

Original article

## System of actions for the production of viands for food sovereignty and nutritional education



### Sistema de acciones para la producción de viandas en función de la soberanía alimentaria y educación nutricional

### Sistema de ações para a produção de produtos alimentares para a soberania alimentar e educação nutricional

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## ABSTRACT

The work proposes a set of actions for the production of viands in the province of Pinar del Río, as part of the implementation of the National Plan for Food Sovereignty and Nutritional Education in Cuba. The objective of this research is to design a system of actions for the production of viands in a sustainable way for human and animal consumption and that allows the development of exportable items in the province of Pinar del Río on the basis of local governance according to territorial development. The methods used were observation, historical-logical, systemic and hypothetical-deductive. In correspondence with these, the procedures analysis and synthesis, scientific abstraction, induction-deduction and individual and group interview techniques were used, with a predominance of documentary analysis, as well as research and participative action. The offered results focus on the diagnosis of the existing situation in the territory regarding the production of viands, identifying strengths, weaknesses, potentialities and limitations, as well as a system of

actions to organize efforts and resources that allow an adequate planning, taking into account the availability, access, consumption and biological use of food.

**Keywords:** actions; food production; food sovereignty and nutrition education.

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## RESUMEN

El trabajo propone un conjunto de acciones para la producción de viandas en la provincia de Pinar del Río, como parte de la implementación del Plan Nacional de Soberanía Alimentaria y Educación Nutricional en Cuba. El objetivo de la presente investigación es diseñar un sistema de acciones para la producción de viandas de forma sostenible con destino al consumo humano, animal y que permita desarrollar rubros exportables en la provincia de Pinar del Río sobre la base de gobernanzas locales en función del desarrollo territorial. Los métodos empleados fueron la observación, el histórico-lógico, sistémico e hipotético-deductivo. En correspondencia con los mismos, se utilizaron los procedimientos análisis y síntesis, abstracción científica, inducción-deducción y las técnicas de entrevista individual y grupal, predominando el análisis documental, así como la investigación y la acción participativa. Los resultados expuestos se centran en el diagnóstico de la situación existente en el territorio referente a la producción de viandas, identificando fortalezas, debilidades, potencialidades y limitaciones, así como un sistema de acciones para organizar los esfuerzos y recursos que permitan una planificación adecuada, teniendo en cuenta la disponibilidad, el acceso, el consumo y utilización biológica de los alimentos.

**Palabras clave:** acciones; producción de alimentos; soberanía alimentaria y educación nutricional.

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## RESUMO

O trabalho propõe um conjunto de ações para a produção de refeições na província de Pinar del Río, como parte da implementação do Plano Nacional de Soberania Alimentar e Educação Nutricional em Cuba. O objetivo desta investigação é conceber um sistema de ações para a produção sustentável de refeições para consumo humano e animal e desenvolver artigos exportáveis na província de Pinar del Río com base na governação local em termos de desenvolvimento territorial. Os métodos utilizados foram a observação, histórico-lógica, sistémica e hipotético-dedutora. Em correspondência com estes, os procedimentos utilizados foram análise e síntese, abstração científica, indução-

dedução e as técnicas de entrevistas individuais e de grupo, com predominância da análise documental, bem como da investigação e da ação participativa. Os resultados apresentados centraram-se no diagnóstico da situação existente no território no que diz respeito à produção de refeições, identificando os pontos fortes, fracos, potenciais e limitações, bem como um sistema de ações para organizar os esforços e recursos que permitam um planeamento adequado, tendo em conta a disponibilidade, acesso, consumo e utilização biológica dos alimentos.

**Palavras-chave:** ações; produção alimentar; soberania alimentar e educação nutricional.

## INTRODUCTION

The updating of the Cuban Economic and Social Model of Development, the National Plan for Economic and Social Development until 2030 and the approval of the Guidelines of the VII Congress of the Communist Party of Cuba (PCC, 2021) are presented as an opportunity and challenge for local actors, especially the leaders of the municipalities, since the functions of government and administration are more clearly delimited and they are given greater authority and self-management (PCC, 2017). In them, the importance of strategic development planning processes is ratified, with an output in programs and projects, the agricultural sector as one of the strategic sectors, the importance of valuing endogenous and exogenous resources, as well as the need for empowerment of local governments (Gil Hernández et al., 2019).

