



Potential Farm Sector Effects of 2009 H1N1 “Swine Flu”: Questions and Answers

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Summary

In March 2009, a number of cases of an influenza-like illness and severe respiratory infections in humans were reported in parts of Mexico. These cases were later confirmed to be a strain of influenza A(H1N1), commonly referred to as “swine flu” and later called 2009 H1N1. By the end of April 2009, confirmed human cases of 2009 H1N1 infection were reported throughout Mexico, in parts of the United States, and in several countries worldwide.

Reports of the outbreak—coupled with the use of the initial moniker “swine flu”—initially caused a downturn in domestic and international pork markets. Domestic pork demand and prices dropped sharply because of consumer fears that eating pork might result in infection. Several pork-importing countries also began to institute trade bans and restrictions on live pig and pork imports from certain countries, including the United States. This initial reaction further rippled throughout pork and other agricultural markets, such as feed grain and other livestock markets, as market analysts attempted to speculate about the short- and long-term consequences of a decline in pork demand and prices.

The Centers for Disease Control and Prevention (CDC), the World Health Organization (WHO), and the World Organization for Animal Health (OIE) confirm that there is no evidence that the 2009 H1N1 virus is transmitted by food and that humans cannot get the illness from eating properly handled pork or pork products. Four global organizations—WHO, OIE, the World Trade Organization (WTO) and the United Nations Food and Agriculture Organization (FAO)—also issued a joint statement that “pork products handled in accordance with hygienic practices are not a source of infection.”

Despite these assurances from U.S. and global food and health organizations, several U.S. trading partners began to implement or were considering implementing full or partial trade restrictions on U.S. swine and pork products. Administration officials and many in Congress are strongly urging U.S. trading partners to base any food safety measures on scientific evidence and to act in accordance with their international obligations under the World Trade Organization (WTO), OIE guidelines, and WTO member obligations under the Sanitary and Phytosanitary (SPS) Agreement. OIE, among other international organizations, has stated that there currently is no justification for imposing trade measures against the importation of pork and pork products. As some countries are continuing to pursue trade restrictions on North American pork products, some affected exporting countries are considering formal trade actions in the WTO.

In June 2009, U.S. Trade Representative (USTR) reported that 16 U.S. trading partners had officially notified the United States of trade restrictions on swine and pork products; USDA reported that as many as 27 countries had imposed such trade restrictions. Of these countries, the two largest in terms of their overall importance to U.S. pork markets, China and Russia, account for an estimated 15% of the value of annual U.S. pork exports. Both China and Russia lifted their restrictions several months later, following negotiations with the United States.

U.S. pork producers hope that efforts to avoid further negative effects on U.S. pork and other agricultural markets are successful. The National Pork Producers Council (NPPC) has asked USDA to provide financial assistance for U.S. pork producers to address the general economic downturn in U.S. hog markets, including assistance to address issues regarding the H1N1 virus.

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General Overview¹

What Is Swine Flu?

Swine flu refers to strains of influenza ("flu") that occur naturally and may cause outbreaks of respiratory illness among wild and domestic pigs. People do not normally get swine flu, but each year the Centers for Disease Control and Prevention (CDC) identifies a few isolated cases of human flu that are caused by flu strains typically associated with swine.

What Is 2009 Influenza A(H1N1)?

The current outbreak of concern is caused by a new strain of flu virus that produces illness in people. It is one of several flu virus strains designated as influenza A(H1N1) for specific proteins on their surface. This new virus was first detected in people in the United States in April 2009. Mexico, Canada, and other countries around the world have reported human cases of illness from the new flu strain. The virus appears to spread from person to person in much the same way as with seasonal flu.

Why Is This Virus Sometimes Called "Swine Flu"?

This virus was originally referred to as "swine flu" because laboratory testing showed that many of its genes were similar to flu viruses that normally occur in pigs in North America. Further study has shown that this new virus is very different from what normally circulates in North American pigs. It has two genes from flu viruses that normally circulate in pigs in Europe and Asia, as well as genes from flu strains that normally circulate in humans and in birds. At this time, there is no evidence that pigs were involved in the transmission of the new flu virus to humans.

For more background information, see CRS Report R40554, *The 2009 Influenza Pandemic: An Overview*. General information is also available at the CDC and WHO websites.²

Food Safety and Human Health Concerns

Can Humans Get This Virus from Eating Pork and Pork Products?

The CDC, the WHO, and the World Organization for Animal Health (OIE)³ confirm that there is no evidence that 2009 H1N1 virus is transmitted by food.⁴ These organizations have repeatedly emphasized that humans cannot get 2009 H1N1 flu, or any other type of flu, from eating pork or

¹ This section is adapted from information provided by CDC on the website "H1N1 Flu (Swine Flu)," <http://www.cdc.gov/h1n1flu/> and http://www.cdc.gov/swineflu/general_info.htm.

² CDC: http://www.cdc.gov/swineflu/general_info.htm; WHO: <http://www.who.int/csr/disease/swineflu/en/>.

³ OIE is the intergovernmental organization responsible for improving animal health worldwide, and is recognized as a reference organization by the WTO. The organization is still known by its former French abbreviation, OIE (Office International des Épizooties), though it was renamed the World Organization for Animal Health.

⁴ CDC: http://www.cdc.gov/swineflu/general_info.htm; WHO: <http://www.who.int/csr/disease/swineflu/en/>; and OIE: http://www.oie.int/eng/press/en_press2009.htm?eId3.

pork products. Some have further emphasized the importance of eating properly handled and cooked pork and pork products, and recommend cooking pork to an internal temperature of 160°F/70°C. This corresponds to the general guidance for the preparation of pork and other meat to kill all viruses and other foodborne pathogens.

The U.S. Department of Agriculture (USDA) has repeatedly said that the 2009 H1N1 flu is not a foodborne disease and that eating properly handled and cooked pork or pork products is safe.⁵ These same arguments were made by medical and veterinary authorities at congressional hearings.⁶ The American Veterinary Medical Association (AVMA) further claims that "neither exposure to pigs nor consumption of pork are risk factors for infection."⁷

Four intergovernmental organizations—WHO, OIE, the World Trade Organization (WTO), and the United Nations Food and Agriculture Organization (FAO)—issued a joint statement that "pork products handled in accordance with hygienic practices are not a source of infection."⁸ The European Centre for Disease Prevention and Control (ECDC) also states that "influenza virus is not transmitted by eating properly handled and cooked pork and pork products," and the European Food Safety Authority (EFSA) claims it is "not aware of any scientific evidence of risk to pork consumers from influenza viruses regardless of the type of pork consumed."⁹

Given the safety of eating pork and pork products, along with the fact that the disease is primarily transmitted from human to human, several U.S. and international organizations argued that the disease should not be called "swine flu." The CDC, WHO, and OIE, among others, recommend instead referring to the disease by its scientific name, influenza A(H1N1) or 2009 H1N1.

