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Summary report on opinion surveys targeting end users

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AVANT



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Introduction

Antibiotics are essential medicines for the treatment of bacterial diseases in people and animals. However, every use of antibiotics carries the risk of selecting bacteria that are resistant against the used medicine. A possible way of mitigating this risk of antibiotics becoming ineffective is replacing them with alternative interventions. In the AVANT project, different types of potential alternative interventions are developed and tested to replace antibiotics in pig production. A survey was conducted to understand the level of acceptance of each type of intervention by different target groups (producers, veterinarians and consumers).

Questionnaire & Methodology

The survey was conducted by 15 minutes phone interviews using a questionnaire that was structured in three parts (participant's profile, awareness of the risks associated with antibiotic use and antibiotic resistance, and acceptance of alternative interventions). The questionnaire was created by P+M, the subcontractor responsible for the execution of the survey and re-worked by the University of Copenhagen (project coordinator of AVANT) in close co-operation with the project consortium. The master questionnaire for the survey was in English and afterwards translated into the respective local languages.

AVANT FACTS

Alternatives to antibiotics: Interventions – Usage – Performance - Perception

Background Information

AVANT (<https://avant-project.eu/>) is a multi-actor intersectoral project that aims to develop and test alternative interventions to antibiotics for the management of bacterial infections in pigs with particular regard to post-weaning diarrhoea, which is the major indication for antibiotic use in livestock in Europe. During pre-clinical studies, efficacy, toxicity, and mode of action of these interventions were tested, and their dosage and formulation were optimised. The complementary set of alternative interventions involves:

- Alternative feeding strategies for sows & piglets
- Gut-stabilising interventions based on a synbiotic (pre- & probiotic) feed additives
- Faecal microbiota transplantation
- Immunostimulating products (injectable & oral)
- Novel veterinary medicinal products containing bacteriophages & polymers

The phone survey was carried out from 14th of March to 12th of April 2022. Its main goal was to measure the level of acceptance of each alternative among consumers, veterinarians and pig producers. The topics addressed by the survey included perception of antibiotic resistance as an important public health problem and antibiotic use in animals as a contributor to the problem, the performance and the acceptance of the AVANT interventions and – to a smaller extent – the willingness of participants to pay for such interventions.

Survey Infographics

Broad range of stakeholders covered

The AVANT survey covers consumers, veterinarians and pig producers located in 5 EU countries, each representing a distinct EU region (Spain – South Europe, Denmark – Scandinavia, Germany – Central Europe, Poland – East Europe, France – West Europe) (Figure 1). The size of the stakeholder groups varied from 130 veterinarians and 440 producers to 1779 consumers. A questionnaire was developed and participants were interviewed by telephone.

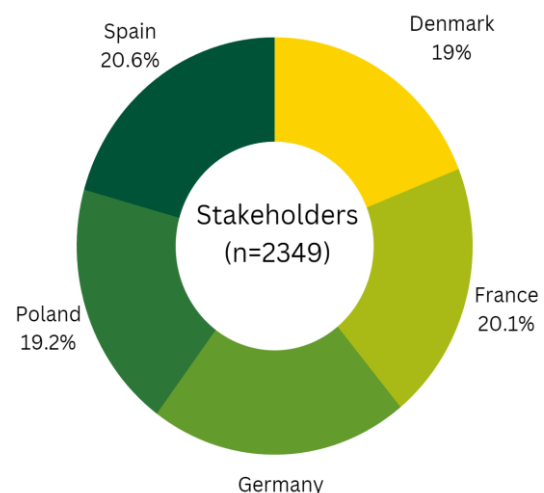


Figure 1

The interviewed producers and veterinarians had longstanding experience in swine production. On average the interviewed producers were 47 years of age and had 23 years of experience in swine production. The veterinarians were, with on average 52 years of age, a bit older. On average, they had 24 years of experience in swine production and were almost fully dedicated

to this sector (Figure 2). Veterinarians specified that they spend 86% of their working time with pigs.