In terms of Food and Nutritional Security (FNS), the country has charted a path to implement important transformations that contribute to fully achieve this much desired state. These include: the approval of a specific regulatory framework, a Food Sovereignty and Food and Nutritional Security Law (National Assembly of People's Power, 2022) to safeguard the right to healthy and adequate food as established in Articles 77 and 78 of the Constitution of the Republic of Cuba (National Assembly of People's Power, 2019), the Food Sovereignty and Nutritional Education Plan, which defines the guidelines that guide the Cuban State for the management of local, sovereign and sustainable food systems, which are based on intersectoral articulation and the participation of all actors linked to the production, processing, marketing and consumption of food (Minag, 2020).

Accordingly, it will be necessary to implement a tool that will help guide the municipal government's management based on the priorities defined on the basis of national and territorial interests. The

Local Development Strategy from its design and management articulates the diagnoses and projections of a territory to lead its own development through the mobilization of its endogenous potential and with the objective of improving the standard of living (Gorgoy Lugo & Torres Paez, 2019; Núñez Jover & Alcazar Quiñones, 2016).

Among the programs defined in the Development Strategy of the Province of Pinar del Río, related to agricultural production, is the viands program with six sub-programs (potato, sweet potato, malanga, cassava, plantain, yam), which is implemented through projects and prioritizes the adoption of technologies and training, based on interaction with universities, research centers and other organizations.

The production and consumption of viands are particularly relevant because they are important elements in Cuban gastronomy and, with the exception of potatoes, are the only crops in which the country is self-sufficient. These foods are historically rooted in the Cuban diet and their production implies the application of agricultural experience and knowledge transmitted generation after generation. However, during the last decades, Cuba's political, economic and social system has been repeatedly impacted by external political forces and changes in the international political order that have modified the traditional forms of production, while new crops have been incorporated (Juárez, 2013).

It is valid to highlight that it represents 50% of the per capita pounds to be delivered in the territorial self-sufficiency, hence all municipalities have to develop the planting of the same with a program of sustainability in the years, using for this purpose the contributions of agricultural and social sciences with attachment to the technological discipline of each of the crops that gives response to high levels of production, ensuring a volume of fresh food for human and animal consumption in each locality, which allows to achieve food sovereignty and enhance nutritional education in consumers.

On the other hand, the growing incorporation of women into the labor force, their greater purchasing power and participation in activities, lead to simplifying the preparation of the daily family meal. In this context, the consumption of fresh and processed viands increases as ingredients in ready-to-use dishes, a fast and nutritious food service for the consumption of the Cuban population.

For the projection of this program, it has been taken into account the indications, guiding documents and definitions issued by the country's management, aimed at meeting the demands for the different destinations that have been established:

- Sustainable Development Goals
- Compendium on municipal self-sufficiency
- Technical booklet on crops for municipal self-sufficiency
- Tourism, seed and urban agriculture development programs
- Technical instructions for crops and their technological charts
- Indications for the cold and spring campaigns, issued by the Directorate of the Ministry of Agriculture (Minag)
- Minag's development projections in the province
- Directives for the development of seeds and phylogenetic resources of Minag
- Report of the first workshop "Food production with more science"
- Work system for the implementation of the Food Sovereignty and Nutrition Education Program with more science
- Food Sovereignty and Food and Nutritional Security Law

As well as, policies that are established nationally or provincially and are mandatory (both by the Ministry of Agriculture, Ministry of Economy and Planning, Ministry of Food Industry, Ministry of Industries, as well as regulatory agencies).

The preliminary research showed that the province of Pinar del Río offers important socioeconomic potentialities, with emphasis on the agricultural sector, which can be used to influence the management of FNS and the levels of satisfaction of the population.

Based on the above, the general objective of the research is defined as: to design a system of actions for the production of viands in a sustainable way for human and animal consumption and to develop exportable items in the province of Pinar del Río on the basis of local governance in terms of territorial development.

## **MATERIALS AND METHODS**

During the development of the research, methods and techniques were used according to each defined stage or objective. Within the empirical method, the bibliographic review was used as the main resource to carry out an analysis of the theoretical and methodological foundations on the management of food production as part of the Development Strategy of the Province. The documentary analysis technique was used, which consisted of the study of documents and policies

issued by the country's leadership regarding the management of food sovereignty and food and nutritional security.

Qualitative research techniques such as group work were used, taking into account that a multidisciplinary team with active participation was involved in its preparation, and whose final result took into account the harmonic articulation with the programs of the other strategic lines.

