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Market Reports

# Impact & Cost if Mecadox Was Not Available

June 2016



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## Sample & Methods

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- ❖ This report is based on information collected from a sample of US-based swine veterinarians that are swine enteric health experts. These veterinarians work directly with US swine producers in public (university) and private (clinic) practices.
- ❖ Collectively these veterinarians influence the health decisions for 78.9 million pigs.
- ❖ An in-depth telephone interview data collection method was used. Each interview lasted approximately 30 minutes.
- ❖ Fieldwork took place from May 19, 2016 to May 27, 2016.
- ❖ Each respondent was assured of confidentiality in order to encourage participation and veracity.



## Executive Summary

1. If Mecadox was not available, the impact to many US swine producers currently using Mecadox is expected to be devastating or even catastrophic. The primary impact driving this assessment would be a significant increase in enteric disease prevalence and severity. This added sickness would result in lower average daily gain (ADG) and higher death loss. Veterinarians expect that 1.3 million pigs would die per year if Mecadox was not available. The estimated total cost to the US Swine Industry in the first year would be \$200.5 million. The three major drivers of this cost will be increased Salmonella, swine dysentery, and E. coli disease pressure in pigs. Other likely impacts are increased amounts of manure, a reduction in the number of small swine farms, and increased use of antibiotics. Antibiotic use will increase since higher amounts of less effective antibiotics will be administered to attempt to control enteric diseases that are currently being controlled by Mecadox. A key finding is that potential Mecadox replacement products are perceived as having inadequate efficacy for controlling the enteric pathogens of greatest importance on the farms that are using Mecadox. After the first year, the annual costs will continue to grow until the total cost peaks in years 4-5 at \$345.4 million per year.
2. The anticipated increase in Salmonella prevalence and severity is a major concern for two reasons. First, production losses associated with the increase in prevalence and severity of the disease are expected to total \$104.3 million per year. This high cost is driven by the lack of efficacy of Salmonella control products that will be used to 'replace' Mecadox. Second, some veterinarians are concerned the actual cost may be even higher. They fear that increased Salmonella incidence will make its way to slaughterhouses and pork resulting in reduced consumer pork demand. The cost of lower hog prices due to lower consumer pork demand is not included in the cost estimates in this report.
3. After 4-5 years of Mecadox not being available, 100% of respondents expect resistance will have developed in the antibacterials (neomycin, gentamicin, tiamulin+CTC) initially used instead of Mecadox. The annual total cost to the US swine industry at that time is expected to have climbed to \$345.4 million because of increased antibacterial resistance in products used to replace Mecadox. The scale of the economic loss due to Mecadox being unavailable is virtually identical to the annual cost of PED during the height of that devastating disease outbreak.
4. The following is a summarized list of the expected outcomes if Mecadox was not available: increased disease prevalence/severity in pigs (Salmonella, dysentery, E. coli, ileitis, HBS); decreased ADG due to added sickness; higher death loss; increased Salmonella in finishing hogs, slaughterhouses and pork, lower pork demand; lower hog prices; fewer small farmers; increased use of antibiotics (feed, water, and medically important in humans); more antibiotic resistance; production changes (facilities, management, etc); and higher vaccine costs.

