación del Sur
Source: Saen+C Pinar Observatory (version 1.0)

The data model that GSAM works allows the analysis of information of different nature, unit of measurement and scope, facilitating the administrative decision making from the definition of levels of segregation in the data, the definition of different variables and the analysis from multiple edges.

Knowing the potentialities and restrictions of each territory allows better management of the different programs prioritized by the Saen Plan at local level, constituting, moreover, a tool of unquestionable value for use in multiple decisions by public administrations. These administrations are the bodies that, par excellence, have to know the context in which the prioritized programs for food production are developed in each locality. The number of successes and failures of their actions will largely depend on the competencies they have in this regard. In this regard, GSAM will contribute to the systematic observation that public administrations must have in order to perform correctly in the conduct of public policies, strategies, development, implementation of action plans, among other tasks.

It is estimated that GSAM will contribute significantly to a better management of the prioritized programs in each territory, since it manages information of high use value that allows interpreting the main strengths, opportunities, threats and weaknesses of

each municipality, regarding the real possibilities they have for food production in each of the prioritized programs in the province.

The value-added services offered by GSAM allow a more equitable management of prioritized programs, based on the recognition of each locality in terms of natural resources, socio-demographic characteristics, structural and installed capital, among other information of high use value.

In this way, GSAM makes an adequate management of science at the local level, enhancing food production at the territorial level in a more friendly way with its environment. GSAM facilitates one of the most expeditious ways to support decision-making in the different programs prioritized from the comprehensive recognition of the reality of each territorial context. The services offered by this system establish an important step to achieve the food sovereignty that the country needs in full harmony with the nature and environment, ensuring from this comprehensive management the sustainable and sustainable development of food at the local level.

**Saen Indicator Management System: IndiSaen**

This component has great technical, operational and functional complexity within the Saen+C Pinar Observatory, since it manages a broad statistical compendium. Its conception is based on the same informative-technological-communicational dimension of information governance, consistent with the principles not only of the NPA, but also of e-government and the ethical use of information.

IndiSaen management is based on the following pillars: transparency (citizens' right to know, information from public bodies), participation (knowledge of work procedures) and accounting render (mechanisms to prevent conflicts of interest, disclosure and complaints).

IndiSaen, up to this point in its development, allows the management of the statistics of the different prioritized programs in the province, as well as their correlation with other municipal and provincial indicators, constituting a high added value product offered by

the Saen+C Pinar Observatory for managers, authorities and the government of the province (Fig. 7).

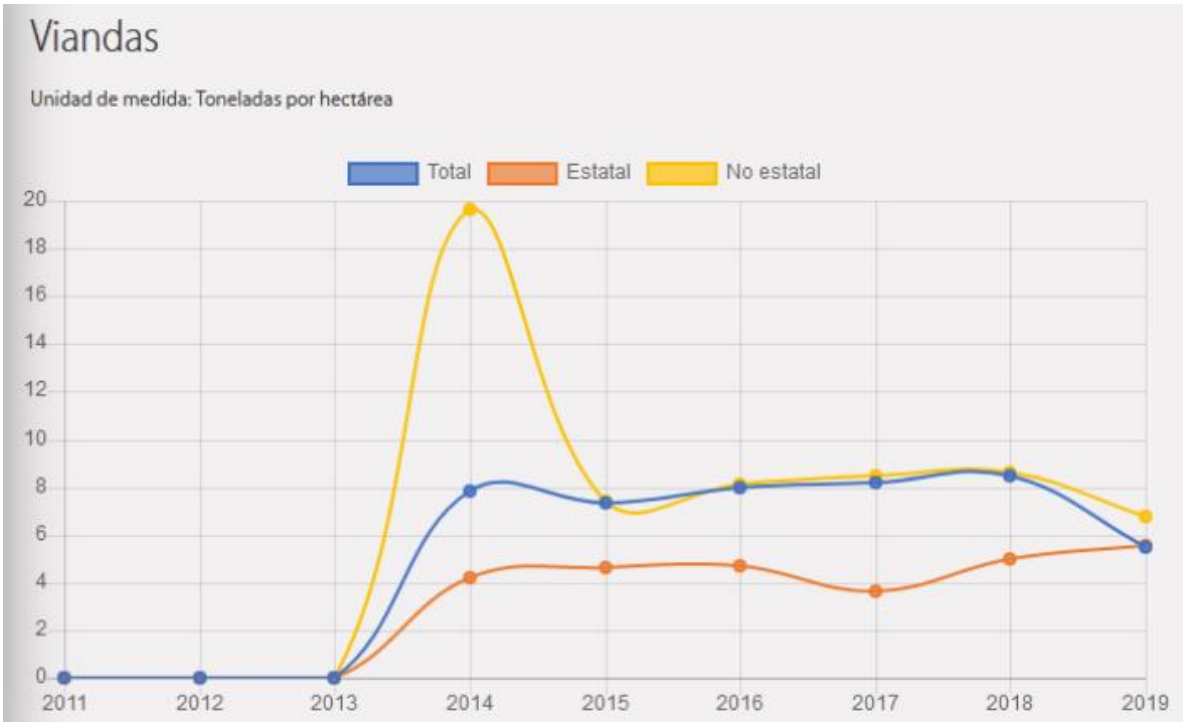


**Fig. 7** - IndiSaen: agricultural yields by selected crops in non-cane agriculture
Source: Saen+C Pinar Observatory (version 1.0)

Public administrations need specific data on the singular development of each sector, productive for the correct decision making in terms of evaluation and planning of results, productivity of each sector, as well as to improve strategies and define financing policies, cooperation and collaboration projects, among many other management possibilities that allow the different statistical analyses.

The Saen+C Pinar Observatory is a platform that, through observation, monitoring and surveillance, manages information with a high innovative content that allows documenting a wide range of decisions, both to strengthen food production with more science in the province, and to promote more innovative forms of management in public administrations.

The Saen+C Pinar Observatory contemplates some of the main characteristics of information governance as an innovative form of management in the NPA, allowing, for example:

- information is available to those who need it and when they need it,
- that information is made available in different formats through different public services,
- to be stored and ensure its proper preservation and protection,
- to have greater transparency in its processes and management,
- better reuse of information for different purposes,
- greater clarity in accounting render and decision-making,
- more citizen participation and involvement,
- better access to information through different information products and value-added services that support decision-making.

The approach of the Saen+C Pinar Observatory also favours the generation of spaces for participation, collaboration and social innovation between strategic actors such as civil society, the private sector, the academic sector and public administrations; facilitating the co-generation of innovations with a high public, social and civic value.

In summary, the Saen+C Pinar Observatory contributes to the recognized need that the country has both at national and territorial level, to have a platform that allows multidimensional, multilevel, multifactorial and multidisciplinary management of the main strategic processes involved in food production.

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**Conflict of interest:**

Authors declare not to have any conflict of interest.

**Authors' contribution:**

All the authors of this study participated in its planning, conception, design and execution, as well as in the interpretation of the results. They also critically reviewed the work, approved its final version and agree with its publication.