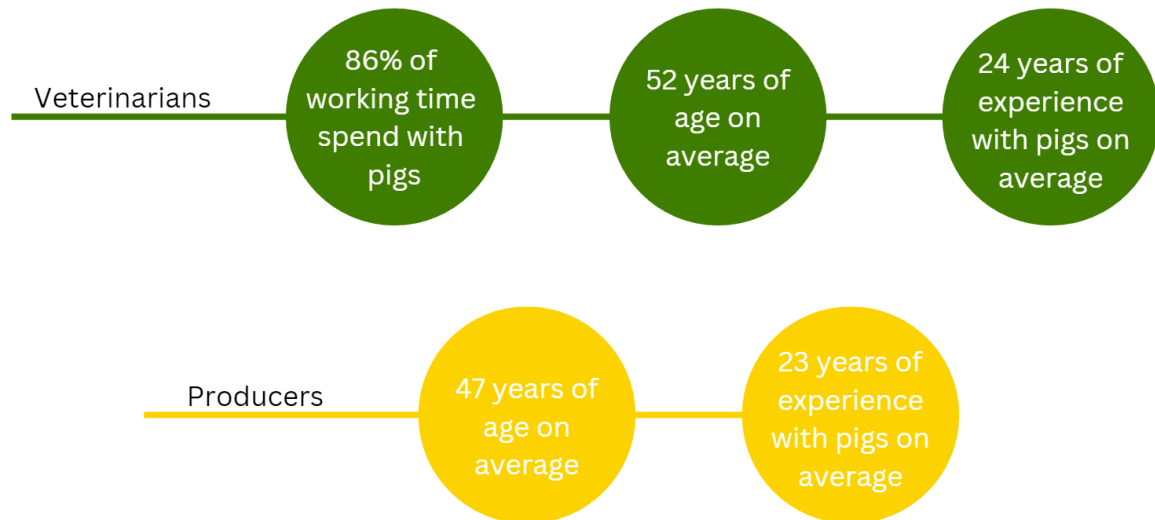


Figure 2

The interviewed consumers were equally divided over both genders and age categories (Figure 3). About two third of the consumers indicated to be the ones responsible for purchasing the food in their household. Over 90 % of the interviewed consumers stated to eat meat including pork. Only 3% of them did not eat meat at all.