Can Humans Get This Virus Through Contact with Uncooked Pork?

The WHO and CDC continue to emphasize that humans typically contact this type of flu through human-to-human contact, or through contact with infected pigs or environments contaminated with the virus. OIE has noted that pork and pork products, "handled in accordance with good hygienic practices recommended by the WHO, the Codex Alimentarius Commission,¹⁰ and the OIE, will not be a source of infection"; and it recommends that "authorities and consumers should ensure that meat from sick pigs or pigs found dead are not processed or used for human consumption under any circumstances."¹¹

⁵ USDA, "Questions and Answers," Release No. 0131.09; and USDA, "Update By Secretary of Agriculture Vilsack Regarding USDA Outreach Efforts Regarding H1N1 Flu," April 27, 2009, Release No. 0132.09.

⁶ See testimony, for example, from a Senate Labor, Health and Human Services, Education, and Related Agencies Appropriations Subcommittee hearing, April 28, 2009.

⁷ AVMA, "AVMA advises consumers that pork and pork products are safe for consumption," April 29, 2009, http://www.avma.org/press/releases/090429_pork_products_safe.asp.

⁸ WTO, "Joint FAO, WHO, OIE, WTO Statement on A/H1N1 Virus," May 2, 2009, http://www.wto.org/english/news_e/news09_e/jt_stat_02may09_e.htm.

⁹ ECDC, "Frequently asked questions on influenza virus A(H1N1)," May 3, 2009; and EFSA, "New influenza A (H1N1)," May 3, 2009, http://www.efsa.europa.eu/EFSA/efsa_locale-1178620753812_1211902500487.htm.

¹⁰ Codex is the international food safety organization that develops food standards, guidelines and codes of practice under the Joint FAO/WHO Food Standards Programme.

¹¹ OIE, "Joint FAO/WHO/OIE Statement on influenza A(H1N1) and the safety of pork," reissued May 7, 2009, http://www.oie.int/eng/press/en_090507_bis.htm.

EFSA has further stated that it is “not aware of any scientific evidence of risk to pork consumers from influenza viruses regardless of the type of pork consumed,” including raw meat, although it is quick to cite longstanding food safety advice that proper cooking kills bacteria or viruses which may be found in foods, and may prevent possible risk of foodborne illness.¹² USDA is also reminding consumers to practice good food hygiene and “safe food handling and preparation techniques for all meat and poultry.”¹³

In December 2009, USDA announced the results of a study providing additional confirmation that meat, blood, and tissue from pigs exposed to the 2009 novel pandemic H1N1 virus did not contain the H1N1 virus; the virus was only found in the animal’s respiratory tract.¹⁴

Can Humans Get This Virus Through Contact with Pigs?

CDC has acknowledged that the H1N1 flu virus can spread from pigs to people and from people to pigs, raising concerns that livestock workers who may be exposed to infected animals may be at risk of contracting the virus.¹⁵

CDC reports that recent studies show that 15%-25% of swine farmers may have been exposed to swine flu viruses at some time in their lives, as well as about 10% of veterinarians.¹⁶ CDC has published guidance for workers who are employed at commercial swine farms; the National Pork Board has also published biosecurity recommendations for producers.¹⁷

Do Any Pigs Have the Virus That Has Infected Humans?

In May 2009, Canadian officials confirmed that the H1N1 flu virus was found in a swine herd in Alberta, Canada. This incident was reported to the OIE and was confirmed to have resulted from human-to-pig transmission.¹⁸ The Canadian Food Inspection Agency (CFIA) said it has taken all necessary precautions and has placed the herd under quarantine. CFIA maintains that Canadian pork continues to be safe to eat.¹⁹ In August, international food agencies announced that H1N1 had been detected in poultry farms, including turkey flocks in Chile.²⁰

¹² EFSA, “New influenza A (H1N1),” May 3, 2009.

¹³ USDA, “Questions and Answers,” Release No. 0131.09, May 7, 2009.

¹⁴ USDA, “USDA Study Confirms Pork from Pigs Exposed to H1N1 Virus Is Safe to Eat,” December 17, 2009, http://www.usda.gov/documents/ARS_STUDY_H1N1_Pork_12-16-09.pdf. USDA’s study is at <http://www.ars.usda.gov/2009H1N1/>.

¹⁵ CDC, “What Pork Producers and Workers Need to Know About Influenza (Flu) In Pigs and People,” November 5, 2009, http://www.cdc.gov/flu/swineflu/pdf/h1n1_pork_prodcr_wrkr.pdf.

¹⁶ Ibid.

¹⁷ CDC, http://www.cdc.gov/h1n1flu/guidelines_commerical_settings_with_pigs.htm; and National Pork Board, <http://www.pork.org/documents/News/Novel%20H1N1%20Biosecurity%20Recommendations%20for%20Producers%20v2.pdf>.

¹⁸ OIE, “Immediate Notification Report,” May 2, 2009, http://www.oie.int/wahis/reports/en_imm_0000008065_20090505_191855.pdf.

¹⁹ CFIA, “An Alberta Swine Herd Investigated for H1N1 Flu Virus,” May 2, 2009, <http://www.inspection.gc.ca/english/corpaffr/newcom/2009/20090502e.shtml>.

²⁰ “FAO Fears Spread of H1N1 Flu from Turkey,” *Food Chemical News*, Vol. 51, No. 26, August 31, 2009.

In October, USDA's National Veterinary Services Laboratories (NVSL) confirmed the presence of the H1N1 flu virus in a pig sample collected at the Minnesota State Fair submitted by the University of Minnesota.²¹ Later that month USDA announced the presence of the H1N1 virus in a commercial U.S. swine herd in Indiana.²² USDA and a network of federal veterinarians, state animal health officials, and private practitioners are regularly monitoring U.S. swine for signs of significant disease.²³ In December, USDA further confirmed the first case of H1N1 flu virus in a U.S. turkey flock located in Virginia.²⁴

Researchers have confirmed that the H1N1 flu virus likely originated in pigs and may have been circulating undetected in pigs for years.²⁵ Some have speculated that the source of the outbreak might potentially be associated with operations with a large number of confined animals.²⁶ Initial reports suggested that the 2009 H1N1 flu had possibly originated at a large confinement of Smithfield Foods Inc. located in Veracruz, Mexico.²⁷ Smithfield has repeatedly reported that there is no evidence of the presence of 2009 H1N1 influenza in any of the company's swine herds or in its employees at any of its worldwide operations, including those in the United States.²⁸

What Animal Surveillance Activities Are Being Conducted?

