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Examining Agricultural Journalism in the Context of Food Safety in Türkiye: Comparative Analysis of Newspaper News

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ABSTRACT
In this study, the approaches to agricultural journalism of national newspapers in Türkiye were examined in the context of food safety. The sample of the study consists of four national newspapers with different publication policies (Cumhuriyet, Sözcü, Milliyet, and Sabah). In the study, agricultural news articles published between April and October 2024 were examined using the content analysis method. The study revealed that the ideological approaches of the newspapers created significant differences in the presentation of agricultural news. While negative news headlines and a problem-oriented journalism approach are dominant in opposition newspapers, positive news headlines and a solution-oriented approach are prominent in the mainstream media. The most frequent news sources are from state institutions, and news related to non-governmental organizations and farmer organizations are more frequently covered in opposition newspapers. While agricultural policies stand out as the most covered theme, sustainable agriculture and food safety issues are not sufficiently addressed. As conclusions of this study, employment of expert reporters should be increased, regular training should be provided to journalists, news sources should be diversified, and agricultural communication should be addressed within the framework of a national strategy in order to increase the quality of agricultural journalism.

Keywords: Black cumin, Seed yield, Genotype, Cultivar, Good agriculture practices (GAP)

1. Introduction

The rapid increase in the world's population has brought with it a demand for increased agricultural productivity in order to meet nutritional needs. In response, various methods such as chemical fertilizers, hybrid seed technologies, agricultural pesticides, and mechanized agriculture have been developed. However, the application of these methods without knowledge of or regard to their consequences has led to environmental pollution and negative effects on the nutritional value of the products, creating risks in terms of food safety (Kodaş & Er 2012). Food safety is a concept that includes complying with the rules determined in the processes from production to consumption of food and taking the necessary precautions (Giray & Soysal 2007). In this context, safe food is defined as food products that are suitable for consumption in terms of physical, chemical, and microbiological aspects and that maintain their nutritional value. Food safety is seen as an important problem not only at the national level but also the global level (Gülse Bal et al. 2006). According to the World Health Organization (WHO), approximately 600 million people in the world, i.e., 1 in every 10 people, experience health problems after consuming contaminated food, and 420,000 people die every year. Especially in low- and middle-income countries, the economic burden of lost productivity and medical expenses resulting from unsafe food is 110 billion US dollars annually. In addition, children under the age of 5 are most affected by foodborne diseases (40%), and 125,000 deaths occur in this age group every year. Foodborne diseases negatively affect socioeconomic development by straining health systems and damaging national economies, tourism, and trade (WHO 2024). Therefore, food safety is of critical importance in social, economic, and environmental dimensions for countries as well as producers and consumers (Gülse Bal et al. 2006).

As living standards increase, concerns about food safety and potential contaminants continue to be a major health issue. Consumers demand the quality and safety of food for the energy and nutrients needed to sustain their lives (Fung et al. 2018). In this context, while the agricultural sector plays a central role in meeting food needs, agricultural communication, which is the process of informing and raising awareness about the sector, is also gaining increasing importance. Agricultural communication refers to the process of transferring information about agriculture between farmers and other individuals who are directly or indirectly related to agriculture (Elpeze Ergeç 2022). The development of effective messages and communication strategies for

agricultural products also constitutes an important stage of food safety studies (Kuşku Özdemir & Topsümer 2017). In this context, it is important for governments, societies, and farmers to be aware of food safety. The media has a significant role in informing the public, creating awareness and providing education in agricultural processes. This field, called agricultural journalism, covers a wide range of topics including agricultural production and consumption, economy, health, chemicals, and technology and represents a specialized type of journalism (Budak 2023). The quality, presentation style, and accuracy of agricultural news are among the basic elements that shape the public's view of agriculture. Incorrect or incomplete information can lead to misunderstanding of agricultural activities and the formation of distrust towards the sector. Agricultural journalism in Türkiye experiences various difficulties in terms of both quantity and quality. With the exception of specialized publications related to the agricultural field, the mainstream media is quite inadequate in terms of specialization and creating independent sections (Budak 2023). In this context, this study examines the agricultural journalism approaches of national newspapers in Türkiye in terms of food safety.

2. Conceptual Framework

2.1. Food safety: risks, threats, and global studies

It is vital for individuals around the world to have access to sufficient amounts of safe food so that they can live a healthy life, complete their physical development, and have adequate and balanced nutrition. In this context, both the production and consumption of safe and healthy food are essential (Erkmen 2010). However, billions of people worldwide are at risk due to the consumption of unsafe food. Every year, millions of people get sick and hundreds of thousands die due to harmful foods (Fung et al. 2018). According to the WHO, foods containing harmful microorganisms or chemical substances can cause over 200 different diseases from diarrhea to cancer. Every year, approximately 600 million people worldwide (i.e., 1 in every 10 people) get sick due to consuming contaminated food, resulting in 420,000 deaths and 33 million healthy years of life lost (WHO 2024). When these factors are evaluated together, the concepts of food security and food safety come to the fore in the studies conducted. Food safety is defined as a process that includes complying with the necessary rules and taking precautions at all stages from food production to consumption. This process aims to ensure healthy food production and includes the implementation of safety standards at basic stages such as production, processing, storage, transportation, and distribution (Giray & Soysal 2007). Food safety is defined as a process that aims to produce healthy by complying with the rules determined and taking the necessary precautions at the stages of production, processing, storage, transportation, distribution, and consumption, starting from the supply of food raw materials (Erkmen 2010). This concept is expressed with the approach of "farm-to-fork" food safety by the food control authorities of many countries, especially those in the European Union (EU), in line with the purpose of protecting public health (Yörük & Güner 2014). Today, food safety is addressed with a transformational and complementary approach, both "farm-to-table" and "farm-to-fork"; it covers basic elements such as safe and sufficient food supply, protection of producer rights, monitoring of consumer health, effective food control, and prevention of unfair competition in the sector (Demirel & Çak 2016).