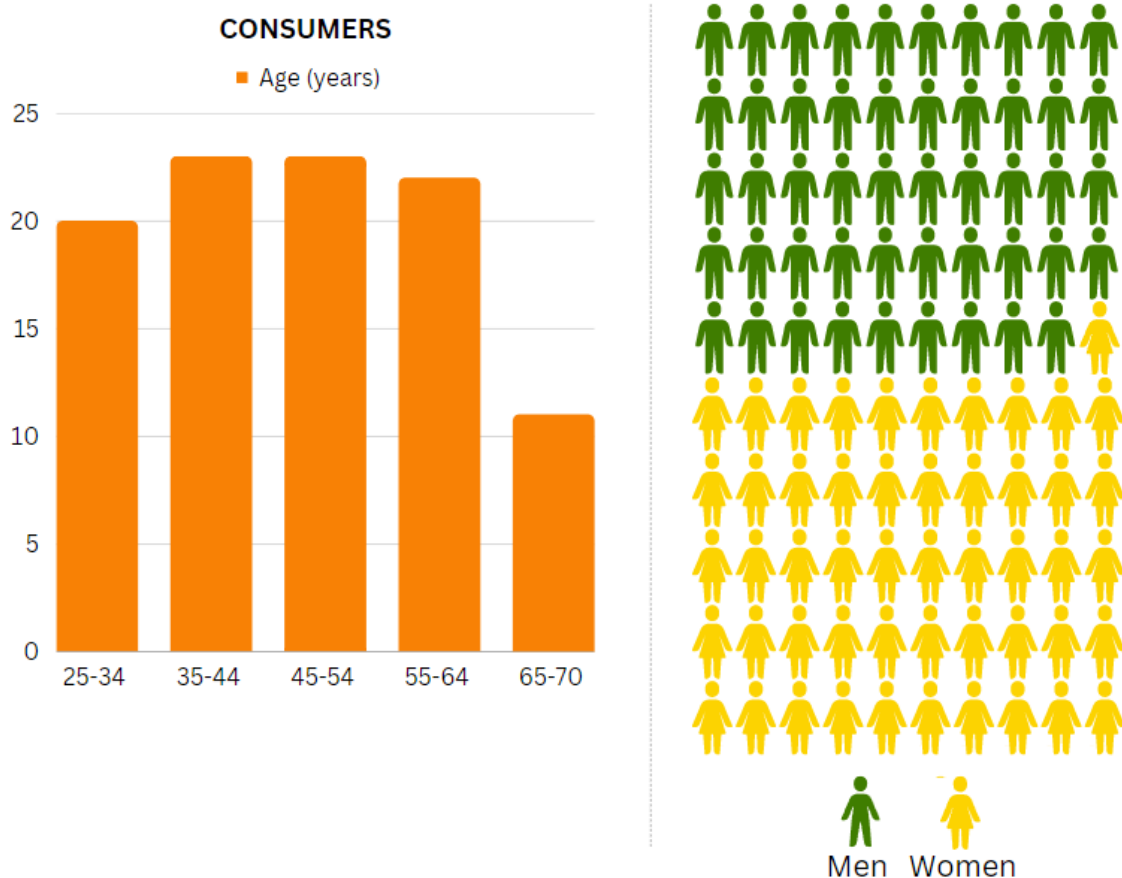


Figure 3

Short description of interventions

1. Biosecurity measures on animals

Biosecurity measures on pigs prevent transmission of pathogenic and resistant bacteria within farms. They are based on minimizing the contact between different batches and on separation of pigs treated with antibiotics. Biosecurity measures are not developed within AVANT, but only used as reference for comparison with the project interventions (Figure 4).

2. Biosecurity measures on humans

Biosecurity measures on humans prevent introduction and transmission of pathogenic and resistant bacteria within farms. They are applied to farm workers and consist of hand hygiene, footwear disinfection, change of clothes and showering. Biosecurity measures are not developed within AVANT, but only used as reference for comparison with the project interventions.

3. Chitosan

Chitosan is a natural biodegradable compound isolated from surplus shrimp shells that has been used as nutritional supplement for humans for more than thirty years. Chitosan is mixed into feed and then fed to piglets.

4. Faecal Microbiota Transplantation

Faecal Microbiota Transplantation (FMT) is a procedure used in human medicine to support healthy microbial conditions in the gut. New-born piglets are exposed to faeces from healthy pigs from the same farm in early life.

5. Feeding Strategies

Feeding strategies provide optimal nutrient content to support intestinal health. They are applied to sows around giving birth or to piglets around the time they stop drinking sow milk (weaning) in the form of pellets.

6. Immunostimulants

Immunostimulants are feed additives extracted from inactivated bacteria that improve pig immunity. They are mixed with feed and are administered to piglets when they stop drinking sow milk (weaning), or to sows before farrowing.

7. Phages

Phages are viruses that kill bacteria with no harm for humans or animals and are already used as additives or disinfectants in food production. They are administered orally to piglets when they stop drinking sow milk (weaning period).

8. Probiotics

Probiotics are mixtures of beneficial bacteria that promote gut health and inhibit the growth of pathogens. They are administered as feed additives around the time piglets they stop drinking sow milk (weaning period).

