



COMMENTARY

Sowing the seeds of skepticism: Russian state news and anti-GMO sentiment

Shawn F. Dorius ^a and Carolyn J. Lawrence-Dill ^b

^aDepartment of Sociology, Iowa State University, Ames, IA, USA

^bDepartment of Genetics, Development and Cell Biology and Department of Agronomy, Iowa State University, Ames, IA, USA

ABSTRACT. Biotech news coverage in English-language Russian media fits the profile of the Russian information warfare strategy described in recent military reports. This raises the question of whether Russia views the dissemination of anti-GMO information as just one of many divisive issues it can exploit as part of its information war, or if GMOs serve more expansive disruptive purposes. Distinctive patterns in Russian news provide evidence of a coordinated information campaign that could turn public opinion against genetic engineering. The recent branding of Russian agriculture as the ecologically clean alternative to genetically engineered foods is suggestive of an economic motive behind the information campaign against western biotechnologies.

KEYWORDS. GM, GMO, propaganda, Russia, genetic engineering, news

On the surface, public attitudes toward genetic engineering techniques can appear quite negative. High profile individuals such as Dr. Oz and organizations like the Center for Food Safety, Right to Know, Greenpeace, and the Organic Consumers Association garner considerable attention as they actively oppose the creation and release of biotech animals and

crops for agricultural production, promote product boycott movements, and call for policymakers to enact both mandatory labeling laws and outright bans. Public opinion campaigns opposing biotechnology in the global food system have organized around the catchphrase GMOs, short for ‘genetically modified organisms’. While the term ‘GMO’ is not well

Correspondence to: Shawn F. Dorius, Iowa State University, 317C East Hall, Ames, IA 50010, USA;
Email: sdorius@iastate.edu

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defined, it has nevertheless become a simple and powerful umbrella term under which many negative connotations have become associated with the science behind molecular genetic engineering techniques.

Despite the persistent campaign against ‘GMOs,’ public awareness on the topic remains low, with national opinion polls in the US showing that 46% of adults care little or not at all about GMOs and less than 20% feel well-informed about GMOs. Importantly, half of the general public thinks the science around genetic engineering is not settled, and just 14% believe that ‘almost all’ scientists agree about the safety of GMO foods for human consumption,¹ despite the US National Academy of Sciences finding that they are in fact safe.² When it comes to information about scientific matters, the public is less trusting of scientists for information about GMOs than they are for information about vaccines, climate change, evolution, or nuclear power.³

To better understand why GMOs evoke unusually high distrust in science and where such views originate, we have been monitoring the prevalence and nature of GMO themes in US news coverage and public responses contained in the ‘comments’ sections of online news. The qualitative evidence largely agrees with quantitative evidence from social surveys: in both cases, concern or outright fear is expressed about the chemicals applied to GMO crops, the potential for GMOs to cross with wild varieties, and long-term health and environmental consequences of widespread adoption of biotechnology in the global food system. Some also express a general moral aversion to the alteration of nature embodied by biotech foods. Our analysis has also detected skepticism or rejection of multinational firms and related capitalist institutions, anti-science sentiment, and low trust of government, which agrees with other research.^{4,5}

Concurrent with our investigation, there has been considerable popular debate about Russian meddling in western elections and the role that social media and online news may have played in these efforts. The accumulated

evidence indicates that Russia is targeting western democracies with an ‘influence campaign’ drawing from a large number of seemingly unrelated social, political, economic, and environmental topics. According to recent declassified assessments by military agencies, this represents a new and more sophisticated asymmetrical war in which Russia is alleged to exploit a network of state-funded news agencies, trolls, bots, and activists to encourage dissent and polarize the electorate in service of eroding trust in western institutions (e.g., elections, government officials and regulatory agencies, capitalism, and an independent press^{6,7} and National Intelligence Council 2016). To date, much of the attention in the US has been on the use of social media giants Facebook and Twitter to spread highly polarizing, ideologically extreme, and conspiratorial propaganda.⁸ Although there has been less attention paid to the *sources* of disinformation campaigns,⁹ two Russian state-funded news organizations, RT (Russia Today) and Sputnik, were singled out by defense agencies as central actors in this influence campaign. Indeed, the US version of RT was recently directed under the Foreign Agents Registration Act, a post-World War II law aimed at preventing foreign influence from affecting US policy, to register with the Justice Department as a foreign agent. Twitter recently banned RT and Sputnik from purchasing advertisements on their network and more recently closed the accounts of several thousand accounts linked to Russian foreign intelligence operations. Other social media outlets, such as Reddit, have recently taken similar action.

These events motivated us to expand the scope of our research to include GMO news coverage appearing in the English-language versions of RT and Sputnik (referred to collectively hereafter as “Russian News”) in order to evaluate how GMOs were portrayed in those sources. Our initial review of Russian News coverage of GMOs identified three key features.

1. Russian News articles consistently touched on many of the same concerns we observed in user comments in other

US-based news organizations (e.g., opposition to multinational firms, skepticism of elected officials and regulatory agencies), suggesting a complex portrayal of GMOs.