The *U.S. Animal Health & Productivity Surveillance Inventory*, maintained by USDA's Animal and Plant Health Inspection Service (APHIS), does surveillance for avian flu.²⁹ Prior to the outbreak, USDA did not conduct surveillance for swine flu because of information limitations.

Currently, the Inventory includes all animal health surveillance programs conducted by Veterinary Services, as well as all animal health monitoring studies completed by the National Animal Health Monitoring System (NAHMS). Information on certain additional animal health surveillance programs or studies conducted by USDA and other Federal agencies is also currently included.

Following the outbreak, industry reports indicated that APHIS was working on draft guidelines and surveillance plans for the H1N1 virus. Other industry reports based on information prior to the outbreak also indicate that the CDC National Center for Immunization and Respiratory Diseases (NCIRD) Influenza Division (ID) and USDA APHIS Veterinary Services (VS,

²¹ USDA, "USDA Confirms 2009 Pandemic H1N1 Influenza Virus Present in Minnesota Fair Pig Sample," Release No. 0514.09, October 19, 2009.

²² "USDA Finds Pandemic H1N1 in Indiana Commercial Swine," *Reuters*, November 2, 2009.

²³ USDA, "Questions and Answers," Release No. 0131.09.

²⁴ R. J. Gabbett, "H1N1 Virus Confirmed in First U.S. Turkey Flock," *Meatingplace Online*, December 2, 2009.

²⁵ L. Schnirring, "Genetic Study: Novel H1N1 Likely Originated in Pigs," May 22, 2009, Center for Infectious Disease Research & Policy (CIDRAP) Academic Health Center, University of Minnesota, <http://www.cidrap.umn.edu/cidrap/content/influenza/swineflu/news/may2209genetics.html>.

²⁶ "Swine CAFOs & Novel H1N1 Flu: Separating Fear from Fact," *Environmental Health Perspectives*, Vol. 117, No. 9, September 2009.

²⁷ See, for example, S. Fainaru, "Mexicans Blame Industrial Hog Farms," *Washington Post*, May 10, 2009; R. Roberson, "Smithfield Says It's Not the Source of H1N1," *Southeast Farm Press*, May 8, 2009; and S. Branford, "The Untold Story of Swine Flu in Mexico," January 7, 2010, <http://southamericanaffairs.suite101.com/>.

²⁸ See, for example, Smithfield Foods Inc., "Smithfield Foods Reaffirms No Incidence of A(H1N1) in Any of Its Herds or Employees," May 3, 2009, <http://investors.smithfieldfoods.com/releasedetail.cfm?ReleaseID=381309>.

²⁹ USDA, APHIS, Animal Health Monitoring & Surveillance, <http://www.aphis.usda.gov/vs/naahss/inventory.htm>. Surveillance and monitoring activities related to avian influenza.

specifically the National Veterinary Services Laboratories or NVSL) entered into an interagency agreement regarding swine influenza virus (SIV) surveillance in July 2008.³⁰ These same reports suggest that a parallel agreement was reached between CDC and USDA Agricultural Research Service (ARS) for related research efforts on isolates derived from the APHIS program.

APHIS's Veterinary Services has since developed guidelines for managing potential cases of the virus in swine.³¹ These guidelines were developed in collaboration with the animal health, food safety, and public health communities. APHIS's National Animal Health Surveillance System (NAHSS), which monitors animal disease outbreaks—including swine influenza virus—in domestic animals, has released its surveillance plan for swine influenza virus.³²

USDA has provided H1N1 virus to several animal vaccine makers, who are developing a vaccine.³³ By December 2009, the first H1N1 swine vaccine was in use in the Midwest, but distribution was limited and heavily monitored.³⁴

U.S. Pork Market Effects

How Did U.S. Consumers React to Reports of the Outbreak?

In late April, amid early reports of the spread of 2009 H1N1 flu, retail outlets reported that consumers were leery of buying pork because of fears that the disease might be linked to pork consumption. Tyson Foods Inc. also reported a drop in domestic pork sales.³⁵ As domestic sales fell, retail and wholesale hog prices fell sharply, along with hog and pork-belly futures prices on the Chicago Mercantile Exchange.³⁶ This drop in prices coincided with seasonal fluctuations in the hog market that would normally have caused prices to be higher. Economists at Purdue University estimated that Indiana hog producers were losing about \$5 a head on April 24, compared to estimated losses of about \$20 immediately following reports of the initial outbreak in March.³⁷ Stock analysts also reportedly downgraded the stock of Tyson Foods Inc. and Smithfield Foods Inc. and lowered annual earnings estimates for these companies.³⁸

³⁰ John A. Korslund and Ellen Kasari, "National Swine Influenza Surveillance," as reported by Thepigsite.com, <http://www.thepigsite.com/articles/1/pig-health/2770/national-swine-influenza-surveillance> (originally reported in North Carolina State Extension's *Swine News*, May 2009).

³¹ APHIS, "Guidelines for Novel H1N1 2009 Virus in Swine in the United States," August 7, 2009, http://www.aphis.usda.gov/newsroom/hot_issues/h1n1/downloads/Novel_H1N1_2009_Guidelines.pdf.

³² See APHIS, http://nsu.aphis.usda.gov/outlook/issue22_jul09/siv_surveillance.pdf; also see http://nsu.aphis.usda.gov/outlook/issue22_jul09/csf_expert_opinion.pdf. For information on feral swine influenza surveillance, see http://nsu.aphis.usda.gov/outlook/issue21_apr09/outlook_apr09_feral_swine.pdf.

³³ N. Jenkins, "Vaccine May Protect Pigs from Human Swine Flu," *Associated Press*, September 4, 2009, <http://www.foodmanufacturing.com/scripts/Products-Vaccine-May-Protect-Pigs-From.asp>.

³⁴ L. M. Keefe, "First H1N1 Swine Vaccine in Use," *Meatingplace Online*, December 1, 2009.

³⁵ "Tyson Foods saw dip in pork sales as flu spread," *Reuters*, May 4, 2009.

³⁶ See, for example, B. Baskin, "Oil Slips Below \$50 a Barrel on Swine-Flu Worries," *Wall Street Journal*, April 29, 2009; W. McFerron, "Hog Futures Fall as Swine Flu Reduces Pork Trade; Cattle Rise," *Bloomberg.com*, April 28, 2009; and W. Cheng, "China, Indonesia Ban Pork From Mexico, U.S. on Flu," *Bloomberg.com*, April 27, 2009.