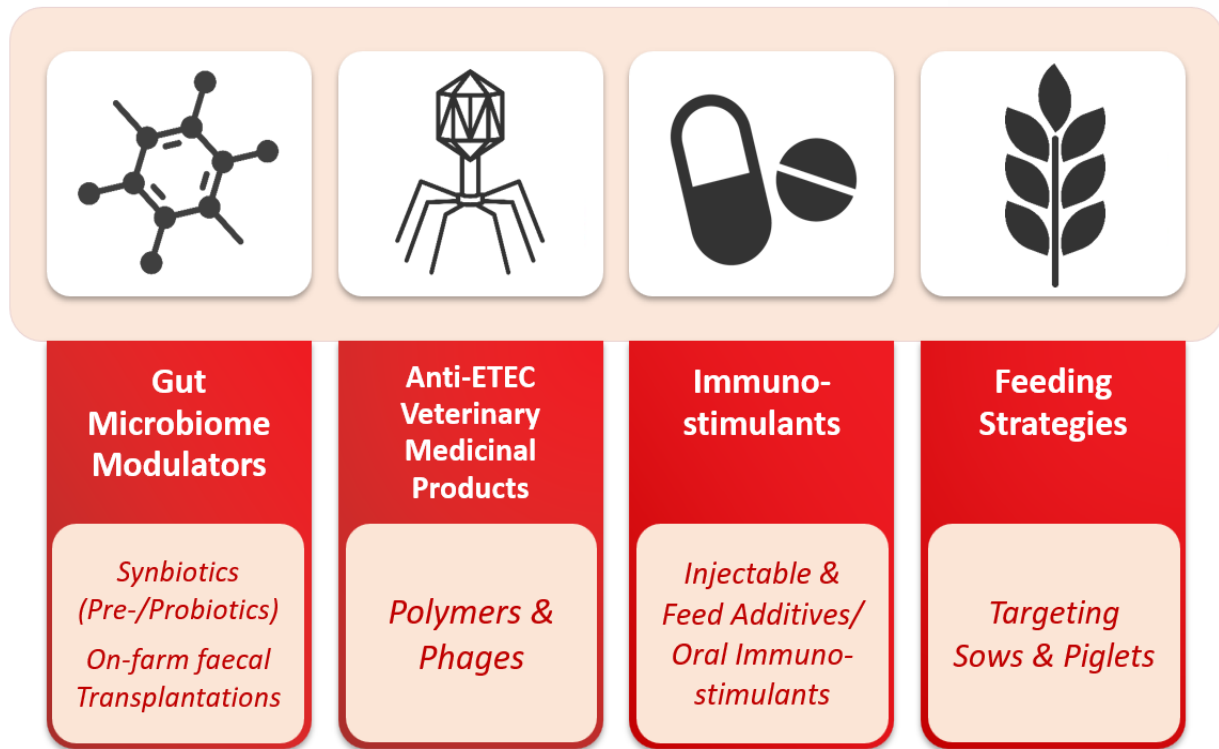


Figure 4

Survey Results

Awareness of the public health problems associated with antibiotic resistance and antibiotic use in animals

The vast majority (>70%) of the participants in all 3 target groups indicated that antibiotic resistance is an important public health problem (Figure 5). They also agreed that the amounts of antibiotics given to animals should go down and that alternatives to antibiotics are needed (data not shown). A large proportion was aware about the fact that antibiotic resistance has a negative impact on the economy of the pig industry and that the use of antibiotics in animals contributes to antibiotic resistance in human health. Surprisingly, 49% of consumers somewhat disagree with the statement that antibiotic-free production can only be a niche market, compared to veterinarians (60%) and producers (61.4%). The results clearly demonstrate a significant willingness of over 50% of target groups to pay 10% more for meat produced with less antibiotics. The clear majority of consumers agree that potential benefits of reduced antibiotics usage are healthier food products and safer environment, higher quality of animal and human health, as well as financial benefits for farmer, who would be able to sell their products more easily.