If food safety is not ensured, consumed foods may contain harmful microorganisms, chemicals, and toxins. This can have negative effects on human health and lead to serious health problems (Merey & Korkmaz 2023). Microorganisms, chemical substances, physical contamination, and human factors have important places among the factors that threaten food safety (Fung et al. 2018). Microorganisms such as *Salmonella*, *Campylobacter*, *Vibrio*, *Escherichia coli*, and *Listeria monocytogenes* generally carry the risk of contamination from raw or undercooked animal foods. In addition, chemicals used in food production can negatively affect the quality and safety of products. Physical contamination occurring during production, packaging, and distribution processes can also pose serious risks to consumer health. In addition, factors such as human errors, non-compliance with hygiene standards, and carelessness may negatively affect food safety (Merey & Korkmaz 2023). Food products contaminated with industrial pollutants have historically caused serious health crises in many countries. Countries such as Japan, Iraq, and the USA have experienced food safety incidents resulting in major outbreaks and deaths (Fung et al. 2018). One of the most well-known examples is Minamata disease, which was detected in 1956 around Minamata Bay in Kumamoto Prefecture, Japan. This disease, caused by methylmercury poisoning, was seen again in Niigata Prefecture, Japan, in 1965. Methylmercury accumulated in fish, causing serious health problems. This outbreak caused 2263 cases and 1368 deaths until 1999 (Eto 2000). Another notable example is the major mercury poisoning incident in Iraq in 1971-72, which occurred when seeds contaminated with organomercury compounds were consumed. In this incident, those who ate seeds treated with fungicides showed serious symptoms such as tremors, hallucinations, and seizures (Skerfving & Copplestone 1976). Food safety issues continue in the 21st century. In 2008, more than 300,000 infants were affected and 6 died as a result of melamine contamination in baby food in China. In 2011, an *Escherichia coli* (EHE coli) outbreak caused by fenugreek sprouts in Germany caused 53 deaths in 8 countries (Fung et al. 2018) . These incidents highlight the threats that unsafe food poses to global health while revealing that vulnerable groups such as the young, the elderly, and the sick are particularly vulnerable.

Various practices have been implemented at the international level in order to prevent problems related to food safety and to minimize economic losses (Onurlubaş & Gürler 2016). These new approaches, which advocate production methods that will not harm human health, have resulted in reliable food legislation and practices that increase control and supervision in food production processes (Halaç 2002). This legislation covers food safety studies in all processes starting from harvest and including transportation, storage, packaging, preparation, and consumption stages. In each of these processes, the goal is to prevent

biological, chemical, and physical hazards that may cause product deterioration and to prevent such contamination (Üçüncü 2000). The basis of food safety studies is based on the establishment of a Food Codex Commission within the framework of the Food Standards Program conducted by the Food and Agriculture Organization of the United Nations (FAO) and the WHO (Aydın, 1973). This commission has determined internationally accepted food safety standards. These standards include the use of appropriate technology in food businesses (GMP), provision of hygiene rules (GHP), and Hazard Analysis Critical Control Points (HACCP). In addition, with the "farm-to-table" approach, steps such as determining, preventing, or minimizing the effects of existing risks in the food safety system have been integrated into the Total Quality Management System (National Food and Nutrition Strategy Working Group Report 2003). These regulations have further increased the importance of food safety and made it mandatory to conduct studies in this area.

2.2. Historical development of the concept of agricultural communication and the tools used

The agricultural sector is an important area that contributes to the healthy nutrition of societies and supports development by producing different nutrients (Altın & Demiryürek 2021). In addition, agriculture is considered an indispensable sector in terms of maintaining the continuity of life, contributing to national income and employment, and providing input and capital to other sectors, as well as protecting biological diversity and ecological balance. Due to these multifaceted effects, agriculture stands out as an area that concerns every segment of society with its economic, social, and environmental dimensions (Doğan et al. 2015). Agricultural communication is increasingly important in terms of creating social awareness and sharing information. Agricultural communication attracts attention as a discipline that is included in both the "agriculture" and "communication" literature and is continuously developing. Agricultural communication is a process that involves the transfer of information between individuals who have a direct or indirect relationship with agriculture and farmers. Agricultural communication focuses on sharing information about the agricultural sector among stakeholders both within and outside the agricultural sector (Elpeze Ergeç 2022). According to Zumalt (2007), in the modern world, a life is lived surrounded by global trade and instant communication, and access to information has become easier than ever. However, many people do not have sufficient information about the content or production processes of the foods they consume. This situation reveals the importance of organized information sharing systems in agriculture and food safety. Effective communication in the agricultural sector is considered a critical element for food and agricultural enterprises. Various reports and analyses demonstrate that information and human communication play integral roles in all aspects of agricultural activities from the local to the global scale (for examples, see Huffman and Tegene; Roberts and Schimmelpfennig; Truelsen; McInerney, Bird and Nucci; Fry; Mody; King; Corey; and Dickson). As these reports demonstrate, communication is a fundamental element that affects and supports all aspects of agriculture. In fact, communication has become an integral part of every single process of agriculture (Zumalt 2007).

Agricultural communication is taking shape as an interdisciplinary social science field at the intersection of the communication and agricultural literature (Küçüktığlı 2023). People have communicated with each other about their agricultural knowledge for thousands of years. In the USA, this communication, which started with word-of-mouth communication since the American Revolution, was later followed by the use of written printing tools (Bardolph 1948; Boone et al. 2000; Fusonie 1977). While books coming from Europe were among the communication tools at first, commercial farm newspapers and magazines were added to this list in the early 1800s. Over time, printed media diversified with radio, television, film, the internet, and other technologies and began to be used in the transmission of agricultural news, information and opinions. Along with this process, a professional and academic field known as agricultural journalism developed and still maintains its importance. In addition, the emergence of non-journalistic elements such as advertising, public relations, extension information services, and organizational communication led to the adoption of a broader definition from the mid-20th century onwards. In this context, the term "communication" has become an umbrella concept encompassing all forms of human interaction such as interpersonal, group, organizational, and societal communication. Agriculture has also expanded significantly during this period and is not limited to food, feed, and fiber production alone; it has become a complex structure encompassing many areas from research to processing and marketing, nutrition, and health. In addition, the concept of agriculture has also focused on the relationships between agricultural/food enterprises and social public interests. In addition, agriculture is increasingly seen as a global collaboration. Today, agricultural communication has been included in higher education curricula, and graduates find various job opportunities in this field (Zumalt 2007). Studies on agriculture and communication had a starting point in the USA, but over time, they combined with periodical literature from different parts of the world and gained a significant international character (Elpeze Ergeç 2022). While scientific studies on agriculture generally fall within the scope of agricultural or veterinary faculties, especially in the USA, these studies are also carried out in Communication Faculties under the title of "agricultural communication". In this context, the concept of "agricultural communicator" began to be used. According to Reisner and Hays, agricultural communicators serve as a critical link in the transmission of information to farmers (Reisner & Hays 1989). The first agricultural communicators consisted of people who transcribed the research of scientists at their universities. During the same period, while major newspapers included farmer writers on their staff, agricultural trade publications began to publish magazines that appealed to a wide audience. In the early 1900s, Iowa State University offered the first course program on agricultural journalism. With the development of radio in the 1920s, the agricultural knowledge accumulated in universities was first conveyed to the target audience through radio broadcasts and then through television programs (Elpeze Ergeç 2022).