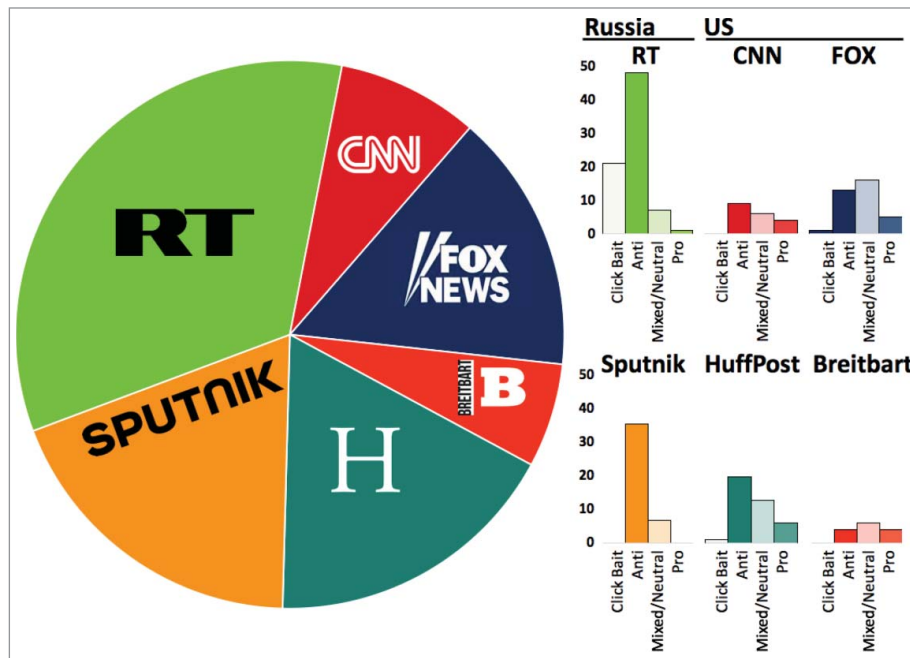
2. In contrast to other US news sources we evaluated, where GMO coverage could be favorable, unfavorable, and mixed or neutral, GMOs were more often presented negatively by RT and Sputnik.
3. A non-trivial share of RT articles containing the keyword ‘GMO’ had little to do with genetic engineering. Initially we considered these to be false-positives, but upon further investigation determined that the topic of GMOs was injected tangentially (at best) or as clear non-sequitur (at worst). We refer to this class of articles as ‘click bait’.

Based on these observations, we set out to systematically collect and analyze all articles that contained the term ‘GMO’ from RT and

Sputnik as well as five US news organizations that span the ideological spectrum of US politics: three US cable news organizations (MSNBC, CNN, and FOX News) and two online US news media outlets (Breitbart and Huffington Post). Focusing on the calendar year 2016, we classified articles into three primary sentiment categories developed to broadly reflect how GMOs were presented to readers: anti, pro, and mixed or neutral. We created a fourth category to track click bait (false-positives). This approach allowed us to contrast the *volume* of GMO-related news items among US and Russian sources and the *sentiment* expressed in those items. For further information on our methods and datasets, including a list of caveats and next steps, see Supplementary Materials at <https://osf.io/fhs8a> (DOI 10.17605/OSF.IO/FHS8A).

We found that RT and Sputnik produced more articles containing the word ‘GMO’ (53%) than the other five news organizations combined (Fig. 1). RT accounted for 34% of

FIGURE 1. GMO coverage in the news, by source. At left a circle chart shows the proportions of articles containing the search term “GMO” among RT, Sputnik, Huffington Post, Breitbart, Fox News, CNN, and MSNBC. At right raw article counts are classified into groups called Click Bait, Anti-GMO, Mixed/Neutral, and Pro-GMO. MSNBC’s single (mixed/neutral) article is not shown.



the articles we collected, followed by Sputnik (19%), Huffington Post (18%), Fox News (15%), CNN (8%), Breitbart News (6%), and MSNBC (<1%). Article classification revealed that RT and Sputnik consistently portrayed genetic modification in a negative light. Among US news organizations, the left-leaning Huffington Post produced the most ‘anti’ articles, followed by CNN. Fox News produced the most mixed or neutral coverage of GMOs. Nearly all articles in which the term GMO appeared as ‘click bait’ were published by RT. These findings implicate Russian News as an important, if largely unknown, purveyor of anti-GMO information.

In the articles we analyzed, Russian coverage of GMOs reflected the full spectrum of anti-GMO attitudes, covering, for example, environmental concerns (cross-pollination, species loss, chemical pollution), health risks (a cause of cancer, Zika, nutritional deficiencies), political corruption, negative social and economic consequences for developing countries and people (suicide of Indian farmers), corporate malfeasance (manipulation of facts by Monsanto), and corruption of federal regulatory agencies. The expansive nature of Russian News portrayal of GMOs reflects a deep understanding of the psychological antecedents of public distrust in bioengineering and is suggestive of an intent to more firmly link these antecedents in the public consciousness, though our current analysis cannot confirm or disconfirm these hypotheses.