³⁷ C. Everson, "Hog Farmers Brace for Financial Pain of Swine Flu," *Associated Press*, May 6, 2009.

³⁸ J. Wilson and T. C. Dreibus, "Corn, Soybeans, Wheat Drop as Swine Flu May Cut Animal-Feed Use," *Bloomberg.com*, April 27, 2009.

In late April, consumers were still confused by how humans can get the 2009 H1N1 flu. For example, a phone survey conducted by the Harvard School of Public Health on April 29 asked 1,067 consumers about the ways humans can get the 2009 H1N1 flu. Among listed choices, respondents were asked about whether each was a possible way of contracting the disease. Most (83% of respondents) said: “From being in close contact with someone who has swine flu—that is, within about three feet.” However, others responded that humans can get the 2009 H1N1 flu “[f]rom being near someone who has swine flu, but not in close contact—that is, being at thirty feet away” (29% of respondents) and “[f]rom coming in contact with pigs” (34%). Others indicated that they thought humans can get the 2009 H1N1 virus “[f]rom eating pork” (13%).³⁹

Once the safety of consuming pork products was widely recognized, consumers in the United States returned to buying them—particularly as pork prices began to drop. However, a survey conducted by the U.S. Meat Export Federation (USMEF) in September 2009 showed that “nearly two-thirds of China’s consumers stopped eating pork in the early stages of the H1N1 influenza outbreak this year, and more than one in five consumers in the world’s largest pork market still believe that eating pork can result in catching the flu virus.”⁴⁰

How Did U.S. Trading Partners React to Reports of the Outbreak?

Citing public health and safety concerns, several countries initiated or implemented steps to ban or restrict U.S. pork or pork products. Initially, reports differed among governmental, industry, and other media sources regarding which importing countries were instituting restrictions and which imported product lines would be targeted.

Following the initial reports of the outbreak, USMEF and other media reports confirmed that several countries, among them mainland China and Russia, had instituted official full or partial trade restrictions on U.S. pork products.⁴¹ In June 2009, U.S. Trade Representative (USTR) reported that 16 U.S. trading partners had officially notified the United States of trade restrictions on swine and pork products: Russia, China, Armenia, Azerbaijan, Bahrain, Indonesia, Jordan, Kazakhstan, Kyrgyzstan, Macedonia, Malaysia, South Korea, St. Lucia, Thailand, Ukraine, and Uzbekistan.⁴² USDA later reported that as many as 27 countries had imposed trade restrictions on U.S. pork products.⁴³ Other countries that imposed such restrictions included Croatia, Ecuador, Honduras, Malaysia, Serbia, and the United Arab Emirates, among others.⁴⁴

³⁹ Harvard School of Public Health, “Swine Flu (H1N1 Virus) Survey,” Harvard Opinion Research Program, April 29, 2009, http://www.hsph.harvard.edu/news/press-releases/files/Swine_Flu.TOPLINE.pdf. Survey was funded under a cooperative agreement with the CDC, and based on a total of 1,067 interviews. See responses to survey question 9.

⁴⁰ “USMEF’s Survey Shows Reaction of Chinese Consumers to H1N1,” September 3, 2009, http://www.usmef.org/TradeLibrary/News09_0903a.asp. Survey of 1,200 Chinese consumers commissioned by USMEF.

⁴¹ As reported by various news media and information cited and/or reported from USTR, USDA, and USMEF.

⁴² USTR, “USTR and USDA Caution Trading Partners to Base Food Safety Measures on Science During Human Swine Influenza Outbreak,” April 28, 2009; USTR, “H1N1 and Trade,” June 2, 2009, <http://www.ustr.gov/trade-topics/agriculture/h1n1-and-trade>.

⁴³ Statement by Michael Scuse, USDA Deputy Under Secretary of Agriculture, Farm and Foreign Agricultural Services, to the House Committee on Agriculture, Subcommittee on Livestock, Dairy, and Poultry, October 22, 2009, <http://agriculture.house.gov/testimony/111/h102209/Scuse.pdf>.

⁴⁴ USMEF, “USMEF Export Issues—Influenza Update,” May 4, 2009; various articles by *Meatingplace Online*; and USMEF press releases and communication.

Restrictions have varied by country. Some countries banned all pork products, whereas other countries restricted certain products only. For example, Russia announced it was restricting all livestock and meat products, including beef, pork, and poultry, from selected states, and was restricting all pork from several other selected states.⁴⁵ Trade restrictions imposed by China were limited to uncooked pork and pork products, and applied to most U.S. states with confirmed H1N1 cases. Fresh/frozen and heat-treated pork and pork products were ineligible if derived from swine raised or slaughtered in most U.S. states. Hong Kong was not included in any portion of China's suspension. South Korea instituted a partial ban (which was subsequently lifted), suspending imports only of live swine, but not pork products.

Within the weeks following initial reports of the outbreak, some countries announced that they would lift their import ban, while others announced that they would extend their bans to include all pork imports.⁴⁶ Many of these countries imposed these same restrictions on Mexican and Canadian pork and pork products. Various conflicting media reports listed some countries as restricting pork imports that may not have imposed such trade restrictions.⁴⁷

Of all the countries that imposed restrictions on U.S. swine and pork products, the two largest in terms of their overall importance to U.S. pork export markets—China and Russia—account for an estimated with 15% of the value of annual U.S. pork trade (**Table 1**).⁴⁸ Russia and China lifted their restrictions after several months, following negotiations with the United States. USTR and USDA announced in late October 2009 that China would re-open the Chinese market to United States pork and live swine,⁴⁹ following news reports in mid-October claiming that Russia would lift all its H1N1-related import restrictions on pork products from all countries.⁵⁰

How Important Are Export Markets to the U.S. Pork Sector?

Foreign sales are a critical source of income for the U.S. meat and poultry industries, with the United States now exporting more than one-fourth of its annual pork production.⁵¹ Fresh, chilled, and frozen pork products account for the bulk of U.S. annual pork exports (**Table 2**). China and Russia are among the top 10 largest international markets for U.S. pork, and represented 15 percent of total U.S. pork exports in 2008 (**Table 1**).

⁴⁵ Russia's restrictions covered fresh/frozen poultry meat, pork, and beef from animals raised or slaughtered in most U.S. states, as well as from certain slaughtering facilities (such as a suspension of imports from Smithfield Packing Company's Virginia slaughter plant, effective as of July 2009). Trade suspensions were limited to uncooked pork and pork products. Heat-treated (not less than 80° Celsius for not less than 30 minutes) meat and poultry products were allowed. Products from some states could continue to transit through any of the restricted states.