## **RESULTS AND DISCUSSION**

The working system for FNS on the basis of local food systems governance is conceptually focused on the process of planning, organization, implementation and evaluation of development programs that contribute to the strategic line of "food sovereignty and nutrition education", defined in the eleven Municipal Development Strategies and the Provincial Development Strategy of the province of Pinar del Río, elaborated with a holistic approach (production, transformation, marketing and consumption), interinstitutional and transdisciplinary (Torres Paez et al., 2022).

Initially, an analysis was made of the indirect and direct actors linked to the program, classified by state Basic Business Units (UEB), non-state productive structures (cooperatives), budgeted units, non-governmental organizations, other non-state productive forms, as well as support, suppliers, academia and regulators, highlighting their roles.

Starting with the diagnostic phase, the analysis of natural, material and infrastructure, economic-productive and human resources was deepened, identifying potentialities and restrictions through documentary analysis, team work, group discussion and brainstorming. The technical team for the food program of the Provincial Development Strategy participated together with the academic advisors. In general, the strengths, weaknesses, threats and opportunities were determined (Table 1).

**Table 1.** Weaknesses, Threats, Strengths and Opportunities Matrix

<b>INTERNAL ANALYSIS</b>	<b>EXTERNAL ANALYSIS</b>
<b>WEAKNESSES</b>	<b>THREATS</b>
<ol style="list-style-type: none"> <li>1. Instability of the skilled labor force, related to the agricultural sector activities in the province.</li> <li>2. High degradation of soils used for viands cultivation.</li> <li>3. Use of type III and IV soils for the production of viands, which have the lowest yields.</li> <li>4. Lack of technological discipline in the production and service processes.</li> <li>5. Insufficient levels of production and application of organic fertilizers, biofertilizers and green manures.</li> <li>6. Insufficient availability and use of equipment, irrigation systems to ensure irrigation and drainage</li> <li>7. Inefficient production, handling and conservation of agamic seeds</li> <li>8. Deficient system for contracting, processing and marketing of food production.</li> <li>9. Low ratio between manual and mechanized farm implements</li> <li>10. Low level of utilization of renewable energy sources</li> <li>11. Insufficient food culture in the consumption of carotene-rich foods</li> </ol>	<ol style="list-style-type: none"> <li>1. The impact of climate change and the natural disasters that frequently affect the province</li> <li>2. U.S. economic, commercial and financial blockade against Cuba</li> <li>3. Fluctuation in the prices of agricultural inputs and agricultural production on international markets</li> <li>4. Current crisis situation accentuated by Covid-19</li> </ol>

<p>12. Little presence of processed, preprocessed and packaged foods that provide a balanced diet for the population</p>	
<p><b>STRENGTHS</b></p>	<p><b>OPPORTUNITIES</b></p>
<ol style="list-style-type: none"> <li>1. Political will of the State and the government to develop programs to support food sovereignty and nutritional education.</li> <li>2. Existence of unexploited areas of type III soils in the premountainous area</li> <li>3. Existence of technologies for soil conservation and improvement</li> <li>4. Consolidation of the agroecological movement of Urban, Suburban and Family agriculture.</li> <li>5. Recognized Science and Technology Forum movement</li> <li>6. Close ties with academic and/or scientific organizations and institutions of the territory and other national organizations and institutions.</li> </ol>	<ol style="list-style-type: none"> <li>1. Transformations in the Cuban economic and social model, which prioritizes municipal food self-sufficiency, bioproducts, mini-industry, among others.</li> <li>2. Legal framework that favors the export of products to different destinations with an increase in tourism activity that generates demand for products, services and processes related to the agricultural sector.</li> <li>3. Presence of national and foreign collaboration programs and projects for strategic issues of the sector with the participation of leading producers.</li> <li>4. Banking system that favors the granting of low-interest loans to producers</li> <li>5. Existence of growing demands for quality food products that ensure health and competitiveness in the marketplace.</li> </ol>

Source: Own elaboration

Subsequently, an analysis of the impacts and results obtained was carried out, from which it was found that the third quadrant has the highest index, indicating that an adaptive strategy should be adopted. Therefore, the focus should be on proposing a strategy or actions to reorient the internal situation in order to reduce the limitations generated by the weaknesses and exploit the opportunities offered by the environment. To do this, priorities are established, that is, in the order that will be



carried out and define the concrete actions that are necessary in order to meet the existence of the growing demand for quality food products that ensure health and competitiveness in the market. With the purpose of eradicating or minimizing these weaknesses and influencing the results identified, a system of innovative actions and solutions was elaborated.