Agricultural communication is considered to be part of communication science (Ruth 2005). Agricultural communication cannot be considered as a field independent of the communication structure. There is a need for effective communication in order

to raise awareness in society about the problems in agriculture and the economic effects of these problems (Ruth 2005). Agricultural communication has a comprehensive effect as an important field that ensures that farmers receive accurate and timely information and increases the efficiency of agricultural production. Sharing in this field includes transferring current developments in the agricultural sector to farmers and disseminating modern agricultural practices and technical information. In addition, it is strengthened with strategies such as supporting agricultural education and consultancy activities and increasing the participation of farmers in educational activities. Within this scope, agricultural products are introduced to farmers and innovations in the sector are shared via events such as seminars, workshops, and agricultural fairs. Information for farmers is also of great importance, especially on issues such as agricultural policies, incentives, and supports (Küçüktığlı 2023). Agriculture-specific content is delivered to large audiences through both traditional media tools and digital platforms. Agricultural communication studies range from articles published in newspapers and magazines to radio and television programs and aim to inform farmers about current developments in the field of agriculture (Küçüktığlı 2023).

According to Sandeep et al. (Sandeep et al. 2020), social media affects many sectors, including the agricultural sector. The ability to easily communicate with farmers and experts in different parts of the world over large geographical distances makes social media an important tool for agricultural communication. These platforms strengthen the interactions and flow of information among various stakeholders regarding agricultural innovations and also increase the effectiveness of agricultural extension and advisory services (Chui et al. 2012). Agricultural information on social media is usually disseminated by agricultural research institutes, state agricultural universities, mass media channels, government agencies, and NGOs. In addition, there are individual initiatives to provide agricultural information to farmers at any time of the day. There are thousands of videos on YouTube related to agriculture. Whatsapp groups are a common communication tool for farmers to share information and discuss with other farmers and experts at the field level (Sandeep et al. 2020). As a result, social media stands out as a powerful tool that shapes the future of agricultural communication and creates a more efficient and effective communication network for all stakeholders in the sector.

2.3. The concept of agricultural journalism, global trends, and problems

Food safety and sustainable production and consumption are possible with a planned and future-oriented agricultural economy. In this context, it is of great importance to raise awareness among governments, societies, and farmers about food security. The media plays an important role by undertaking the task of creating awareness and providing information and education in agricultural processes. Agricultural journalism, as a specialized branch of this field, is an important type of journalism that provides information on a wide range of topics including agricultural production and consumption, economy, health, chemicals, and technology (Budak 2023). This evolution in the field of journalism has become an important aspect of specialized journalism and has gained a wide scope with concepts such as Agricultural Communication, Farm Journalism, and Agricultural Journalism. These developments have had great impacts on the agricultural sector of countries (Bassey 2021). Amadi & Raji (2020) define agricultural journalism as a branch of journalism that deals with collecting, writing, organizing, and reporting agricultural information through media (newspaper, radio, television, advertising, etc.). This field aims to learn about modern farming and to convey this information to farmers through mass media. Bassey (2021) emphasizes that agricultural journalism is the process of reporting current developments in the field of agriculture and preparing web and print articles by researching with verified data from professional sources. Agricultural journalism is a specialized form of reporting and is not a field that everyone can master. According to the basic principles of journalism, Accuracy, Brevity and Clarity, agricultural journalists are expected to select verifiable information and present it in an accurate, clear, and concise manner. A good agricultural journalist provides news on farmers' soil-related problems and modern agricultural techniques. In recent years, it has gained popularity among young people due to increasing demand and many institutions offering agricultural journalism courses (Bassey 2021).

One of the most striking aspects today is that technology is constantly and rapidly changing. Production methods and techniques are constantly evolving, and various technological innovations are offered to producers at every stage of agricultural production. Learning technology and adopting new technologies are some of the important elements that ensure agricultural development. Agricultural innovation is the process of directing and adopting technical information and innovations to farmers (Aydın et al. 2018). In this context, Kant, Singh & Singh (2018) state that the type of communication channels used and the availability of detailed information about the innovations developed greatly affect the rate of adoption of agricultural innovation, especially in rural areas. Therefore, agricultural journalism has become essential in order to ensure that rural farmers have timely access to up-to-date information about new inventions and innovations in agriculture (Kant et al. 2018). However, there are a number of factors that prevent agricultural journalism from being done in a qualified manner. These factors start with agriculture not receiving enough space in the media and being overshadowed by other important issues, especially the economy and politics. The economic-political structure's closeness to governments and large companies and legitimizing the discourses of these actors are also among the important obstacles. In addition, various problems such as lack of specialization in agricultural media, limited access of rural people to information and new technologies, and the failure to approach agricultural news from a scientific and holistic perspective are among the factors that reduce the quality of agricultural journalism. These factors seriously restrict agriculture from receiving the attention it deserves in society and farmers' access to up-to-date information (Budak 2023).