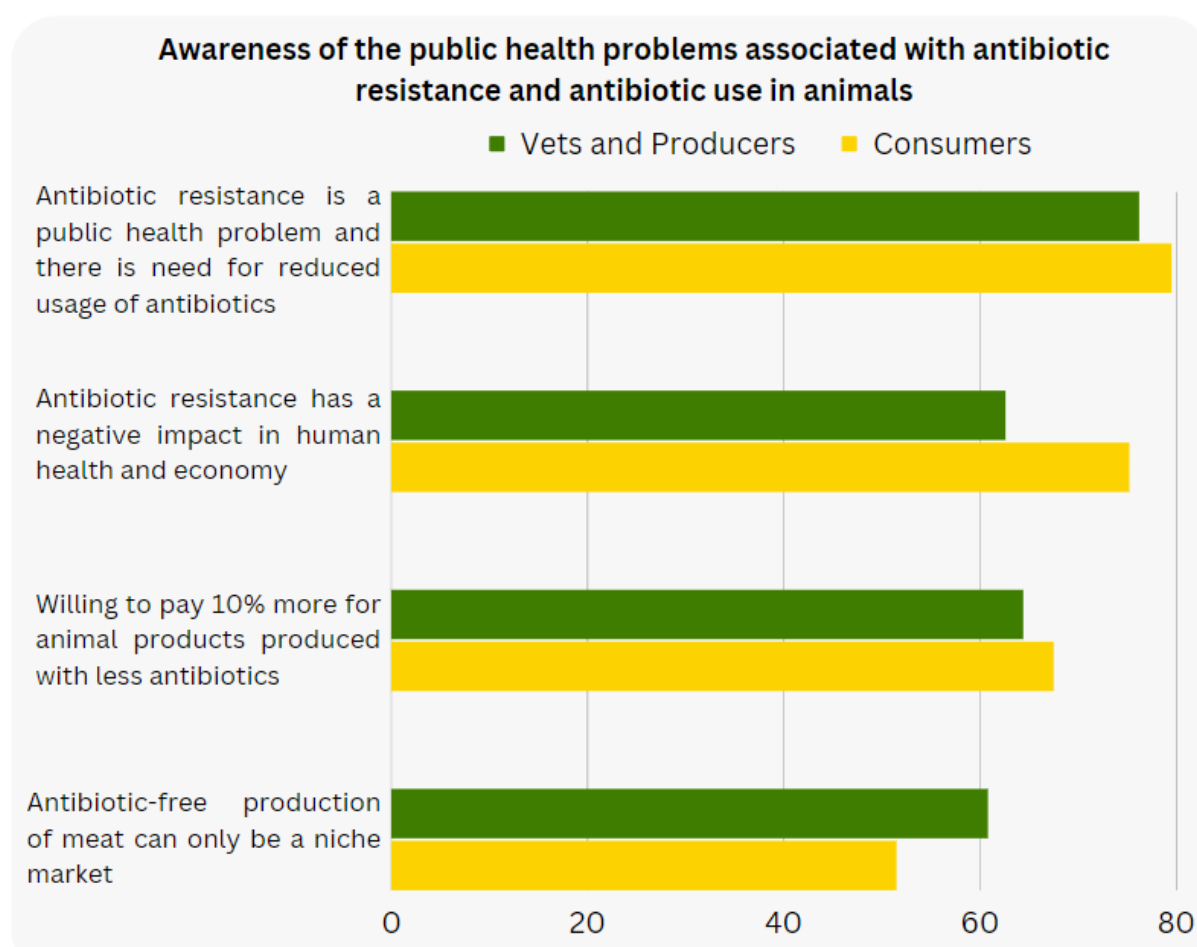


Figure 5

Interventions to reduce antibiotic resistance

Producers and veterinarians were also asked about interventions they currently use to reduce antibiotic resistance. Both target groups choose the same 4 interventions as the most preferred: vaccines, biosecurity procedures for farm personnel and animals, management procedures, and feed additives (Figure 6).