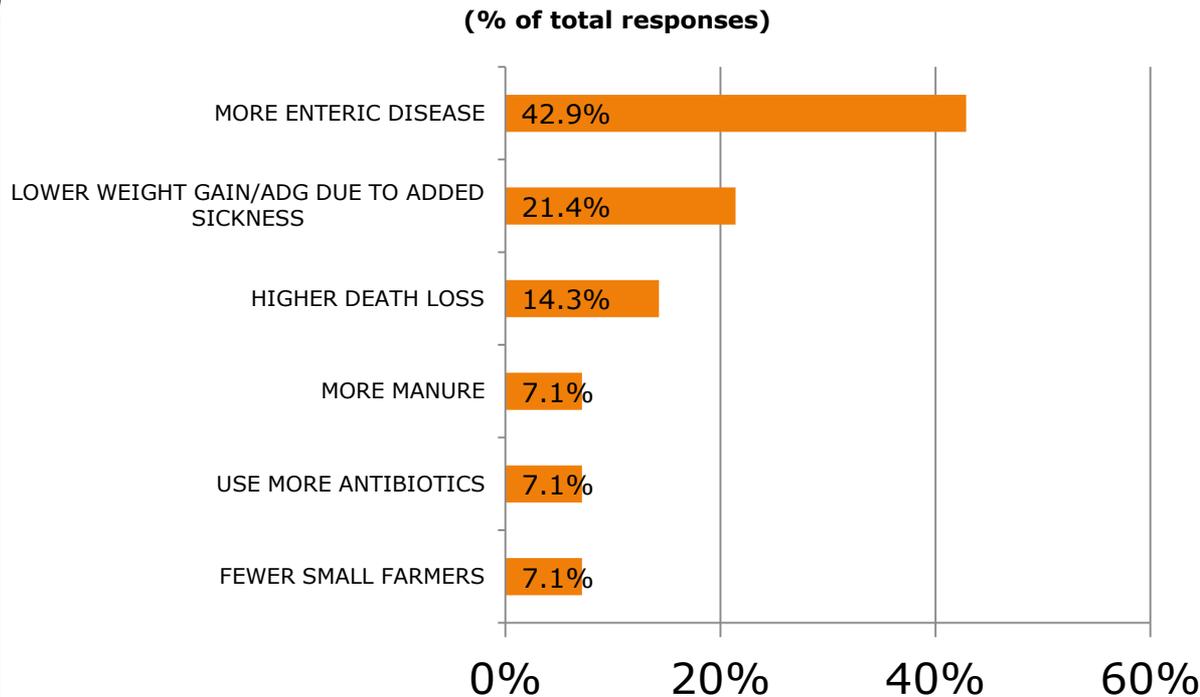


## Likely Impacts: Next 12 Months

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*If Mecadox was no longer available, what would be the likely impact in the next 12 months?*



**•The most mentioned impact is increased enteric disease.**

**•Those mentioning higher death loss believe 1.3 million pigs per year would die if Mecadox was not available.**

**•Those mentioning fewer small farmers believe approximately 3,400 small farmers would be lost if Mecadox was not available. This is approximately 5% of total US swine farms.**

**•The words 'devastating' & 'catastrophic' were used to describe the impacts in the next 12 months.**



## Likely Impacts: Next 12 Months

### *If Mecadox was no longer available, what would be the likely impact in the next 12 months?*

- The following comments provide insight into the most mentioned impacts:
  - *Mecadox controls bacterial gut diseases. I'm nervous to pull it out of the feed. We're going to lose Salmonella and E. coli gut coverage. That will mean more death loss in the nursery...and more environmental costs due to more manure.*
  - *Not having Mecadox will have a devastating effect on mortality. The impact will continue to grow over the years because the organisms that Mecadox is knocking down - will start to go up.*
  - *Mecadox is the gold standard for enteric disease. We will need to use much more water medication to control it without Mecadox*
- The following comments provide insight into the impact on the number of small farms:
  - *There will be higher rates of loss in certain parts of the country. Along the East Coast and deep South smaller sow farms will be lost. These are areas where we see higher pressure from swine dysentery. Without Mecadox controlling this disease, these farms will be forced to sell all their current sows and buy new sows that are disease free. The high capital expense of that will drive many of these farmers out of business.*
  - *I expect to see 5% of producers go out of business due to higher rates of sickness in pigs.*
  - *A bunch of my smaller producers will just quit. It's tough enough raising pigs now.*
- We asked respondents if they believed the removal of Mecadox from the market is supportive of the goals of the Veterinary Feed Directive (VFD) which is to be implemented in January 2017. 100% said Mecadox removal is not supportive of the VFD. The following comments provide additional insight:
  - *Mecadox isn't covered by the VFD because it is not used in human medicine. Now we'll have to replace Mecadox with products that are important to human medicine.*
  - *It will force veterinarians to use products used in humans. For that reason it does not support the VFD goals.*
  - *Removing Mecadox will be detrimental to their goal to stop using human antibiotics in pigs.*
  - *We'll have to re-write protocols if they take it away. That will be an extra cost to implementing the VFD*