3. Material and Methods

The agricultural news was examined in the Cumhuriyet, Sözcü, Milliyet, and Sabah newspapers, which have different publication policies in Türkiye. When selecting newspapers, attention was paid to the fact that the publication policies of the newspapers were different as well as their circulation figures. Cumhuriyet and Sözcü newspapers were opposition newspapers, while Milliyet and Sabah were mainstream newspapers. A total of 60 news items, 15 from each newspaper, were included in the study. The news items, obtained from a business that provides professional services in media monitoring, cover the period between April and October 2024. A coding table was prepared for the obtained news items. A total of 15 codes were determined in the coding table, including the tone of the news item, its size, visual use, focus, theme, sector, actor, source, emphasis, problem, solution, food safety, technology/innovation, and sustainable agriculture. The content analysis method was used in the analysis of the news items processed in the coding table. The main purpose of content analysis is to determine the concepts and relationships that can explain the collected data. Content analysis attempts to define data and reveal facts that may be hidden in the data. The basic process of content analysis is to collect similar data within the framework of certain concepts and topics and interpret them in a way that the reader can understand (Yıldırım & Şimşek 2021). In other words, content analysis is a research method that helps to derive valid and meaningful results from data (Krippendorff 2018). While performing content analysis, the data recorded in the coding table was transferred to the SPSS v27 program. Then, cross tables giving the numerical and percentage values of the data obtained from the categories were created and chi-square tests were performed. If more than 20% of the cells in the cross tables were less than 5, the Fisher-Freeman-Halton Exact test result was reported.

4. Results and Discussion

The distribution of agricultural news in newspapers according to the tone of the news headline is presented in Table 1. The analysis results showed that there was a statistically significant relationship between the newspapers and the tone of the news headline (Fisher-Freeman-Halton Exact test = 48.594, P<.001). When the post-hoc analyses were examined, the rate of news headlines containing a negative tone (80.0%) in Cumhuriyet and Sözcü newspapers was significantly higher than in other newspapers. On the other hand, the rate of news headlines containing a positive tone (86.7%) in Milliyet and Sabah newspapers was found to be significantly higher than in other newspapers. No significant difference was observed between the newspapers in terms of news headlines containing a neutral tone.

Table 1- Distribution of agricultural news headline tones by newspaper

Tone of the news headline	*Newspaper*								*Total*	
	Cumhuriyet		*Sözcü*		*Milliyet*		*Sabah*			
	n	*%*	*n*	*%*	*n*	*%*	*n*	*%*	*n*	*%*
Positive	0_a	0.0	2_a	13.3	13_b	86.7	13_b	86.7	28	46.7
Neutral	3_a	20.0	1_a	6.7	2_a	13.3	1_a	6.7	7	11.7
Negative	12_a	80.0	12_a	80.0	0_b	0.0	1_b	6.7	25	41.7
Overall	15	100.0	15	100.0	15	100.0	15	100.0	60	100.0

Fisher-Freeman-Halton Exact test = 48.594, P<.001. Cells with different letters in rows are significantly different from each other.

4.1. Findings regarding the font size of the news

The distribution of agricultural news in newspapers according to their font size is presented in Table 2. There was no statistically significant relationship between newspapers and the tone of the news headline (Fisher-Freeman-Halton Exact test = 10.337, p = 0.099). When post-hoc analyses were examined, although the rate of small-sized news in Sözcü newspaper (80.0%) was relatively higher than other newspapers, this difference was not statistically significant. Similarly, although the rate of large-sized news in Milliyet and Sabah newspapers (33.3%) was relatively higher than other newspapers, this difference was not statistically significant either. There was no significant difference between newspapers in terms of medium-sized news.

Table 2- Distribution of agricultural news sizes by newspaper

The font size of the news	*Newspaper*								*Total*	
	Cumhuriyet		*Sözcü*		*Milliyet*		*Sabah*			
	n	*%*	*n*	*%*	*n*	*%*	*n*	*%*	*n*	*%*
Small	7_a	46.7	12_a	80.0	7_a	46.7	7_a	46.7	33	55.0
Medium	7_a	46.7	2_a	13.3	3_a	20.0	3_a	20.0	15	25.0
Large	1_a	6.7	1_a	6.7	5_a	33.3	5_a	33.3	12	20.0
Overall	15	100.0	15	100.0	15	100.0	15	100.0	60	100.0

Fisher-Freeman-Halton Exact test = 10.337, p = .099. Cells with different letters in rows are significantly different from each other.

4.2. Findings regarding the use of visuals in the news

The distribution of agricultural news in newspapers according to visual usage is presented in Table 3. No statistically significant relationship was observed between newspapers and the use of visuals in the news (Fisher-Freeman-Halton Exact test = 8.596, p = 0.152). When post-hoc analyses were examined, the rate of news items without visual elements in Cumhuriyet newspaper (33.3%) was relatively high compared to other newspapers, but this difference was not statistically significant. The rate of news items with one visual element in Sözcü and Milliyet newspapers (80.0%) and the rate of news items with more than one visual element in Sabah newspaper (26.7%) were relatively high compared to other newspapers, but these differences were not found to be statistically significant.

Table 3- Distribution of visual use in agricultural news by newspaper

Use of visuals in the news	***Newspaper***								***Total***	
	Cumhuriyet		***Sözcü***		***Milliyet***		***Sabah***			
	n	*%*	*n*	*%*	*n*	*%*	*n*	*%*	*n*	*%*
No visual elements	5_a	33.3	1_a	6.7	1_a	6.7	1_a	6.7	8	13.3
One visual element	10_a	66.7	12_a	80.0	12_a	80.0	10_a	66.7	44	73.3
More than one visual element	0_a	0.0	2_a	13.3	2_a	13.3	4_a	26.7	8	13.3
Overall	15	100.0	15	100.0	15	100.0	15	100.0	60	100.0

Fisher-Freeman-Halton Exact test = 8.596, p = .152. Cells with different letters in rows are significantly different from each other

4.3. Findings regarding the focal point of the news

The distribution of agricultural news in newspapers according to their focus is presented in Table 4. There was no statistically significant relationship between the newspapers and the focus of the news (Fisher-Freeman-Halton Exact test = 7.627, p = 0.152). When the post-hoc analyses were examined, nationally focused news constituted the majority in all newspapers. All of the news in Cumhuriyet newspaper (100%), 80% of the news in Sözcü newspaper, 93.3% of the news in Milliyet newspaper, and 86.7% of the news in Sabah newspaper were nationally focused. Although the rate of internationally focused news was relatively higher in Sözcü (20%) and Sabah (13.3%) newspapers, these differences were not statistically significant. Locally focused news was seen only in Milliyet newspaper (6.7%), and no locally focused news was found in the other newspapers.