⁴⁶ T. Johnston, "Some Countries Are Over H1N1 Scare, Some Aren't," *Meatingplace Online*, May 11, 2009.

⁴⁷ See, e.g., Reuters wire, "Countries Slap Bans on Pork After Flu Outbreak," April 30, 2009; and T. Johnston, "More Trading Partners Prohibit U.S. Pork on Swine Flu Fears," *Meatingplace Online*, April 27, 2009.

⁴⁸ *Global Trade Atlas* data, 2006-2008.

⁴⁹ USDA, "USTR Kirk and Agriculture Secretary Vilsack Announce China's Intent to Re-Open the Chinese Market to U.S. Pork Products," Release No. 0533.09, October 29, 2009, http://www.usda.gov/wps/portal/?navid=USDA_H1N1.

⁵⁰ "Russia Lifts A/H1N1-Related Pork Ban," *ThePigSite.com*, October 16, 2009, <http://www.thepigsite.com/swinenews/22228/russia-lifts-a-h1n1related-pork-ban>.

⁵¹ *CattleFax Update*, August 29, 2008.

Table 1. U.S. Pork Product Exports, by Country
(annual and three-year average, 2006-2008, and percentage share; \$ millions)

Country	2006	2007	2008	Average 2006-2008	% Share 2008	% Share 2006-2008
Japan	1,034	1,144	1,529	1,236	34%	37%
Mexico	429	363	574	455	13%	14%
Canada	388	452	516	452	11%	14%
Russia	145	182	402	243	9%	7%
Hong Kong	42	82	350	158	8%	5%
Korea	227	224	275	242	6%	7%
Mainland China ^a	47	138	271	152	6%	5%
Australia	52	71	95	73	2%	2%
Philippines	10	17	49	25	1%	1%
All Other	190	196	440	275	10%	8%
Total	2,564	2,870	4,503	3,312	100%	100%
Potential Loss^b	208	342	738	429	16%	13%

Source: Compiled by CRS using data from the U.S. International Trade Commission, <http://dataweb.usitc.gov>.

Notes: By U.S. Harmonized Tariff Schedule (HTS), includes live pigs (HTS 0103), fresh, chilled and frozen pork (HTS 0203), processed pork products (HTS 1602.40), and offal and other pork products (HTS 0206.40, 0502). Imports for consumption (U.S. dollars). Nominal U.S. dollars.

a. China does not include Hong Kong.

b. "Potential Loss" based on reported U.S. exports from countries with import bans, mostly attributable to Russia and Mainland China (see text).

Table 2. U.S. Pork Product Exports, by Type
(annual and three-year average, 2006-2008, and percentage share; \$ millions)

HTS Category	2006	2007	2008	Avg. 2006-2008	% Share 2008	% Share 2006-2008
Live pigs	25	19	28	24	1%	1%
Fresh, chilled, frozen pork	2,222	2,488	3,789	2,833	84%	86%
Processed pork products	131	152	204	162	5%	5%
Offal and other products	186	211	481	293	11%	9%
Total	2,564	2,870	4,503	3,312	100%	100%

Source: Compiled by CRS using data from the U.S. International Trade Commission, <http://dataweb.usitc.gov>.

Notes: By U.S. Harmonized Tariff Schedule (HTS), includes live pigs (HTS 0103), fresh, chilled, and frozen pork (HTS 0203), processed pork products (HTS 1602.40), and offal and other pork products (HTS 0206.40, 0502). Imports for consumption (U.S. dollars). Nominal U.S. dollars.

What Share of U.S. Pork Exports Is Represented by Countries Restricting Trade?

Countries that had instituted full or partial bans, as of mid-May, on U.S. pork exports as a result of the 2009 H1N1 flu outbreak represented 13%-16% of U.S. annual pork trade, based on trade data from 2006 through 2008 (**Table 1**). The bulk of this lost potential was the result of restricted trade from Russia and China. The other countries that restricted U.S. pork imports comprise a small overall share of annual U.S. pork trade. Japan, the largest U.S. market for U.S. pork, with more than one-third of the market in 2008, has repeatedly indicated that it will not restrict U.S.

pork exports; also, Hong Kong, despite mainland China's trade restrictions, has indicated that it will not restrict trade.⁵²

Some reports indicated that China alone accounted for about 20% of U.S. pork trade, and was among the top U.S. pork export markets.⁵³ These statements likely reference USMEF-reported data that include export statistics for both mainland China and Hong Kong. USMEF data typically report exports for Hong Kong and China as a single region because product is known to enter China through Hong Kong. Separately, however, Hong Kong is a larger market for U.S. swine and pork products, with a reported 9% of exports in 2008 compared to 6% for China. Accordingly, the overall possible trade effects from the China ban because of concerns about the H1N1 flu virus are likely lower than those reported by some Washington-based trade associations, since Hong Kong was not included in any portion of China's suspension.⁵⁴

What Are the International Obligations of Our Trading Partners?

Under WTO rules, health and safety measures applied to imports must be supported by scientific evidence. Administration officials and many in Congress are strongly urging all U.S. trading partners to base any food safety measures on scientific evidence and to act in accordance with their international obligations under the WTO, OIE guidelines, and WTO member obligations under the Sanitary and Phytosanitary (SPS) Agreement.⁵⁵

Regarding 2009 H1N1, OEI—the global animal health standards organization—asserts that “the imposition of ban measures related to the import of pigs and pig products do [*sic*] not comply with international standards published by the OIE and all other competent standard setting international bodies for animal health and food safety.”⁵⁶ Accordingly, it is argued, there currently is no justification for imposing trade measures against the import of pork and pork products based on 2009 H1N1.

What International Actions Have Been Taken?

As some countries continue to pursue trade restrictions on North American pork products, some affected exporting countries are considering formal trade actions within the WTO. USTR urged all U.S. trading partners to base any food safety measures on scientific evidence in accordance with their international obligations, and to remove trade restrictions. In a statement, USTR said that “restrictions on U.S. pork or pork products or any meat products from the United States resulting from the recent outbreak do not appear to be based on scientific evidence and may result in serious trade disruptions without cause.” USDA also emphasized that “the science is clear that

⁵² USMEF, “USMEF Export Issues—Influenza Update,” May 4, 2009.

⁵³ See, for example, comments by Mary Kay Thatcher, American Farm Bureau Federation, at a House Small Business Committee hearing, September 9, 2009; and National Pork Producers Council, “NPPC Briefs U.S. Trading Partners On H1N1 Flu,” September 15, 2009, <http://www.nppc.org/News/PressRelease.aspx?DocumentID=25333>.