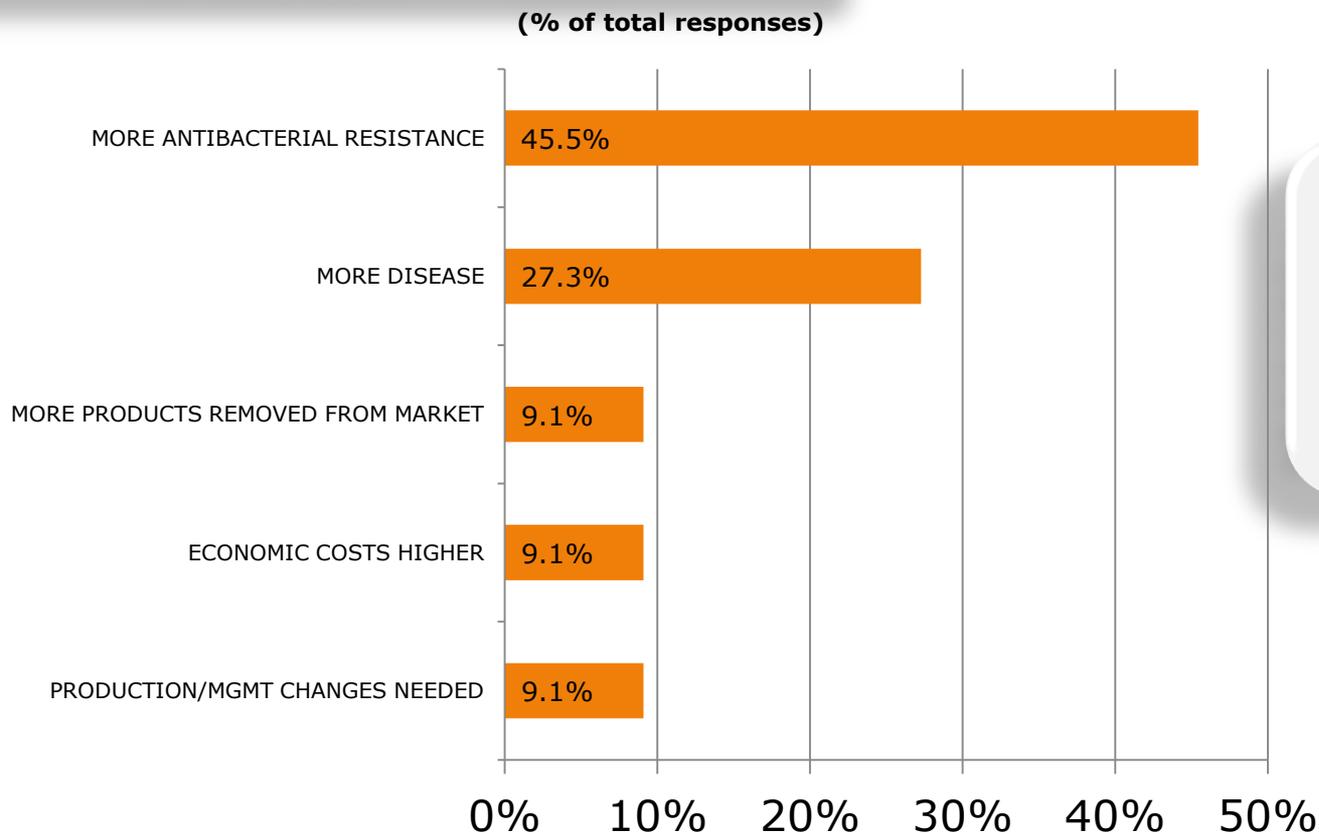


## Likely Impact: In 4-5 Years

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***If Mecadox was no longer available, what would be the likely impact in 4-5 years?***



***•The most mentioned impact is increased antibacterial resistance. The antibacterials most mentioned are: gentamicin, tiamulin, and neomycin.***