Table 2 shows the proposed system of actions in accordance with the ideas set forth above.

**Table 2.** System of actions to be carried out (innovative solutions) specified for each year to influence weaknesses and results

No	Weaknesses and/or results	Actions	Participating entities	Responsible entity	Year
1	Instability of the skilled labor force, related to the activities of the agricultural sector in the province.	<ul style="list-style-type: none"> <li>To carry out a training program that includes legal, technical and economic issues to facilitate the actions of producers, technicians and leaders.</li> <li>To Train producers, technicians and leaders.</li> <li>Exchange with leading producers on positive experiences and economic results in the production of viandas crops.</li> <li>Improve working conditions.</li> </ul>	UPR, Minag training school, Agricultural Department, Actaf, Acpa, Labiofam, Inivit, etc.	Provincial and Municipal Delegation of Minag, Anap and Tobacco and Forestry Agricultural and Livestock Enterprises	(Starting years) 2021 and 2022

		<ul style="list-style-type: none"> <li>• Create profit centers and mini-industries that encourage the female labor force.</li> </ul>			
2	High degradation of the soils used for the cultivation of viands.	<ul style="list-style-type: none"> <li>• Train and sensitize producers on conservation management practices using practical methods.</li> <li>• To increase the use of organic matter, earthworm humus, bioproducts and soil conservation measures.</li> <li>• To increase the production of worm humus in the companies.</li> </ul>	UPR, Agricultural Department, Actaf, Inivit, IS, DPS, Companies and productive units of Minag.	Provincial and Municipal Delegation of Minag, Anap and Agricultural, Tobacco and Forestry Companies, Provincial Department of Soils.	2021
3	Lack of technological discipline in production and service processes.	<ul style="list-style-type: none"> <li>• Periodically train leaders, officials, technicians and producers.</li> <li>• Perform technical inspections of production structures.</li> <li>• Systematically check the progress of campaigns.</li> </ul>	Agricultural, forestry and tobacco companies, CPA, CCS, UEB, UBPC, UPR, Agricultural Department, Actaf, Inivit, IS, DPS	Provincial and Municipal Delegation of Minag, Anap and Tobacco and Forestry Agricultural and Livestock Enterprises	2021-2030

		<ul style="list-style-type: none"> <li>Control statistical information.</li> </ul>			
4	Insufficient levels of production and application of organic fertilizers, biofertilizers and green manures.	<ul style="list-style-type: none"> <li>Implement and certify MO production centers.</li> <li>Training producers, technicians and managers.</li> <li>Introduce technologies for the production of organic fertilizers, biofertilizers and green manures.</li> </ul>	IS, DPS, Minag enterprises and productive units, Minag municipal delegations, etc.	DPS, Agricultural Department, Agricultural, tobacco and forestry enterprises	2022
5	Insufficient availability and use of equipment, irrigation systems and hydraulic works to guarantee irrigation and drainage.	<ul style="list-style-type: none"> <li>Apply prognostic irrigation.</li> <li>Acquire electric pivot irrigation techniques.</li> <li>Acquire parts and pieces of other irrigation systems to improve the existing ones.</li> <li>Train producers in the use of new irrigation techniques.</li> </ul>	Department of Agricultural Engineering, Iagri, Gelma, Agricultural, forestry and tobacco companies	Provincial and Municipal Delegation of the Minag, Department of Agricultural Engineering, Iagri	2021
6	Inefficient production, handling and	<ul style="list-style-type: none"> <li>To promote the 11 existing seed farms with new clones.</li> </ul>	Department of seeds and phylogenetic	Department of seeds and phylogenetic	2021