Table 4- Distribution of the focal points of agricultural news by newspaper

Focus of the news	***Newspaper***								***Total***	
	Cumhuriyet		***Sözcü***		***Milliyet***		***Sabah***			
	n	*%*	*n*	*%*	*n*	*%*	*n*	*%*	*n*	*%*
Local	0_a	0.0	0_a	0.0	1_a	6.7	0_a	0.0	1	1.7
National	15_a	100.0	12_a	80.0	14_a	93.3	13_a	86.7	54	90.0
International	0_a	0.0	3_a	20.0	0_a	0.0	2_a	13.3	5	8.3
Total	15	100.0	15	100.0	15	100.0	15	100.0	60	100.0

Not. Fisher-Freeman-Halton Exact test = 7.627, p = .152. Cells with different letters in rows are significantly different from each other

4.4. Findings regarding the main theme of the news

The distribution of agricultural news in newspapers according to their main themes is presented in Table 5. There was no statistically significant relationship between the newspapers and the main theme of the news (Fisher-Freeman-Halton Exact test = 22.040, p = 0.102). When post-hoc analyses were examined, agricultural policies were the most frequently covered theme (33.3%) and were especially covered more in Cumhuriyet (46.7%) and Sözcü (40.0%) newspapers. The themes of agricultural technology/innovation and agricultural supports and incentives (18.3%) were especially covered more in Sabah (33.3%). The theme of farmers' problems (11.7%) was mostly covered in Sözcü (33.3%) but was not covered at all in Cumhuriyet and Sabah newspapers. The themes of agricultural production (5.0%), agricultural export/import (6.7%), and other (6.7%) showed a relatively less frequent but balanced distribution among newspapers. However, none of these differences were statistically significant.

Table 5- Distribution of main themes of agricultural news by newspaper

Main theme of the news	*Newspaper*								*Total*	
	Cumhuriyet		*Sözcü*		*Milliyet*		*Sabah*			
	n	*%*	*n*	*%*	*n*	*%*	*n*	*%*	*n*	*%*
Agricultural production	1_a	6.7	1_a	6.7	1_a	6.7	0_a	0.0	3	5.0
Agricultural policies	7_a	46.7	6_a	40.0	4_a	26.7	3_a	20.0	20	33.3
Farmer issues	0_a	0.0	5_a	33.3	2_a	13.3	0_a	0.0	7	11.7
Agricultural technology and innovation	2_a	13.3	1_a	6.7	3_a	20.0	5_a	33.3	11	18.3
Agricultural supports and incentives	2_a	13.3	1_a	6.7	3_a	20.0	5_a	33.3	11	18.3
Agricultural export/import	1_a	6.7	1_a	6.7	0_a	0.0	2_a	13.3	4	6.7
Other	2_a	13.3	0_a	0.0	2_a	13.3	0_a	0.0	4	6.7
Overall	15	100.0	15	100.0	15	100.0	15	100.0	60	100.0

Fisher-Freeman-Halton Exact test = 22.040, p = .102. Cells with different letters in rows are significantly different from each other

4.5. Findings regarding the agricultural sub-sector of the news

The distribution of agricultural news in newspapers according to sub-sectors is presented in Table 6. There was no statistically significant relationship between newspapers and the agricultural sub-sector of the news (Fisher-Freeman-Halton Exact test = 7.222, p = 0.186). When post-hoc analyses were examined, the vast majority of agricultural news (81.7%) was in the general agriculture category. While all of the news in Milliyet newspaper (100%) was in the general agriculture category, this rate was 80.0% in Cumhuriyet and Sabah newspapers and 66.7% in Sözcü newspaper. News on plant production constitutes 15% of the agricultural news, and it was highest in Sözcü newspaper (26.7%) followed by Cumhuriyet newspaper (20.0%). However, there was no news on plant production in Milliyet newspaper. News on the animal husbandry sub-sector is quite limited (3.3%) and only appeared in Sabah and Sözcü newspapers (6.7%). However, the differences in this distribution were not statistically significant.

Table 6- Distribution of agricultural news sub-sectors by newspaper

Agricultural sub-sector of the news	*Newspaper*								*Total*	
	Cumhuriyet		*Sözcü*		*Milliyet*		*Sabah*			
	n	*%*	*n*	*%*	*n*	*%*	*n*	*%*	*n*	*%*
Plant production	3_a	20.0	4_a	26.7	0_a	0.0	2_a	13.3	9	15.0
Livestock farming	0_a	0.0	1_a	6.7	0_a	0.0	1_a	6.7	2	3.3
General agriculture	12_a	80.0	10_a	66.7	15_a	100.0	12_a	80.0	49	81.7
Overall	15	100.0	15	100.0	15	100.0	15	100.0	60	100.0

Fisher-Freeman-Halton Exact test = 7.222, p = .186. Cells with different letters in rows are significantly different from each other.

4.6. Findings regarding the actors in the news text

The distribution of actors in agricultural news in newspapers is presented in Table 7. There was no statistically significant relationship between the newspapers and the actors in the news text (Fisher-Freeman-Halton Exact test = 13.549, p = 0.504). When post-hoc analyses were examined, the actors most frequently included in the news are state institutions (60.0%). State institutions are especially included at a higher rate in Milliyet and Sabah newspapers (73.3%); this rate was 53.3% in Cumhuriyet and 40.0% in Sözcü. Civil society organizations (15.0%) were mostly included in Sözcü (26.7%) and Cumhuriyet (20.0%) newspapers. Private sector actors (10.0%) were relatively balanced among newspapers. Farmers and farmers' associations (5.0%) were only included in Cumhuriyet and Sözcü newspapers, while educational institutions and universities (1.7%) were only included in Milliyet newspaper. Other actors (8.3%) were seen at a higher rate in Sözcü and Sabah newspapers. However, none of these differences were statistically significant.