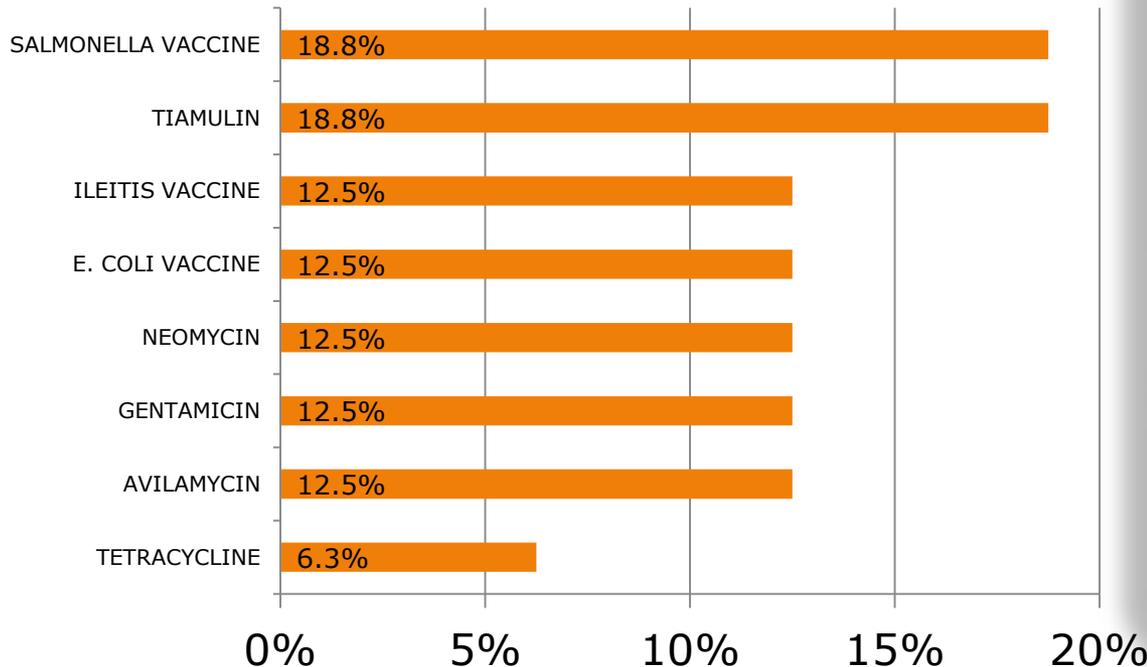
## Likely Replacement Products

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***If Mecadox was no longer available, which products (including vaccines), if any, would be used in its place in the pigs under your supervision?***

(% of total responses)



***•60% said they don't believe any products on the market can fully replace the health benefits provided by Mecadox.***

***•We asked if more water medications would be used. 100% said 'Yes.' The water medications most mentioned were: neomycin, gentamicin, and tiamulin. Tylvalosin, florefenicol, and enrofloxacin were also mentioned.***