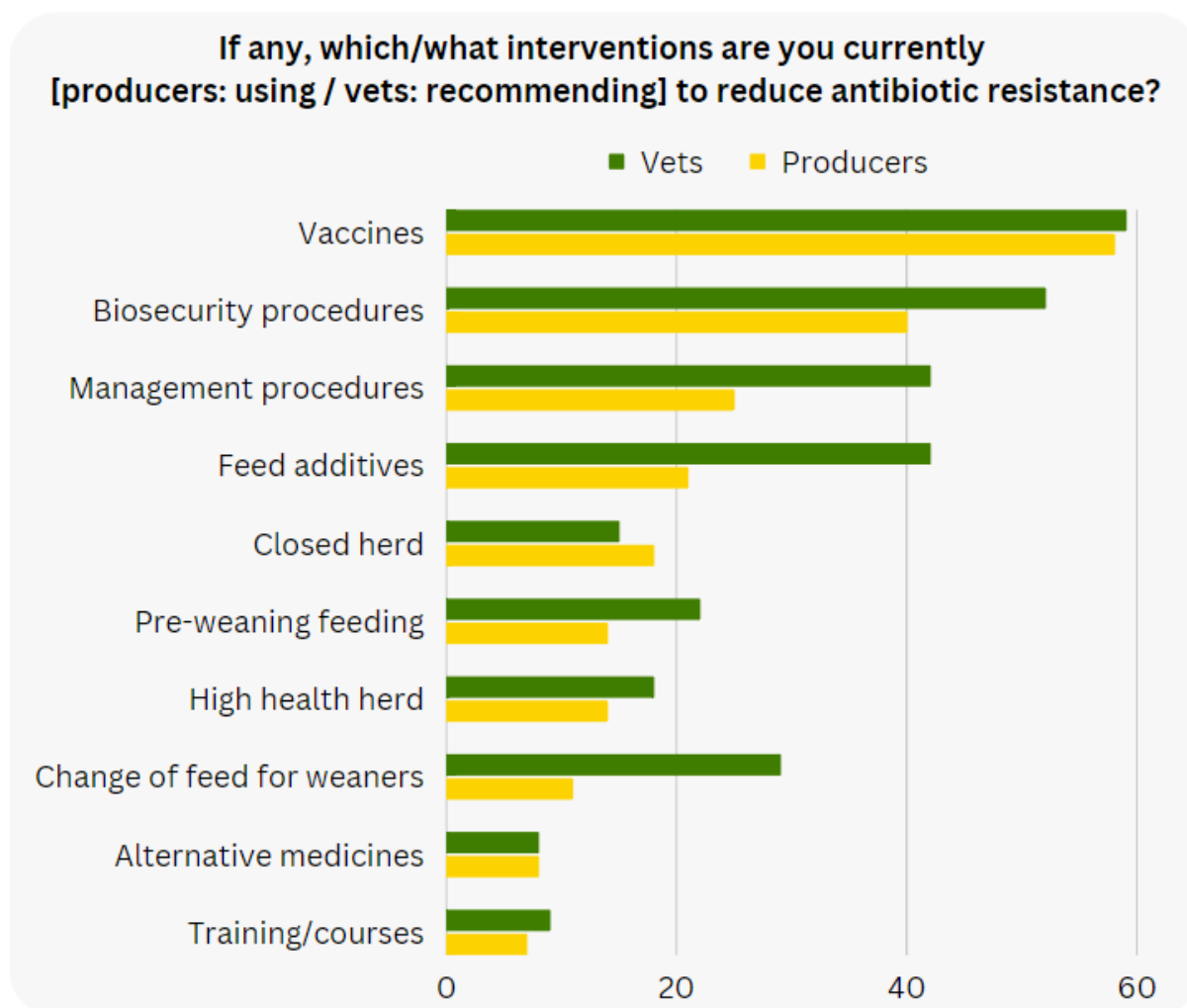


Figure 6

It is clear that some aspects need to be investigated in order to gain additional uptake. Not surprisingly, the survey showed significant differences between veterinarians and producers. Here are some of the key factors could determine the difference interventions preferred by these two target groups to reduce antibiotic resistance.:

- cost of implementing the intervention
- limited knowledge of the certain interventions by producers
- effectiveness of the intervention
- Additional labour and time-consuming process to implement the suggested interventions in farms

Acceptance and performance of AVANT interventions

With regard to the different interventions examined in the project, all target groups were asked about the attractiveness of the intervention. The acceptance scores for the different interventions were similar among the different target groups. For each of the target group categories, the top 4 of most accepted interventions were i) biosecurity measures in farm personnel, ii) biosecurity measures for animals, iii) feeding Strategies, and iv) probiotics, each scoring between 7.5 and 8.2 on a 10-point scale (Figure 7). The 4 least accepted interventions were i) immunostimulants, ii) chitosan, iii) phages, and iv) faecal microbiota transplantation. However, all target groups were neutral about the acceptance of those interventions, and none of them was regarded as negative (Figure 7).