Table 7- Distribution of actors in agricultural news by newspaper

Actors in the news text	*Newspaper*								*Total*	
	Cumhuriyet		*Sözcü*		*Milliyet*		*Sabah*			
	n	*%*	*n*	*%*	*n*	*%*	*n*	*%*	*n*	*%*
Governmental Institutions	8_a	53.3	6_a	40.0	11_a	73.3	11_a	73.3	36	60.0
Non-Governmental Organizations	3_a	20.0	4_a	26.7	1_a	6.7	1_a	6.7	9	15.0
Farmers and Farmers' Associations	1_a	6.7	2_a	13.3	0_a	0.0	0_a	0.0	3	5.0
Private Sector	2_a	13.3	1_a	6.7	2_a	13.3	1_a	6.7	6	10.0
Educational Institutions and Universities	0_a	0.0	0_a	0.0	1_a	6.7	0_a	0.0	1	1.7
Other	1_a	6.7	2_a	13.3	0_a	0.0	2_a	13.3	5	8.3
Overall	15	100.0	15	100.0	15	100.0	15	100.0	60	100.0

Fisher-Freeman-Halton Exact test = 13.549, p = .504 Cells with different letters in rows are significantly different from each other

4.7. Findings regarding news sources

The distribution of agricultural news in newspapers according to their sources is presented in Table 8. There was no statistically significant relationship between newspapers and news sources ($\chi^2 = 4.821$, sd = 3, p = 0.185). When post-hoc analyses were examined, 53.3% of the news was obtained from primary sources such as interviews and direct observations and 46.7% from secondary sources such as reports, statistics, and official statements. While the use of primary sources was higher in Sözcü (73.3%) and Cumhuriyet (60.0%) newspapers, it was lower in Milliyet and Sabah (40.0%) newspapers. In parallel, the use of secondary sources was higher in Milliyet and Sabah (60.0%) newspapers and lower in Sözcü (26.7%) and Cumhuriyet (40.0%) newspapers. However, the differences in this distribution were not statistically significant.

Table 8- Distribution of agricultural news sources by newspaper

Sources of the news	*Newspaper*								*Total*	
	Cumhuriyet		*Sözcü*		*Milliyet*		*Sabah*			
	n	*%*	*n*	*%*	*n*	*%*	*n*	*%*	*n*	*%*
Primary source	9_a	60.0	11_a	73.3	6_a	40.0	6_a	40.0	32	53.3
Secondary source	6_a	40.0	4_a	26.7	9_a	60.0	9_a	60.0	28	46.7
Overall	15	100.0	15	100.0	15	100.0	15	100.0	60	100.0

Chi-square test, $\chi^2 = 4.821$, sd = 3, p = .185. Cells with different letters in rows are significantly different from each other

4.8. Findings regarding the problem/solution highlighted in the news

The distribution of the agricultural news examined according to the emphasis on problem/solution is presented in Table 9. There was a statistically significant relationship between newspapers and problem/solution focused news (Fisher-Freeman-Halton Exact test = 25.861, P<0.001). When the post-hoc analyses were examined, news emphasizing only problems were significantly higher in Sözcü (40%) and Cumhuriyet (33.3%) newspapers, while they were not present at all in Milliyet and Sabah newspapers. News emphasizing only solutions were significantly higher in Milliyet newspaper (60%). Although the rate of news emphasizing both problems and solutions did not show a statistically significant difference between the newspapers, it was higher in Cumhuriyet and Sözcü newspapers (53.3%) and lower in Milliyet newspaper (26.7%).

Table 9- Distribution of problem/solution emphasis in agricultural news by newspaper

Problem/solution highlighted in the news	*Newspaper*								*Total*	
	Cumhuriyet		*Sözcü*		*Milliyet*		*Sabah*			
	n	*%*	*n*	*%*	*n*	*%*	*n*	*%*	*n*	*%*
Neither the problem nor the solution is emphasized	1_a	6.7	0_a	0.0	2_a	13.3	1_a	6.7	4	6.7
Only the problem is emphasized	$5_{a.\ b}$	33.3	6_a	40.0	0_b	0.0	0_b	0.0	11	18.3
Only the solution is emphasized	1_a	6.7	1_a	6.7	9_b	60.0	$7_{a.\ b}$	46.7	18	30.0
Both the problem and the solution are emphasized	8_a	53.3	8_a	53.3	4_a	26.7	7_a	46.7	27	45.0
Overall	15	100.0	15	100.0	15	100.0	15	100.0	60	100.0

Fisher-Freeman-Halton Exact test = 25.861, P<.001 Cells with different letters in rows are significantly different from each other.

4.9. Findings regarding agricultural problems highlighted in the news

The distribution of agricultural news in newspapers according to the agricultural problems emphasized is presented in Table 10. There was a statistically significant relationship between agricultural problems emphasized in newspapers and news (Fisher-Freeman-Halton Exact test = 36.726, P<0.001). When post-hoc analyses were examined, no problems were emphasized in 33.3% of the news, cost increase in 6.7%, water scarcity in 6.7%, marketing problems in 5%, financing problems in 5%, climate change effects in 3.3%, technological inadequacy in 3.3%, and other problems in 36.7%. News articles not emphasizing problems were significantly more prevalent in Milliyet (66.7%) and Sabah (53.3%) newspapers, while they were less prevalent in Cumhuriyet and Sözcü (6.7%) newspapers.

Table 10- Distribution of problems highlighted in agricultural news by newspaper

Agricultural problem highlighted in the news	*Newspaper*								*Total*	
	Cumhuriyet		*Sözcü*		*Milliyet*		*Sabah*			
	n	*%*	*n*	*%*	*n*	*%*	*n*	*%*	*n*	*%*
Problem not highlighted	1_a	6.7	1_a	6.7	10_b	66.7	8_b	53.3	20	33.3
Cost increase	3_a	20.0	0_a	0.0	1_a	6.7	0_a	0.0	4	6.7
Climate change impacts	1_a	6.7	0_a	0.0	0_a	0.0	1_a	6.7	2	3.3
Water scarcity	1_a	6.7	0_a	0.0	2_a	13.3	1_a	6.7	4	6.7
Marketing issues	0_a	0.0	3_a	20.0	0_a	0.0	0_a	0.0	3	5.0
Financing issues	1_a	6.7	2_a	13.3	0_a	0.0	0_a	0.0	3	5.0
Technological inadequacy	1_a	6.7	0_a	0.0	0_a	0.0	1_a	6.7	2	3.3
Other	7_a	46.7	9_a	60.0	2_a	13.3	4_a	26.7	22	36.7
Overall	15	100.0	15	100.0	15	100.0	15	100.0	60	100.0

Fisher-Freeman-Halton Exact test = 36.726, P<.001. Cells with different letters in rows are significantly different from each other

4.10. Findings regarding the solution suggestions presented in the news

The distribution of agricultural news in newspapers according to the solution suggestions provided is presented in Table 11. There was no statistically significant relationship between the suggested solutions provided in the newspapers and the news (Fisher-Freeman-Halton Exact test = 16.859, p = 0.237). In 35% of the news items, state support/incentives were presented as a suggested solution; in 18.3%, technological investments; in 16.7%, other solutions; in 5%, education and consultancy services; and in 1.7%, sustainable agricultural practices were presented as suggested solutions, while in 23.3%, no solutions were suggested. News items without suggested solutions were presented at a higher rate in Cumhuriyet and Sözcü newspapers (40%), while state support/incentives were presented at a higher rate in Sabah newspaper (46.7%) and technological investments were presented at a higher rate in Sabah (33.3%) and Milliyet (20%) newspapers. However, these differences were not statistically significant.