⁵⁴ Including Hong Kong, “China” is the second largest importer of U.S. pork products (see, e.g., USMEF, “Total U.S. Pork Exports, 1999-2008,” <http://www.usmef.org/TradeLibrary/files/Pork%201999%20to%202008.pdf>).

⁵⁵ SPS measures refer to any of the laws, rules, standards, and procedures that governments employ to protect humans, other animals, and plants from diseases, pests, toxins, and other contaminants. See also CRS Report RL33472, *Sanitary and Phytosanitary (SPS) Concerns in Agricultural Trade*, by (name redacted).

⁵⁶ OIE, “OIE reaction to trade restrictions imposed following transmission of virus ‘A/H1N1’ from human to pigs,” May 7, 2009, http://www.oie.int/eng/press/en_090507.htm.

consuming or handling pork, consistent with safe handling practices, is of no risk to consumers.”⁵⁷ Many in Congress also urged U.S. trading partners to base these decisions on science, and therefore not to ban imports of U.S. pork.⁵⁸

At a June 2009 meeting of the WTO’s Committee on Sanitary and Phytosanitary Measures, which deals with trade-related aspects of food safety and animal and plant health, several exporting countries—Australia, Canada, the Dominican Republic, Mexico, Japan, and the United States—criticized WTO member countries that had imposed “unjustified” import bans on pork and pork products. Some countries with import restrictions—Ukraine, Indonesia, China, Jordan—claimed these measures were temporary and either had been lifted or would be lifted once the “scientific evidence had been examined.” China said it had to “act urgently” because of its “large vulnerable population, the burden on its public health system, the importance of pigs and pork, and the fact that the H1N1 virus shares some genetic make-up with influenza that affects pigs.”⁵⁹

On May 5, Mexico issued a statement asking its trading partners to “withdraw any restrictive measure imposed on Mexican products that is not consistent with the scientific information available and with their international obligation.”⁶⁰ This was followed by other formal statements against import restrictions on pork products due to influenza H1N1 maintained by Armenia, Bahrain, China, Croatia, Gabon, Indonesia, Jordan, Thailand, and Ukraine.⁶¹ Other reports indicated that Canada would consider bringing a WTO challenge to China’s ban on imports of Canadian pork.⁶² The European Union Standing Committee on the Food Chain and Animal Health also asserts that, based on the available evidence, trade restrictions are not justified.⁶³

Many regarded the trade bans and restrictions as politically motivated or intended to protect pork producers in their own countries. Russia, for example, is not competitive on the global market in red meats and poultry, and its domestic production has not kept pace with consumption as incomes rise, even though government policies have attempted to encourage domestic production. In recent years, imports have accounted for a growing share of Russian pork consumption, and reached more than 50% of supplies in 2008.⁶⁴ Russia periodically has imposed SPS measures that have impeded U.S. meat and poultry imports in recent years. In March 2002, Russia announced a ban on U.S. poultry imports over the possible presence of avian influenza in the United States.

⁵⁷ USTR, “USTR and USDA Caution Trading Partners to Base Food Safety Measures on Science During Human Swine Influenza Outbreak,” April 28, 2009; USTR, “H1N1 and Trade,” June 2, 2009, <http://www.ustr.gov/trade-topics/agriculture/h1n1-and-trade>.

⁵⁸ See, for example, press releases from Senator Harkin, “Harkin Statement on the Safety of U.S. Pork,” April 28, 2009, and “Harkin Calls on U.S. Trade Representative, Secretary of Agriculture, Secretary of State to Push for Lift of Bans on U.S. Pork,” June 11, 2009; and public comments from Senator Grassley, “Transcription of Senator Grassley’s Agriculture News Conference Call,” July 21, 2009.

⁵⁹ WTO, Sanitary and Phytosanitary Measures, “Members discuss trade responses to H1N1 flu,” June 25, 2009, http://www.wto.org/english/news_e/news09_e/sps_25jun09_e.htm; and International Centre for Trade and Sustainable Development (ICTSD), “Pork Exporters Condemn ‘Swine Flu’ Import Bans,” July 1, 2009.

⁶⁰ WTO, Committee on Sanitary and Phytosanitary Measures, “Information On Outbreaks of A/H1N1 Human Influenza Virus On Mexican Territory,” Communication from Mexico, G/SPS/GEN/921, May 5, 2009.

⁶¹ Ibid; see also WTO notifications G/SPS/N/CHN/116, G/SPS/N/JOR/20, G/SPS/N/UKR/2.

⁶² “Mexico, Canada Condemn Bans on Pork Exports,” *Bridges Weekly*, May 6, 2009.

⁶³ EC, “Statement of the Standing Committee on the Food Chain and Animal Health,” May 5, 2009, http://ec.europa.eu/health/ph_threats/com/Influenza/docs/scfcah_statements.pdf.

⁶⁴ USDA, “Pork Summary Selected Countries,” *Production, Supply and Distribution Online*.

U.S. officials countered that the ban was not scientifically defensible and was discriminatory.⁶⁵ China is among the world's largest pork markets and producers, and imports account for a negligible share of overall supplies. However, imports have grown in recent years and are important to exporting nations such as the United States, given the sheer size of China's market.

In May 2009, the National Pork Producers Council (NPPC) said it expected current restrictions on U.S. pork exports to be temporary, particularly as international authorities continued to emphasize that the virus is transmitted through human contact and not through pork consumption.⁶⁶ However, many producers were concerned that these initial trade restrictions would be difficult to remove, once fully instituted. For example, EU's livestock beef production has not returned to the level it maintained prior to the outbreak of bovine spongiform encephalopathy (BSE), commonly known as "mad cow disease." BSE also affected U.S. beef producers in 2003 when the first U.S. case was announced.⁶⁷ Russia was among the many countries to ban U.S. beef, although it not had been a major purchaser of such products.

Other U.S. Farm Sector Effects

Were Other U.S. Agricultural Markets Affected by the Outbreak?

Initially, as domestic pork sales fell in response to the spread of the H1N1 flu, futures prices for corn, soybeans, and wheat declined sharply.⁶⁸ This was a result of concerns that lower pork demand and production could reduce demand for other commodities, including U.S. feed grains and protein meals (like soybeans), as well as other farm inputs. There were also fears that reduced demand for pork would have adverse ripple effects throughout the hog sector, resulting in production changes as producers respond to lower prices.⁶⁹ Analysts predicted that feed prices would likely continue to be volatile, but difficult to anticipate.⁷⁰ For example, grains prices have moved higher since their initial drop following early reports of the outbreak.⁷¹ In other livestock markets, wholesale beef and cattle futures prices were initially higher following reports of the outbreak.⁷² The U.S. produce sector also expressed concerns about possible restrictions on fresh produce trade with Mexico and the processing of agricultural guest labor workers from Mexico because of the 2009 H1N1 outbreak, but these fears so far have not materialized.⁷³

⁶⁵ See CRS Report RS22948, *U.S.-Russia Meat and Poultry Trade Issues*, by (name redacted).