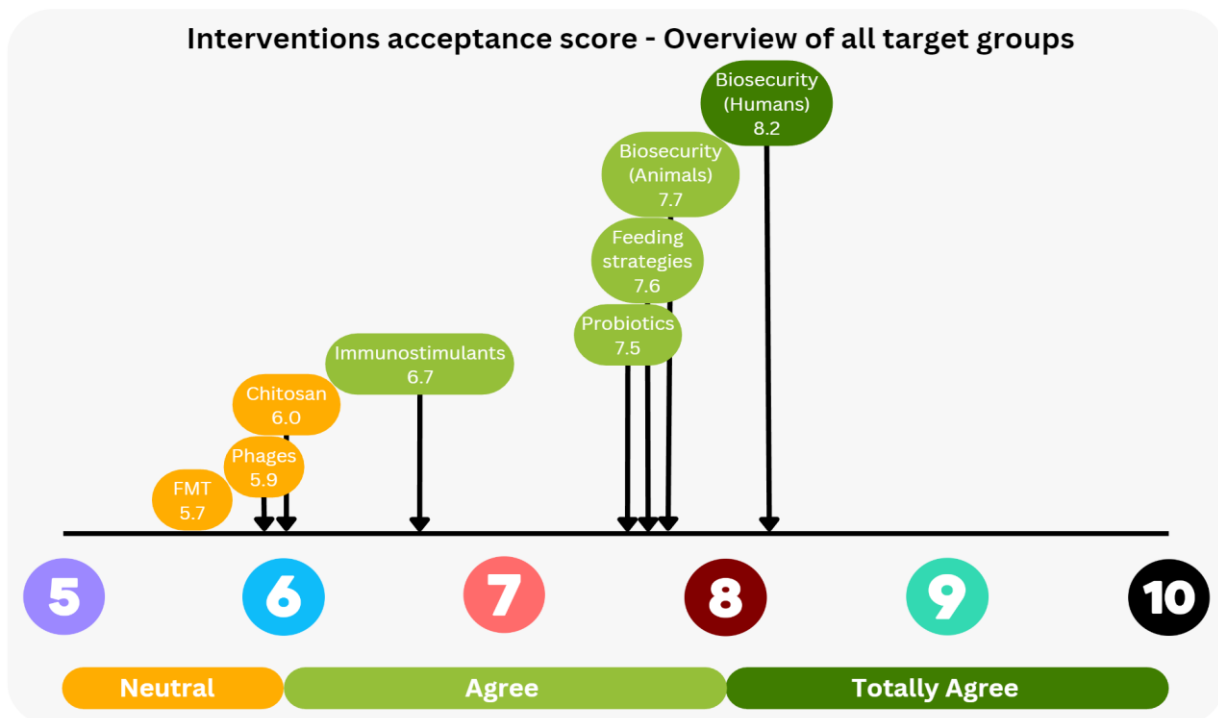


Figure 7

Questions to the consumers focussed on their opinion about the attractiveness of each intervention. More specifically, the were asked i) if knowing that a food product originated from animals that had been treated with the intervention would incentivize them to buy it, ii) if they would be willing to pay more for it, and iii) if the image of animal farming in their country would be improved by the use of the alternative. Among the total group of consumers (n=1779 participants), FMT is the least favourite intervention, scoring an average 5.8 on a 10-point scale. Consumers are more positive about buying meat that has been treated with one of the AVANT interventions and they agree that use of those interventions instead of antibiotics would improve the image of animal farming on their country. On the other hand, they are less keen on to paying more for products coming from animals that have been treated with the AVANT interventions.

Producers and veterinarians were enquired about the easiness of implementing each intervention, the safety for pigs, the effectiveness for control of post-weaning diarrhoea, and the economic sustainability. Both groups showed to be convinced about safety and the economic sustainability of the 4 preferred interventions on their farms. However, they were less convinced about the easiness to implement the interventions and their effectiveness to control of post-weaning diarrhoea (Figure 8).