Table 11- Distribution of solution suggestions presented in agricultural news by newspaper

Solution suggestions presented in the news	*Newspaper*								*Total*	
	Cumhuriyet		*Sözcü*		*Milliyet*		*Sabah*			
	n	*%*	*n*	*%*	*n*	*%*	*n*	*%*	*n*	*%*
No solution proposed	6_a	40.0	6_a	40.0	1_a	6.7	1_a	6.7	14	23.3
Government support/incentives	5_a	33.3	4_a	26.7	5_a	33.3	7_a	46.7	21	35.0
Technological investments	2_a	13.3	1_a	6.7	3_a	20.0	5_a	33.3	11	18.3
Education and consultancy services	0_a	0.0	1_a	6.7	2_a	13.3	0_a	0.0	3	5.0
Sustainable agricultural practices	0_a	0.0	0_a	0.0	1_a	6.7	0_a	0.0	1	1.7
Other	2_a	13.3	3_a	20.0	3_a	20.0	2_a	13.3	10	16.7
Overall	15	100.0	15	100.0	15	100.0	15	100.0	60	100.0

Fisher-Freeman-Halton Exact test = 16.859, p = .237. Cells with different letters in rows are significantly different from each other

4.11. Findings regarding agricultural policies/practices highlighted in the news

The distribution of agricultural news in newspapers according to the agricultural policies/practices emphasized is presented in Table 12. There was no statistically significant relationship between agricultural policies/practices emphasized in newspapers and news (Fisher-Freeman-Halton Exact test = 13.991, p = 0.164). Other policies/practices were emphasized in 53.3% of the news items, support policies in 26.7%, smart agricultural practices in 11.7%, credit practices in 5%, and agricultural insurance in 3.3%. While support policies were more prominent in Cumhuriyet newspaper (46.7%), smart agricultural practices were more prominent in Sabah newspaper (26.7%), and other policies/practices were more prominent in Sözcü newspaper (73.3%). However, these differences were not statistically significant.

Table 12- Distribution of agricultural policies/practices emphasized in agricultural news according to newspapers

Agricultural Policy/ Practice Emphasized in News	*Newspaper*								*Total*	
	Cumhuriyet		*Sözcü*		*Milliyet*		*Sabah*			
	n	*%*	*n*	*%*	*n*	*%*	*n*	*%*	*n*	*%*
Support policies	7_a	46.7	3_a	20,0	3_a	20,0	3_a	20,0	16	26,7
Credit applications	0_a	0.0	0_a	0.0	1_a	6.7	2_a	13.3	3	5.0
Agricultural insurance	0_a	0.0	0_a	0.0	1_a	6.7	1_a	6.7	2	3.3
Smart farming applications	0_a	0.0	1_a	6.7	2_a	13.3	4_a	26.7	7	11.7
Others	8_a	53.3	11_a	73.3	8_a	53.3	5_a	33.3	32	53.3
Total	15	100.0	15	100.0	15	100.0	15	100.0	60	100.0

Note. Fisher-Freeman-Halton Exact Test = 13.991, p = .164. Cells indicated with the same letter within rows do not differ significantly from each other

4.12. Findings regarding the approach to food security in the news

The distribution of agricultural news in newspapers according to their approach to food security is presented in Table 13. There was a statistically significant relationship between newspapers and the news' approach to food security (Fisher-Freeman-Halton Exact test = 14.563, p = 0.016). Food security was not mentioned in 55% of the examined news items, food security problems were emphasized in 26.7%, and solutions to increase food security were presented in 18.3%. When post-hoc analyses were evaluated, a significant difference was found between Cumhuriyet newspaper (53.3%) and Milliyet newspaper (6.7%) in terms of emphasizing the food security problem. In addition, a significant difference was found between Cumhuriyet newspaper (0%) and Sabah newspaper (40%) in terms of providing solutions to increase food security. The differences between other newspapers were not statistically significant.

Tablo 1- Distribution of Food Security Approaches in Agricultural News by Newspapers

Approach to food security in news	*Newspaper*								*Toplam*	
	Cumhuriyet		*Sözcü*		*Milliyet*		*Sabah*			
	n	*%*	*n*	*%*	*n*	*%*	*n*	*%*	*n*	*%*
Food security not mentioned	7_a	46.7	8_a	53.3	11_a	73.3	7_a	46.7	33	55.0
Food security issue emphasized	8_a	53.3	$5_{a,\,b}$	33.3	1_b	6.7	$2_{a,\,b}$	13.3	16	26.7
olutions presented to enhance food security	0_a	0.0	$2_{a,\,b}$	13.3	$3_{a,\,b}$	20.0	6_b	40.0	11	18.3
Total	15	100.0	15	100.0	15	100.0	15	100.0	60	100.0

Note. Fisher-Freeman-Halton Exact test = 14.563, p = .016. Cells indicated with different letters within rows differ significantly from each other.

4.13. Findings on the approach to agricultural technology and innovation in the news

The distribution of agricultural news in newspapers according to their approach to agricultural technology and innovation is presented in Table 14. No statistically significant relationship was determined between newspapers and the news' approach to agricultural technology and innovation (Fisher-Freeman-Halton Exact test = 11.616, p = 0.071). In 71.7% of the examined news items, technology and innovation were not mentioned; in 26.7%, technology and innovation were addressed positively; and in 1.7%, technology and innovation were approached critically. While technology and innovation were not mentioned in 93.3% of Sözcü newspaper's news items, this rate dropped to 53.3% in Sabah newspaper. The rate of news items in which technology and innovation were addressed positively was the highest in Sabah newspaper at 46.7% and the lowest in Sözcü newspaper at 6.7%. However, these differences were not found to be significant.

