

DISCUSSIONS ON FMD IMPACT AND MITIGATION STRATEGIES

The Effects of an FMD Outbreak

- Foot and mouth disease is both economically devastating and a serious infectious disease of hoof stock
- FAO CVO Juan Lubroth states that the FMD situation globally is the worst in 50 years
- Recent and current outbreaks encompass much of Asia including Japan (resolved), Korea, China, Vietnam, and Myanmar (Burma); and much of southern Africa including South Africa, Mozambique, Zimbabwe, Zambia, and Angola.
- Countries affected where unrest is occurring are affected such as Libya and Iran, so bioterrorism is an ever present threat.
- There is an increase in the mobility of people and the trade of agricultural commodities (both regulated and unregulated) and livestock globally, thereby heightening the risk of disease transmission
- There are also risk factors within and surrounding the U.S. that APHIS is trying to mitigate including maintaining adequate security along the unsettled southern border; the growth of urban animal agriculture in key ethnic communities with ties to their home countries; and the struggle to maintain biosecurity programs in an increasingly hostile budget environment
- The greatest impact is on export markets: based on 2010 statistics - pork (18% exported amounting to about \$4 billion); beef (12% exported amount to about \$4 billion)
- Collaterally affected export markets would likely include: poultry (\$4 billion); egg and processed product (\$174 million); soybeans (\$19 billion); corn (\$10 billion); wheat (\$7 billion)
- Key trading partners would likely close access to U.S. product for some indeterminate amount of time or until the outbreak was resolved
- FMD would have a profound impact on domestic production markets with the price of all commodities plummeting with the surplus of unexportable product. For example, when HPAI H5N1 entered only one eastern province of India, 20% of the poultry producers went bankrupt within 30 days.
- Producer bankruptcy would quickly ensue, especially in the pork and poultry industries which are heavily dependent on the export market
- Attempts to negotiate compartmentalization and zoning for export of U.S. product from unaffected parts of the country would be difficult to negotiate with trading partners because the U.S. hasn't been eager to recognize zones or compartments of others
- Furthermore, the rules of compartmentalization and zoning require an animal traceability system be in place which is currently not implemented in the U.S.
- There is also likely to be resistance between States to accept product or allow movement of animals through States where risk is perceived.

- Many U.S. companies have reduced risk by diversifying and establishing production facilities in other areas of the world (especially for swine and poultry). Eastern Europe and South America are good examples of these off-shore animal holdings areas. The implications of this move are that by the time the U.S. is able to resume export, other countries could have filled the void created by the lack of U.S. product and the markets may have vanished.
- Because of the dire consequences of even a small FMD outbreak, the U.S. must be able to mount a profound and exhaustive response effort to contain the disease. There have been no detections of FMD in the U.S. for 82 years and we have been privileged to maintain our “free” status. Our high standards of biosecurity, net export of animal products (which has reduced the need for import of foreign animal products), and geographical isolation have help to protect the country. However, in a world of increased trade and human mobility, coupled with budgetary constraints and the concomitant reduction in regulatory oversight, the risk for disease encroachment grows ever greater.

FMD Preparedness for Disease Mitigation and Response Strategies

- APHIS has been very proactive in planning mitigation and response strategies for FMD and has been engaged in methods development for novel response technologies, especially in the area of vaccination, depopulation, disposal, and disinfection.
- APHIS has developed a rapid response plan called the FMD Red Book which provide guidance and SOP’s for responding to an outbreak
- APHIS is augmenting its surveillance capability for FMD by permitting validated laboratories within the National Animal Health Laboratory Network to conduct presumptive FMD testing
- APHIS has developed continuity of business products such as the Secure Egg Supply Plan and is developing the Secure Milk Supply Plan. The Egg Supply Plan product was endorsed by USAHA is currently under consideration by the States
- APHIS realizes that there is insufficient Federal personnel to respond adequately to a large outbreak, so APHIS has engaged contractors on an “as-needed” basis and is trying to coordinate with State and Industry stakeholders
- The National Veterinary Stockpile is adding supplies and equipment appropriate for FMD response. NVS is investing in methods and development projects for new response technologies
- The NAFMDVB is a trilateral venture that will help to ensure that FMD vaccine is made available to the U.S. when needed.