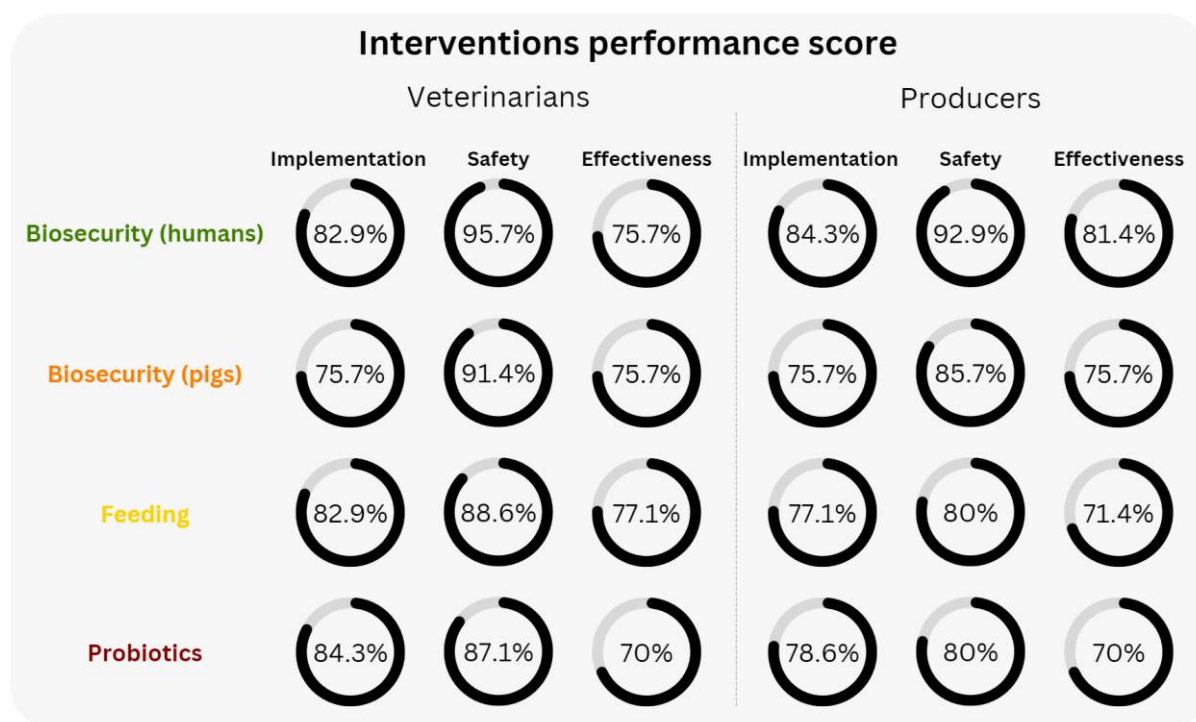


Figure 8

Here are some specific conclusions about the 5 countries and the 3 target groups that are supported by the survey results:

- In Denmark, while veterinarians indicate that they would be willing to try FMT and agree about its effectiveness to treat post-weaning diarrhoea, producers are less positive about the application of this intervention on their farms.
- In Spain, veterinarians have greater trust in the effectiveness of biosecurity measures for control of post-weaning diarrhoea, whereas producers are more positive about the effectiveness of immunostimulants, as compared to the producers from the other 4 countries.
- The effectiveness of biosecurity measures was given the lowest score by veterinarians in Poland.
- In Germany, producers are the least positive about using biosecurity measures on animals.
- In France, both veterinarians and producers are less confident about the effectiveness and the easiness to implement biosecurity measures for control post-weaning diarrhoea in pigs.

Conclusions

The results discussed above provide valuable insights into veterinarians, producers and consumers concerning use of antibiotics and antibiotic resistance in animals, as well as use of alternative solutions to prevent and control post-weaning diarrhoea in pigs. These are the most apparent conclusions that can be drawn from the results of the survey:

1. There is **demand to reduce the use of antibiotics in animal production**, which is perceived as a driver to the spread of antibiotic resistance in animals, and possible zoonotic transmission to humans.
2. **Alternatives to antibiotics could offer a pathway of change** that all the target groups in the animal product value chain have been waiting for.
3. There is a **clear market potential for alternatives to antibiotics**, like those developed in AVANT.

In line with these conclusions, the AVANT Consortium will continue and reinforce the efforts to inform the public and to raise public awareness about alternatives to antibiotics through promotion actions, information and education campaigns, at local, national and community levels. The **AVANT communication campaign, strategy and training** will contribute to better understanding of alternatives to antibiotics by consumers, and higher implementation of those solutions by veterinarians and producers in liaison with local authorities and associations.