***•We asked if more medically important medications (in humans) would be used. 100% said 'Yes.'***

### **The following comments provide additional insight:**

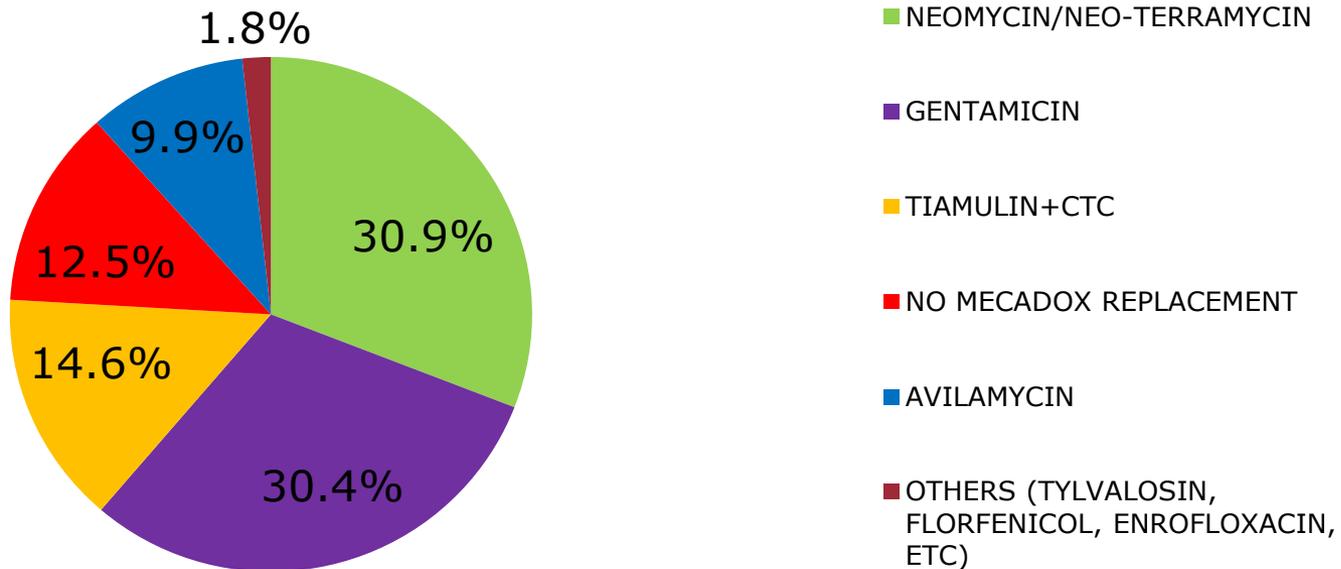
- Absolutely nothing can replace Mecadox.***
- There are no good options to replace Mecadox.***
- We'll move a few pigs to other feed meds such as tiamulin...but I can't see using tiamulin or tiamulin+CTC as a total replacement for Mecadox. Tiamulin is systemic and not the drug of choice for Salmonella as Mecadox is.***



## Expected Antibacterial Use In Place Of Mecadox

*If Mecadox was no longer available, how many pigs under your supervision would be moved from Mecadox to other antibacterials?*

(% of Mecadox pigs that will be moved to...)



**•61.3% of the pigs currently on Mecadox will be moved to aminoglycosides such as neomycin and gentamicin.**

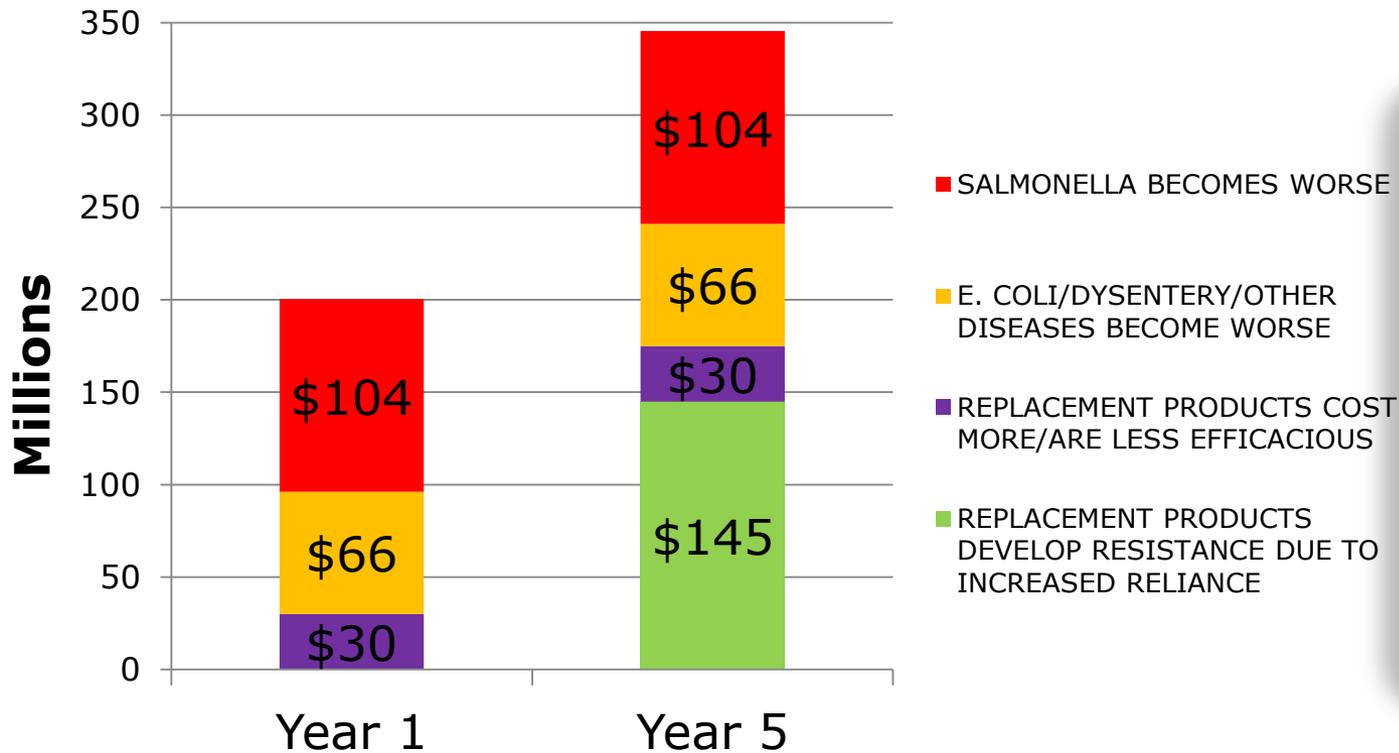
**•Respondents were asked to rate the efficacy of Mecadox versus the expected replacement products (neomycin, gentamicin, and tiamulin). 100% rated Mecadox higher than their expected replacement products.**