Real and Potential Gaps in the Defense Strategy

- Surveillance
 - There is a large and growing population of feral animals, especially in key border areas including swine, escaped cattle, and exotic hoof-stock such as nilgai that pose an unknown threat because they can move readily across borders

- Product import into the U.S. is increasing, yet there is insufficient border security to thoroughly inspect shipments even from high risk countries
 - The growth of urban agriculture has become an unknown risk factor for the introduction of FADs since these are largely unmonitored populations
 - International travel has become the norm and expatriates living in the U.S. visiting their homeland may bring contraband material with them either knowingly or unknowingly.
 - Bioterrorism is an ever present threat of unknown potential, and it is difficult to engineer surveillance efforts to address this risk
 - The number of FADDs needs to be increased and coursework detailing recognition and proper notification of suspect clinical signs of FADs should be mandatory instruction in all veterinary colleges AND animal science programs
- Vaccine
 - The lessons learned in both Japan and Korea dictate that the prudent use of vaccine can quickly halt the expansion of an outbreak. Therefore, APHIS has made the decision to use FMD vaccine where and when appropriate.
 - Three vaccination strategies are proposed:
 - Eradication with NO vaccination
 - Vaccinate to eradicate
 - Vaccinate to live
 - Each strategy has advantages and disadvantages and the decision cannot be made by APHIS alone but must be made in concert with State and Industry stakeholders. Therefore, APHIS is reaching out to State and Industry stakeholders to determine vaccine strategies for each animal production sector and the trigger points for the decision to vaccinate
 - The reason a multi-lateral approach to vaccination must be taken is because each animal production sector has a different business model which vaccination will affect. For example, the swine industry may be reluctant to vaccinate due to the impact on the export market while the dairy industry would want to employ the use of vaccine to preserve long-term use of production animals.
 - Industries must also create public messaging and education campaigns on meat safety if FMD should occur. These efforts must extend to vaccinated animals because the public may see APHIS depopulating animals on one hand, and then being asked to consume vaccinated product on the other.
 - Another issue is whether meat processors would willingly take vaccinated product if there is a negative public perception
 - Lastly, since APHIS has made the decision to use vaccine, the vaccine supply must be greatly expanded and this has resulted in resource issues with the NAFMDVB
- Response
 - Biosecurity plans during outbreaks are not widely developed across the animal production sectors and must be coordinated with regulatory plans
 - Movement Control
 - There is no uniform coordination across all States to implement Stop-Movement orders although some States do have plans in place, they may be untested. States must coordinate and create MOAs with their local law enforcement agencies and National Guard authorities for movement control
 - Depopulation

- APHIS will always try and pursue an animal sparing response effort where possible, but depopulation is a reality of any comprehensive response effort. The key is to reduce the numbers of animals that require depopulation if possible
 - APHIS has invested in new depopulation technologies that will speed the effort yet attempt to maintain an acceptable level of humane treatment
 - The training for these new methods among response personnel is lacking and just in time training may not be sufficient for some of these methods
 - Disposal
 - Disposal is the most challenging aspect of any response effort
 - Disposal technologies have not been sufficiently advanced to meet the need of a catastrophic depopulation event
 - Disposal can be the most costly part of the response effort and can have long term consequences if not properly executed.
 - Rendering capacity is largely connected with offal disposal and is insufficient for dead stock yet rendering has the greatest benefits for reducing the biomass
 - Burial is one of the worst options for disposal for a number of reasons except in managed landfills which have limited capacity
 - Composting is useful in on-farm dynamic disposal efforts, but having sufficient land and carbon sources for large-scale disposal is challenging
 - Incineration is not practical on a large scale
 - Ancillary technologies such as alkaline hydrolysis do not have the necessary capacity to meet the need and may create a greater biomass for disposal
 - Some technologies show promise such as gasification, but are far from ready for implementation and are yet unproven
 - Disinfection
 - Automated vehicle disinfection stations need to be developed and stationed at key positions within a control zone
 - More work is needed for disinfectants that are effective but yet safe to use on corrosive sensitive surfaces such as in aircraft
- Recovery
 - Indemnity issues are some of the most difficult and rancorous faced by APHIS
 - APHIS is often challenged with paying fair market value and the stakeholders perceived value of that animal, especially when valuable genetic stock are involved
 - Livestock insurance is a new product and still in development, but may offer some relief at addressing the disparity between the market value and actual value of the animal
 - The ability to depopulate without prior official evaluation is impeded by lack of adequate valuation documents such as production records
 - What can be done with meat that is salvageable (exposed or nascently infected) is unknown because processors may be reluctant to “contaminate” their plants and potentially besmirch the brand name; and the public may reject the products altogether as happened in the recent FMD outbreak in Japan