	conservation of agamic seed.	<ul style="list-style-type: none"> <li>• Training producers, technicians and managers.</li> <li>• Systematically monitor the activity of seeds and phylogenetic resources.</li> </ul>	resources of Minag, seed UEB, municipal delegations, agricultural, forestry and tobacco companies, biofactory.	resources of Minag, seed UEB, municipal delegations, agricultural, forestry and tobacco companies, biofactory.	
7	Lack of botanical seed to establish crops used in the production of green manure.	<ul style="list-style-type: none"> <li>• Select producers who can establish farms for the cultivation and development of botanical seed.</li> <li>• Establish areas for seed production.</li> <li>• Control and supervise the quality of production by the seed UEB.</li> </ul>	Department of seeds and phylogenetic resources of Minag, seed UEB, municipal delegations, agricultural, forestry and tobacco companies.	Department of seeds and phylogenetic resources of Minag, seed UEB, municipal delegations, agricultural, forestry and tobacco companies.	2021
8	Deficient system for contracting, processing and marketing of food production.	<ul style="list-style-type: none"> <li>• Remodeling of agricultural product processing plants.</li> <li>• Implement the currently approved commercial policy.</li> <li>• Train producers in commercial and food safety techniques.</li> <li>• Encourage producers to sell products that</li> </ul>	Minag Marketing Department, Empresa de Acopio y Fruta Selecta, Cítrico Troncoso and Agropecuaria Cubaquivir, Gelma, Agricultural, forestry and	Marketing Department of Minag, Empresa de Acopio y Fruta Selecta, Cítrico Troncoso and Agropecuaria Cubaquivir.	(Starting Years) 2021 and 2023

		have benefited and been selected according to their quality.	tobacco companies.		
9	Insufficient availability of agricultural implements for manual and mechanized use.	<ul style="list-style-type: none"> <li>Acquire new technologies for manual and mechanized implements.</li> <li>Procurement of spare parts and aggregates.</li> <li>Rehabilitation of workshops and blacksmith shops.</li> <li>To train people to work as blacksmiths and mechanics of agricultural implements.</li> <li>Repair the existing implements in the productive structures.</li> </ul>	UEB Humberto Lamote, Gelma, Agricultural Department, Agricultural, forestry and tobacco enterprises	UEB Humberto Lamote, Gelma, Agricultural Department, Agricultural, forestry and tobacco enterprises	2024
10	Low level of utilization of renewable energy sources.	<ul style="list-style-type: none"> <li>Implement solar panel technologies in irrigation activities.</li> <li>Repairing and building windmills.</li> </ul>	UEB Humberto Lamote, Gelma, Department of Agricultural Engineering, Agricultural, forestry and	UEB Humberto Lamote, Gelma, Department of Agricultural Engineering, Agricultural,	2024

			tobacco companies	forestry and tobacco companies	
11	Insufficient production and food culture in the consumption of foods rich in carotene.	<ul style="list-style-type: none"> <li>• Introduce carotene-rich varieties in production.</li> <li>• Allocate 5% of the area to plant viands rich in carotene (sweet potato).</li> <li>• Publicize in provincial and municipal mass media, including social networks, to encourage the consumption of foods rich in carotene as a means of disease prevention.</li> <li>• Encourage the consumption of these foods in children's circles and schools.</li> <li>• To carry out culinary activities that show a variety of ways of elaboration where these viands are included.</li> <li>• Distribute leaflets to the population that</li> </ul>	Mincult, Minag, municipal delegations, provincial and municipal government, Ministry of Education, mass organizations: PCC, UJC, FMC, CDR, Anap, Actaf, agricultural, forestry and tobacco companies.	Mincult, Minag, municipal delegations, provincial and municipal government, Ministry of Education, mass organizations: PCC, UJC, FMC, CDR, Anap, Actaf, agricultural, forestry and tobacco companies.	2022

		include information on the importance of eating these foods and easy recipes.			
12	Little presence of processed, preprocessed and packaged viands that provide a balanced diet for the population.	<ul style="list-style-type: none"> <li>Acquire a potato preprocessed food processing plant.</li> <li>Acquire mini-industries for the transformation of cassava and sweet potato into flour for human and animal consumption and its implementation in the municipalities of Consolación del Sur and Sandino.</li> </ul>	Minag, Agricultural companies	Minag, Agricultural companies	2025

Source: Own elaboration

The action plan defined followed the established precepts and the guidelines of the different national agencies and organizations to bring about significant changes in the manifestation of the problems detected. This implies not only complying with what was established in the plan, but also reviewing it through control and supervision dynamics to correct it in time if necessary.

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### **Conflict of interest**

Authors declare that they have no conflicts of interest.

### **Authors' contribution**

*María Eugenia Ramos Crespo* designed the study, analyzed the data and prepared the draft.

*Armando del Busto Concepción* was involved in the design and prepared the draft.

*Yuliany Pacheco Correa* was involved in data collection, analysis and interpretation.

*Liset Monduy Piñera* was involved in the design of the proposal, data collection, analysis and interpretation.

All the authors reviewed the writing of the manuscript and approve the version finally submitted.



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