⁶⁶ NPPC, NPPC Expects Export Restrictions to be Temporary," *PigSite.com*, May 1, 2009.

⁶⁷ G. Blumenthal, "Influenza Trade Enforcement Needed," *World Perspectives, Inc. Daily Wire* April 29, 2009.

⁶⁸ University of Illinois Extension, "Crop markets react to swine flu," *Weekly Outlook*, April 27, 2009; and W. Cheng, "China, Indonesia Ban Pork From Mexico, U.S. on Flu," *Bloomberg.com*, April 27, 2009.

⁶⁹ For example, hog producers may choose to curtail planned farrowing and/or decrease their demand for weaned feeder pigs, or choose to liquidate/reduce herd sizes, if lower prices result in low/negative meat-to-feed profit margins.

⁷⁰ D. Good, "Crop Markets React To Swine Flu," *Weekly Outlook*, University of Illinois, April 27, 2009.

⁷¹ "Grains rally after initial market reaction to "swine" flu," *Brownfield Network*, May 4, 2009.

⁷² W. Cheng, "China, Indonesia Ban Pork From Mexico, U.S. on Flu," *Bloomberg.com*, April 27, 2009.

⁷³ T. Karst, "Swine flu raises concern about trade, H2-A program," *The Packer*, May 1, 2009; and subsequent postings on *The Packer* website (<http://www.thepacker.com/>)

What Were the Estimated Aggregate Market Costs to the U.S. Agriculture Sector?

Initial reports of the aggregate economic effects of H1N1 on the farming sector—especially on U.S. hog producers—were grim. However, as time has passed and the general economic downturn in the U.S. hog industry has deepened, it has become difficult to separate out the economic effects of H1N1 from generally unfavorable market conditions in the U.S. hog sector.

Early estimates by analysts at the University of Missouri estimated that the U.S. pork industry could see losses of up to \$400 million in the months following initial reports of the outbreak, given expected lower market prices.⁷⁴ In its May 2009 outlook report, USDA revised its second-quarter hog prices downward to reflect lower prices in April due to the negative effects of H1N1 flu virus.⁷⁵ In June 2009, USTR reported updated estimates by the University of Missouri, indicating that the U.S. pork industry could face losses of about \$270 million in income in the second quarter of 2009 alone, based on market conditions in the first few days since the virus was identified.⁷⁶ More recent estimates, however, indicate that the economic effect of the H1N1 virus has not been as negative as some analysts had predicted.⁷⁷

Pork producers in the United States began to see a downturn in U.S. pork markets in late 2007. Following years of favorable returns in 2004-2006, the domestic industry began to expand and eventually pushed up slaughter rates to record levels in 2008. At the same time, pork prices started to decline while feed costs and other production input costs were rising. Starting in 2008, the worldwide economic downturn resulted in a decrease in meat demand.⁷⁸ The H1N1 outbreak compounded this already worsening situation, and newly imposed trade restrictions in U.S. export markets, particularly in Russia and China, only further strained demand for U.S. pork products. At the same time, despite industry efforts to downsize and reduce sow numbers, increased herd productivity and efficiency gains—given higher litter rates and also higher slaughter weights owing to favorable weather over the summer of 2009—kept overall production volumes stable and put downward pressure on prices.⁷⁹ In part because of the surplus situation, in May 2008 and March 2009, USDA announced that it would purchase \$50 million and \$25 million, respectively, in pork products for federal food and nutrition assistance programs.⁸⁰ Subsequent USDA pork product purchases followed later in 2009.

⁷⁴ J. Perkins, "Hog industry to take huge hit from Influenza A," *Brownfield Network*, May 1, 2009.

⁷⁵ USDA, World Agricultural Supply and Demand Estimates, May 12, 2009; and USDA Economic Research Service, "Livestock, Dairy, and Poultry Outlook," LDP-M-181, July 17, 2009.

⁷⁶ USTR, "H1N1 and Trade," June 2, 2009, <http://www.ustr.gov/trade-topics/agriculture/h1n1-and-trade>.

⁷⁷ For example, see USMEF, "Pork, Beef Exports Weathering Influenza, Economic Crisis Fairly Well," July 13, 2009.

⁷⁸ For market information on the U.S. hog market prior to H1N1, see Ron Plain, "2009 Hog Market Outlook," University of Missouri, February 2009, <http://web.missouri.edu/~plainr/PowerPoints/PowerPointindex.html>. Other University of Missouri reports are at <http://web.missouri.edu/~plainr/>. Also see M. J. Crumb, "Feed costs, swine flu put small hog farms in peril," *Associated Press*, June 19, 2009.

⁷⁹ "Hog Cutbacks Seem Slow," *Cattle Buyers Weekly*, August 24, 2009; USDA Economic Research Service, "Livestock, Dairy, and Poultry Outlook," LDP-M-181, July 17, 2009; and CRS communication with Ron Plain, University of Missouri, September 3, 2009.

⁸⁰ USDA, "Agriculture Secretary Vilsack Announces Support for Domestic Nutrition Programs, Ranchers and Farmers Assistance to Benefit Turkey, Pork, Lamb and Walnut Industries," Release No. 0079.09, March 31, 2009; and USDA news release dated May 1, 2008.

Following the H1N1 outbreak, USDA predicted that prices would recover and did not alter its outlook for hog prices during the second half of 2009, based on expectations that market disruptions from trade restrictions and consumer concerns would be short-lived.⁸¹ In mid-June, Smithfield Foods Company reported that, although it remained concerned about restrictions on international markets, the company believed that H1N1 had had "only a short-term effect on U.S. fresh pork demand," with "no significant effect on the quarter" based on the company's consolidated income statement.⁸² In August, representatives for Smithfield reiterated that quarterly returns would be favorable despite existing hog market conditions that are expected to persist until May 2010.⁸³ USDA also predicted pork prices would remain low through 2009.⁸⁴ Market forecasts for 2010 indicate that U.S. hog producers should fare better and might at least break even during the year, as market prices are expected to be near or close to production costs.⁸⁵