Word density analysis further supports the assertion that coverage of GMOs by Russian News in 2106 was distinctive from US news coverage over the same period. When ‘GMO’ appeared in CNN news reports, for example, it was most commonly in the context of genetically modified mosquitoes aimed at combating the spread of the Zika virus in Florida. Monsanto was mentioned 15 times in 36 Fox News reports for an average of just under half a mention per report. Monsanto was mentioned 26 times across 23 CNN reports (1.1 article mention rate), and was mentioned 177 times across 77 RT articles for an average mention rate of 2.3. As previously described, GMO click bait was largely an RT phenomenon that

appeared in articles focused on topics generally considered negative or distasteful to most people, an indication that the insertions were designed to create latent associations between GMOs and negative emotions. For example, in an RT article entitled “Complex abortion debate emerges over Zika virus-infected fetuses,” GMO click bait appears near the end via a link to “READ MORE: GMO mosquitoes could be cause of Zika outbreak, critics say”.¹⁰ In another RT article about the online regulation of offensive material, the article began by focusing on Danish TV2 before shifting attention to two high profile US firms, Disney and Facebook. It concluded with the following sentence: “Reports of Facebook using its power to block anti-GMO content and criticisms of the Trans-Pacific Partnership suggest an inconsistent approach to censorship and free speech”.¹¹

It has elsewhere been noted that such efforts are designed to amplify existing controversies¹² and emerging research indicates that computational propaganda does, in fact, amplify messaging.¹³ One strategy used in such campaigns, referred to as “false flags”,¹⁴ attempts to mask the true identity of those behind the disinformation campaign. Disinformation campaigns can provide emotional energy and additional attention to topics deemed important for guiding public opinion well into the future. Russian state news may be producing an anti-GMO message and using bots to spread it, but they are unlikely to create the initial sets of necessary association fallacies –that would take human effort. Our analysis indicates that GMO content flowing from Russian News fits the profile of the Russian information warfare strategy described in recent military reports. This raises the question of whether Russia views the production and dissemination of anti-GMO content as just one of the many divisive issues (reviewed by Miller¹⁵) it seeks to exploit as part of its information war, or if GMO disinformation, like Russian anti-fracking propaganda, serves more expansive disruptive purposes. Recent events and positions taken by Russia suggest that spreading anti-GMO sentiment may also serve Russian economic and political interests.

Agriculture has recently expanded to become the second largest sector of the Russian economy,¹⁶ trailing only the oil and gas sector. In 2015, Russian President Vladimir Putin signed a new national security strategy with food security and food independence singled out as national priorities. Toward this end, Russia intends to grow its agricultural industry by supporting domestic agribusiness, preventing ‘food trafficking’, and training domestic agricultural specialists. These efforts coincide with a ban on the production and import of GMOs and a rebranding of Russian agriculture as “ecologically clean”.¹⁷ In these ways, Russia appears intent on presenting itself as the healthier and more environmentally responsible alternative to genetically modified US agriculture: a position with clear implications for trans-Atlantic relations. Anti-GMO messaging is a wedge issue not only within the US, but also between the US and its European allies, many of whom are deeply skeptical of GMOs. Relative to US news organizations we analyzed, English-language Russian News more often presents GMOs in the context of multilateral trade agreements (e.g., the Transatlantic Trade and Investment Partnership) and more often referenced international actors such as America, the EU/Europe, Russia, and sovereign states. Taken together, this suggests that stirring the anti-GMO pot could serve Russian political, economic, and military objectives.

Returning to our original interest in understanding the reason for unusually high distrust in the science behind GMOs, we found a number of instances in which Russian News articles cast biotechnology in a negative light and otherwise raised questions about the scientific consensus concerning biotechnology. The threat of Russia’s disinformation campaign is not limited to sowing seeds of division in the US and bolstering Russian economic power – there is also the potential to erode public trust in science, an institutionalized pillar of western intellectual tradition. Additional research is needed to more fully understand the nature and breadth of propaganda campaigns targeting biotechnology and the effectiveness of efforts to influence public opinion. Here we have conducted a US-

centric analysis. Additional, comparative research is needed to consider the presence of similar patterns in other countries.

Efforts such as the work we describe here are sometimes considered to be outside the research scope of scientists working in the broad field of biotechnology. To those, we note that scientific inquiry occurs within larger social, economic, and political contexts. Attention to public sentiment toward science should not be overlooked or dismissed, as it can have indirect effects on scientific funding and policy developments.

We encourage greater integration of ethical, legal, social, environmental, and economic analyses into biotechnology research.

ABBREVIATION

GMO Vernacular umbrella term that is shorthand for ‘genetically modified organism.’ Encompasses products of genetic engineering and conflated with pesticide resistance, modern farming practices, and other concepts. Lacks any specific scientific meaning.

DISCLOSURE OF POTENTIAL CONFLICTS OF INTEREST

No potential conflicts of interest were disclosed.

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ORCID

Shawn F. Dorius  <http://orcid.org/0000-0001-5821-7972>

Carolyn J. Lawrence-Dill  <http://orcid.org/0000-0003-0069-1430>

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