**•100% of respondents believe the increased reliance on replacement products has the potential to result in resistance to those products in 4-5 years.**



## Cost if Mecadox Was Not Available

*If Mecadox was no longer available, what would be the likely cost to US swine farms per year?*



*•In the first year the cost is estimated to be \$200.5 million.*

*•By the 5<sup>th</sup> year the total cost would peak at \$345.4 million.*

*•The total cost at the peak is very close to our PED cost estimate of \$346.7 million made near the height of that outbreak.*

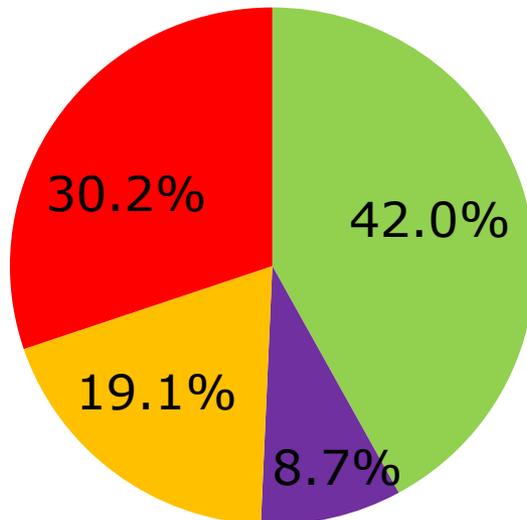


## Cost if Mecadox Was Not Available

*If Mecadox was no longer available, what would be the likely cost to US swine farms per year at the peak?*

**COST/YEAR = \$345.4 MILLION**

(% of total cost)



