Plan estratégico de crecimiento y expansión de las pequeñas empresas productoras de trucha arcoíris del departamento Norte de Santander

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RESUMEN

La gestión y regulación de la piscicultura, que se considera una de las actividades acuícolas más importantes dentro del sector agroalimentario, presenta un desafío complicado tanto para los productores como para los organismos encargados de control y vigilancia. Esta complejidad surge, en primer lugar, de los altos niveles de incertidumbre que provienen de diversos factores que afectan la producción piscícola. Entre estos factores se encuentran las condiciones ambientales cambiantes, la aparición de enfermedades, la variabilidad en la calidad del agua, los fenómenos climáticos extremos y los crecientes conflictos por el uso de recursos naturales con otros sectores económicos o sociales. En este escenario, tanto los piscicultores como los reguladores se enfrentan a una realidad dinámica y multifacética que complica la toma de decisiones efectivas y sostenibles. Además, la falta de un conocimiento sólido y actualizado sobre las necesidades externas que impactan directamente los sistemas de producción piscícola representa un obstáculo importante para la implementación de políticas públicas efectivas y estrategias de manejo integral. A menudo, las decisiones se basan en modelos teóricos que no reflejan las condiciones reales del territorio ni las particularidades socioeconómicas de los actores involucrados, lo que genera desconfianza, ineficiencia en la gestión y resistencia al cambio por parte de los productores. En este contexto, se llevó a cabo un estudio con un enfoque cuantitativo con el objetivo de analizar la percepción de la competitividad entre los productores de trucha en el departamento de Norte de Santander, Colombia.

Para ello, se utilizó una metodología que consistió en la aplicación de un instrumento estructurado con escala de Likert, diseñado en torno a seis dimensiones clave que influyen en la competitividad del sector. Estas dimensiones abarcaron: innovación,

tecnología, recursos disponibles, gestión administrativa, acceso a mercados y sostenibilidad ambiental. Los hallazgos del estudio muestran que hay una fuerte conexión entre las dimensiones evaluadas, lo que revela una estructura sistémica donde los factores no actúan de forma aislada, sino que son elementos interdependientes que se afectan mutuamente. En particular, se resalta la importancia de las dimensiones de innovación, tecnología y disponibilidad de recursos, que tienen un impacto significativo en las demás variables. La adopción de tecnologías adecuadas, junto con la capacidad de los productores para innovar en sus procesos productivos, comerciales y organizacionales, se convierte en un factor clave para mejorar la competitividad y sostenibilidad de las unidades productivas. Además, el estudio identificó un conjunto de estrategias que pueden desarrollarse a partir del análisis de la dimensión de innovación tecnológica. Entre ellas, se subraya la necesidad de fortalecer los procesos de transferencia de conocimiento, promover alianzas público-privadas para el desarrollo de tecnologías adaptadas al contexto local, y establecer mecanismos de financiamiento específicos para implementar soluciones innovadoras. Estas estrategias no solo buscan aumentar la productividad del sector, sino también mitigar los impactos ambientales y mejorar la resiliencia ante los cambios del entorno. Finalmente, a partir del análisis de antecedentes y del trabajo de campo realizado, se proponen varias líneas de investigación futuras enfocadas en profundizar en temas como la gobernanza en la piscicultura, la evaluación de impactos ambientales acumulativos, la economía circular en sistemas acuícolas y el desarrollo de modelos de gestión basados en datos. En conclusión, para fortalecer la competitividad del sector piscícola en regiones como Norte de Santander, es fundamental adoptar una visión integral que combine innovación, tecnología, gestión participativa y políticas públicas alineadas con las realidades del territorio.

Palabras clave: Competitividad, Innovación Tecnológica, Piscicultura, Trucha

ABSTRACT

The management and regulation of fish farming, considered one of the most important aquaculture activities within the agri-food sector, presents a complicated challenge for both producers and the agencies responsible for control and surveillance. This complexity arises, first and foremost, from the high levels of uncertainty stemming from various factors affecting fish production. These factors include changing environmental conditions, the emergence of diseases, variability in water quality, extreme weather events, and increasing conflicts over the use of natural resources with other economic or social sectors. In this scenario, both fish farmers and regulators face a dynamic and multifaceted reality that complicates effective and sustainable decision-making.

Furthermore, the lack of solid and up-to-date knowledge about the external needs that directly impact fish production systems represents a significant obstacle to the implementation of effective public policies and comprehensive management

strategies. Decisions are often based on theoretical models that don't reflect the actual conditions of the area or the socioeconomic characteristics of the stakeholders involved, leading to mistrust, inefficient management, and resistance to change among producers. In this context, a quantitative study was conducted to analyze the perception of competitiveness among trout producers in the department of Norte de Santander, Colombia. To do so, a methodology was used that consisted of applying a structured Likert-scale instrument designed around six key dimensions that influence the sector's competitiveness. These dimensions included: innovation, technology, available resources, administrative management, market access, and environmental sustainability. The study's findings show a strong connection between the evaluated dimensions, revealing a systemic structure where factors do not act in isolation, but are interdependent elements that mutually affect each other. In particular, the importance of the dimensions of innovation, technology, and resource availability is highlighted, as they have a significant impact on the other variables. The adoption of appropriate technologies, along with producers' ability to innovate in their production, commercial, and organizational processes, becomes a key factor in improving the competitiveness and sustainability of production units. Furthermore, the study identified a set of strategies that can be developed based on the analysis of the technological innovation dimension. These strategies highlight the need to strengthen knowledge transfer processes, promote public-private partnerships for the development of technologies adapted to the local context, and establish specific financing mechanisms to implement innovative solutions. These strategies not only seek to increase the sector's productivity but also mitigate environmental impacts and improve resilience to environmental changes. Finally, based on the background analysis and fieldwork conducted, several lines of future research are proposed, focused on delving into topics such as governance in fish farming, the assessment of cumulative environmental impacts, the circular economy in aquaculture systems, and the development of data-driven management models. In conclusion, to strengthen the competitiveness of the fish farming sector in regions such as Norte de Santander, it is essential to adopt a comprehensive approach that combines innovation, technology, participatory management, and public policies aligned with the realities of the region.

Key Words: Competitiveness, Technological Innovation, Fish Farming, Trout

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