U.S. pork exports for May and June 2009 were reportedly 31%-36% lower, respectively, compared to the same period for 2008, which also coincided with a time of record high U.S. pork exports.⁸⁶ USMEF reported that, overall, "April pork exports were not down as much as had been predicted," particularly given the continued economic downturn.⁸⁷ Preliminary estimates indicate that, overall, total 2009 pork export volumes were roughly 12% below that for 2008, which was a record year for U.S. pork exports.⁸⁸ Nevertheless, at an October 2009 House Agriculture Subcommittee hearing on the economic conditions facing the U.S. pork industry, both Administration and industry officials acknowledged the economic effects on the sector from reduced exports and trade restrictions because of concerns about the H1N1 flu virus.⁸⁹ Exports in 2010 are expected to be much higher, although slightly below 2008 record levels.⁹⁰

Overall, analysts predicted that 2009 H1N1 would have less of an impact on the pork industry than BSE had on the beef industry in 2003 or avian influenza on the poultry industry in 2005-2006.⁹¹ Analysts with World Perspectives, Inc., noted that although pork prices have declined, supplies are also lower than last year, and it was unclear whether pork sales had actually decreased following the outbreak.⁹² In other markets, analysts at the University of Illinois highlighted that "grains have had quite a rally in prices, after the market's initial 'knee-jerk'

⁸¹ USDA, World Agricultural Supply and Demand Estimates, May 12, 2009; and USDA Economic Research Service, "Livestock, Dairy, and Poultry Outlook," LDP-M-179, May 19, 2009.

⁸² Smithfield Foods Company, "Smithfield Foods Reports Fourth Quarter and Full Year Results," June 16, 2009, <http://www.smithfieldfoods.com/media/news.aspx>.

⁸³ L. M. Keefe, "Smithfield's Pope has good, bad news for 2010," *Meatingplace Online*, August 27, 2009.

⁸⁴ USDA Economic Research Service, "Livestock, Dairy, and Poultry Outlook," LDP-M-181, July 17, 2009.

⁸⁵ "Hog Producers Should Break Even in 2010: Economist," *Meatingplace.com*, January 5, 2010, citing research by analysts at Purdue University.

⁸⁶ USDA Economic Research Service, "Livestock, Dairy, and Poultry Outlook," LDP-M-181, July 17, 2009; and USMEF, "Slump Continues for Beef, Pork Exports," August 13, 2009. USMEF reports that the export total in June 2008 was the second-highest single-month total in the history of U.S. pork sales.

⁸⁷ Jim Herlihy, "April Pork, Beef Exports Reflect Tough Economic Climate," USMEF Press Release June 11, 2009, http://www.usmef.org/TradeLibrary/News09_0611a.asp.

⁸⁸ USDA Economic Research Service, "Livestock, Dairy, and Poultry Outlook," LDP-M-186, December 17, 2009.

⁸⁹ House Committee on Agriculture, Subcommittee on Livestock, Dairy, and Poultry, "Hearing to Review the Economic Conditions Facing the U.S. Pork Industry," October 22, 2009, <http://agriculture.house.gov/hearings/index.html>.

⁹⁰ USDA Economic Research Service, "Livestock, Dairy, and Poultry Outlook," LDP-M-186, December 17, 2009.

⁹¹ L. M. Keefe, "Pork Recovery to Take 'Weeks': Purdue Economist," *Meatingplace Online*, May 1, 2009.

⁹² G. Blumenthal, "Pork for Pork, Beef Deal," *World Perspectives, Inc. Daily Wire*, May 6, 2009.

reaction," although pork prices continued to be lower.⁹³ Among meat packers, analysts predicted that the trade restrictions would have less of an effect on larger diversified companies, such as Cargill Inc. and JBS S.A., but could affect single-product firms such as National Beef Packing Company and companies already operating under financial distress, such as Pilgrims Pride.⁹⁴

What Type of Assistance Did the U.S. Pork Industry Receive?

The ongoing economic crisis in the U.S. hog sector, coupled with potentially negative effects of the H1N1 virus, remains a concern to the sector.

In May 2009, NPPC sent a letter to USDA to request assistance for the U.S. pork industry to compensate for losses it says it has incurred since the 2009 H1N1 outbreak. Specifically, NPPC asked USDA to implement a purchase program for \$50 million of pork products to help boost cash hog prices; to work with U.S. trading partners to remove all restrictions on exports of U.S. pork and pork products; to develop a comprehensive surveillance program for early detection of swine diseases; and to work to keep open the border between the United States and Canada to allow for movement of hogs.⁹⁵

Again, in August, NPPC asked USDA for up to \$250 million in support for USDA pork purchases and for other assistance.⁹⁶ Also in August, another group of producer organizations, including the Producers Livestock Marketing Association, the National Farmers Organization, and the Allied Producers Cooperative, asked USDA to consider a \$200 million federally funded sow buy-out program to reduce pork supplies.⁹⁷

In September 2009, USDA announced it would purchase another \$30 million in pork products. At that time, USDA claimed it has purchased "approximately \$151 million in pork products for food and nutrition assistance programs this year."⁹⁸ In November 2009, USDA announced it would purchase another \$50 million in pork products for domestic nutrition programs. These actions are largely intended to "help stabilize prices and markets, stimulate the economy, and provide high quality food to Americans in need of USDA's nutrition assistance programs."⁹⁹

⁹³ "Grains rally after initial market reaction to "swine" flu," *Brownfield Network*, May 4, 2009.

⁹⁴ Johnston, T., "H1N1 hurting protein companies' cash flow and credit profiles," *Meatingplace Online*, June 16, 2009.

⁹⁵ NPPC, "NPPC Asks USDA to Help U.S. Pork Producers," May 1, 2009, <http://www.nppc.org/News/DocumentPrint.aspx?DocumentID=24693>.

⁹⁶ NPPC, "NPPC Asks USDA to Save Pork Industry," August 17, 2009, <http://www.nppc.org/News/PressRelease.aspx?DocumentID=25252>.

⁹⁷ "Pork groups urge for sow buy-out program," *PigProgress.net*, August 21, 2009, <http://www.pigprogress.net/news/pork-groups-urge-for-sow-buy-out-program-id3316.html>. The proposal would take as many as 500,000 sows out of production.

⁹⁸ USDA, "Agriculture Secretary Vilsack Announces Support for Domestic Nutrition Programs and Pork Producers," Release No. 0420.09, September 3, 2009, <http://www.usda.gov>. The purchases reflect both emergency surplus removals and entitlement program purchases for domestic food programs.

⁹⁹ USDA, "Agriculture Secretary Vilsack Announces Food Purchases For Domestic Nutrition Programs, Assists Pork, Cherry, Plum And Apple Farmers," Release No. 0567.09, November 12, 2009, <http://www.usda.gov>.

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