Table 14- Distribution of approaches to technology and innovation in agricultural news by newspaper

Approach to agricultural technology and innovation in the news	*Newspaper*								*Total*	
	Cumhuriyet		*Sözcü*		*Milliyet*		*Sabah*			
	n	*%*	*n*	*%*	*n*	*%*	*n*	*%*	*n*	*%*
Not mentioned	12_a	80.0	14_a	93.3	9_a	60.0	8_a	53.3	43	71.7
Taken positively	2_a	13.3	1_a	6.7	6_a	40.0	7_a	46.7	16	26.7
Approached critically	1_a	6.7	0_a	0.0	0_a	0.0	0_a	0.0	1	1.7
Overall	15	100.0	15	100.0	15	100.0	15	100.0	60	100.0

Fisher-Freeman-Halton Exact test = 11.616, p = .071. Cells with different letters in rows are significantly different from each other

4.14. Findings on sustainable agriculture approach in the news

The distribution of agricultural news in newspapers according to the sustainable agriculture approach is presented in Table 15. There was a statistically significant relationship between the sustainable agriculture approach in the news and the newspapers (Fisher-Freeman-Halton Exact test = 19.512, p = 0.001). In 58.3% of the examined news items, sustainability was not mentioned; in 28.3%, sustainable agricultural practices were emphasized; and in 13.3%, sustainability issues were addressed. When post-hoc analyses were evaluated, significant differences were found between Cumhuriyet newspaper (46.7%) and Milliyet (0%) and Sabah (0%) newspapers in terms of addressing sustainability issues. The differences between other newspapers were not statistically significant.

Table 15- Distribution of sustainable agriculture approach in agricultural news by newspaper

Sustainable agriculture approach in the news	***Newspaper***								***Total***	
	Cumhuriyet		***Sözcü***		***Milliyet***		***Sabah***			
	n	*%*	*n*	*%*	*n*	*%*	*n*	*%*	*n*	*%*
Sustainability not addressed	6_a	40.0	12_a	80.0	7_a	46.7	10_a	66.7	35	58.3
Sustainable agricultural practices emphasized	2_a	13.3	2_a	13.3	8_a	53.3	5_a	33.3	17	28.3
Sustainability issues addressed	7_a	46.7	$1_{a.\ b}$	6.7	0_b	0.0	0_b	0.0	8	13.3
Overall	15	100.0	15	100.0	15	100.0	15	100.0	60	100.0

Fisher-Freeman-Halton Exact test = 19.512, p = .001. Cells with different letters in rows are significantly different from each other

4.15. Findings on word frequencies in the news

The words used in agricultural news in newspapers were examined according to their frequency. In the examination, the 10 most frequently used words in agricultural news in newspapers were agriculture (n = 404), support (n = 122), farmer (n = 107), production (n = 94), lira (n = 81), Türkiye (n = 76), sector (n = 68), minister (n = 59), food (n = 38), and forest (n = 37). The word cloud created with the words used in agricultural news in newspapers is presented in Table 16.

Table 16- Top 10 Most Frequently Used Words in Agricultural News in Newspapers

Rank	***Word***	***Frequency (n)***
1	Agriculture	404
2	Support	122
3	Farmer	107
4	Production	94
5	Lira	81
6	Türkiye	76
7	Sector	68
8	Minister	59
9	Food	38
10	Forest	37

5. Conclusions

In this study, the agricultural journalism approaches of four national newspapers in Türkiye with different publishing policies (Cumhuriyet, Sözcü, Milliyet, and Sabah) were examined using the content analysis method. The research results revealed that the ideological approaches of the newspapers created significant differences in the presentation of agricultural news.

According to the content analysis results, while headlines with a negative tone (80%) were dominant in Cumhuriyet and Sözcü newspapers, headlines with a positive tone (86.7%) were prominent in Milliyet and Sabah newspapers. This situation shows that the opposition newspapers adopted a problem-oriented journalism approach, while the mainstream media exhibited a solution-oriented approach. This difference confirms that the ideological references of the newspapers directly affect the news content, as emphasized in the study of Ünal & Dağtaş (2023).

When looking at the news sources, state institutions (60%) stand out as the most important source, while news from non-governmental organizations and farmers' organizations are more common in opposition newspapers. When evaluated from a thematic perspective, agricultural policies (33.3%) were the most covered theme. While technology and innovation issues are covered more often in the mainstream media, farmers' issues are covered more intensively in the opposition media. It is noteworthy that sustainable agriculture and food security issues are not covered sufficiently in any of the newspapers. In terms

of the problem-solution balance, while problem-focused news is dominant in opposition newspapers, solution proposals are given more space in the mainstream media.

In light of these findings, some important steps need to be taken to increase the quality of agricultural journalism in Türkiye. First, it is important to increase the employment of reporters specialized in agricultural journalism in media organizations and to provide regular training to journalists on agriculture, food safety, and sustainability (Budak, 2023). The establishment of agricultural desks by media organizations and the production of special content in this field can be considered to be institutional steps that will increase the quality of journalism. At this point, it is important to eliminate the technical deficiencies emphasized by Sert et al. (2020).

In terms of content production, it is important to give more space to food security and sustainable agriculture issues, to observe the problem-solution balance, and to adopt a constructive journalism approach. Strengthening local agricultural journalism and covering technology-innovation issues more are also critical for the development of the sector. In addition, as Adhikari et al. (2020) stated, the scientific and ecological dimensions of agriculture should be addressed more.

At the policy level, agricultural communication should be addressed within the framework of a national strategy, legal regulations supporting agricultural journalism should be made, and access to agricultural data should be facilitated. Strengthening academic-media collaboration and developing ethical principles in agricultural journalism are also important for the professionalization of the sector. In addition, in order to overcome the trust issues pointed out by Rust et al. (2021), it is important to develop ethical principles in agricultural journalism and strengthen the understanding of independent journalism.

As a result, in order for agricultural journalism in Türkiye to contribute to food security and sustainable agriculture goals, media organizations need to develop a journalistic approach that is scientifically based and solution-oriented, that is in the public interest, beyond newspapers ideological approaches. In this context, it is of great importance for all stakeholders to make a joint effort to professionalize agricultural journalism and strengthen its institutional capacity. Only in this way will agricultural journalism be able to fully realize its potential to increase society's awareness of food security and contribute to the spread of sustainable agricultural practices.

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