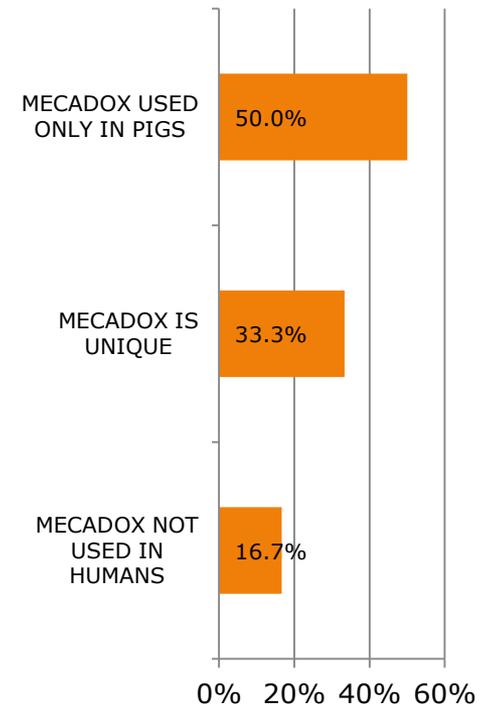
- REPLACEMENT PRODUCTS DEVELOP RESISTANCE DUE TO INCREASED RELIANCE
- REPLACEMENT PRODUCTS COST MORE/ARE LESS EFFICACIOUS
- E. COLI/DYSENTERY/OTHER DISEASES BECOME WORSE
- SALMONELLA BECOMES WORSE



## Resistance Expectations without Mecadox

- 100% of respondents said they expect antibacterial resistance to increase if Mecadox was not available.
  - The resistance is expected to develop in the most used replacement antibacterials. The top three replacement antibacterials are: neomycin, gentamicin, and tiamulin+CTC.
- 100% of respondents said they have not seen any Mecadox resistance.
- We asked “why do you think resistance would develop to neomycin, gentamicin, and tiamulin+CTC but not Mecadox?”
  - *The pathways to resistance are different for Mecadox than neomycin or tiamulin. This has been proven by an independent and reputable diagnostic lab.*
  - *It has to do with how Mecadox is used. Mecadox is only used in young pigs. The replacement products are used in older animals (hogs and sows) and so there are more potential reservoirs for resistance.*
  - *Mecadox is a compound that is unique when it comes to resistance. It is also used strategically in younger pigs and not in all phases of pork production like the other products.*
- The cost of resistance due to increased reliance on replacement products is estimated at \$145 million/year. These costs are expected to peak 4-5 years after Mecadox is not available.
- The following comments provide additional insight:
  - *When resistance develops to the products used to replace Mecadox, the cost of disease will double.*
  - *Mecadox has been used for 40 years and there is not any resistance. If you look at Europe there is already widespread resistance to tiamulin.*
  - *In 4-5 years there will be resistance to neomycin and gentamicin.*

**WHY WOULD RESISTANCE DEVELOP IN REPLACEMENTS BUT NOT MECADOX?**  
(% of total responses)





# Salmonella Control without Mecadox

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***For pigs moved from Mecadox, would Salmonella increase in prevalence or severity?***

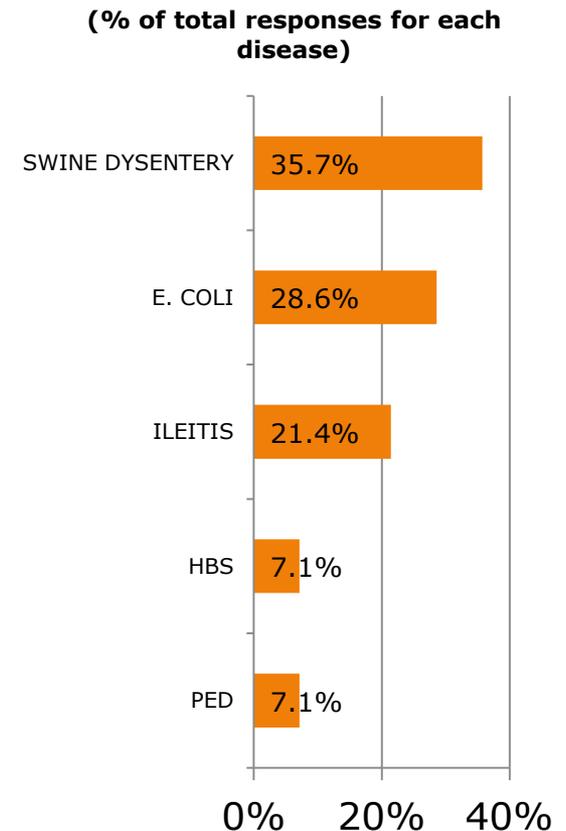
- 100% of respondents said that Salmonella would increase in prevalence and/or severity if Mecadox was not available to control it.
- The cost of increased Salmonella prevalence or severity, if Mecadox was not available to control it, is estimated at \$104.3 million/year.
- 100% of respondents said vaccines do not control Salmonella as well as Mecadox. The following comments provide insight into this issue:
  - *There are lots of strains of Salmonella. The vaccines only work on two of them. Mecadox controls all of them.*
  - *Vaccines reduce - but not eliminate - inevitable problems caused by the 2 main Salmonella strains. There are around 2,200 different strains - and of these 50-100 have the potential to cause clinical disease. Mecadox controls all the strains.*
  - *There are a host of pathogenicity islands and for this reason vaccines are not a panacea like Mecadox. Pigs will get sick even if vaccinated.*
  - *Vaccines are available for 2 of the Salmonella species. Unlike Mecadox, they are narrow in their range of control.*
- Some respondents said that the incidence and severity of Salmonella will make its way into slaughterhouses and will result in lower meat quality. These veterinarians felt this unintended consequence could lower hog prices due to reduced consumer pork demand. The cost of potentially lower pork/meat demand was not included in the estimates in this report.
- The following comments help underscore veterinarians' concerns with controlling Salmonella without Mecadox:
  - *We will have Salmonella out the wazoo. Meat quality will decline due to much more Salmonella exposure in pigs.*
  - *Mecadox is the best product available for Salmonella. It has been keeping Salmonella under control for years. What will happen if Salmonella gets out of hand? I'm worried pork quality will suffer.*
  - *Hygiene will decline. Salmonella will cost an extra \$3 per pig produced plus you'll have contamination of pork products.*
  - *Salmonella will add \$4-\$5 per pig in cost alone. I wouldn't be surprised if it is even higher than that. There are no good replacements (for Mecadox). It will result in much more Salmonella exposure. We will have it in the meat.*
  - *Mecadox is the best in Salmonella protection. We will increase our use of Salmonella vaccines - but I am not confident in the efficacy.*



## Other Disease (Non-Salmonella) Control without Mecadox

***For pigs moved from Mecadox, would other diseases increase in prevalence or severity?***

- 100% of respondents said that diseases other than Salmonella would increase in prevalence and/or severity if Mecadox was not available to control them. Swine dysentery was mentioned most often. E. coli was mentioned second most often.
- The cost of increased disease (non-Salmonella) prevalence and severity if Mecadox was not available to control them is estimated at \$66.1 million/year.
- The following comments help underscore veterinarians' concerns with controlling other diseases (non-Salmonella) without Mecadox:
  - *Brachyspira [swine dysentery] will get worse. There aren't any alternatives to control it as well as Mecadox.*
  - *For E. coli we will have more challenges. We will have to increase the grams per ton of other in-feed antibiotics to get control. The other option is to use a floroquinolone to control - but that is a much bigger concern for resistance.*





## Other Concerns if Mecadox Was Not Available

- 60% of respondents expect to move some pigs from Mecadox to tiamulin+CTC if Mecadox was not available. These respondents listed the following concerns:
  - The number of pigs/hogs on CTC is expected to grow 52 percent. The increased use was listed as a concern since CTC may be viewed as medically important in humans.
  - Tiamulin is highly regarded as a first-line antibacterial for controlling respiratory diseases in finishing hogs. The concern is that increased use in pigs for enteric diseases may create resistance to respiratory diseases later in the production cycle.
- At the end of the interviews we asked: Are there any other issues or unforeseen consequences regarding the potential FDA withdrawal of Mecadox that you think are important or need further discussion? 80% of respondents indicated they are concerned that the government will similarly restrict use of other antibacterials in the future. The following comments express the concerns regarding government action toward antibacterials.
  - *The pigs deserve to be healthy. It pains me to see this government action. 100 million pigs in the US will have a worse state of health because of this.*
  - *To me, the whole problem is that the government is pushing us in the wrong direction. We need to let the science guide us on these issues.*
  - *Keep the science in front of them (the FDA). There is not scientific evidence that Mecadox is causing problems in vivo in humans.*