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**PROMEMORY STUDY**
**ViridisFarm-AS Ltd.**
Rudarska 8
HR-52333 Potpićan
Croatia (HR), Europe Union.

# AGRO PROMES Farm

Croatia, Europe Union

## Subject of promemory:

The introduction and use of micronized activated natural clinoptilolite as a supplement in pig diets produced by new **VAM technology (vibro activation of minerals).**

## Present:

dr.sci. Mirsad Sadiković - Doctor of Science – patent owner
Goranka Mikšić, dr.vet.med. - doctor of veterinary Medicine
Snježana Vugrinec, dr.vet.med. - doctor of veterinary Medicine
Stjepan Trcak, dr.vet.med. - doctor of veterinary Medicine

## CONCLUSIONS FROM THE MEETING:

For the purposes of the experiment it will be used activated micronized natural mineral clinoptilolite. Clinoptilolite is a natural volcanic mineral that is technologically processed and activated by the procedure and process of manufacturer ViridisFarm-AS Ltd. This procedure crushes mineral to a particle size which are for the most part in the nano area, thereby increasing bioactivity of the material, and reinforces its characteristic ion exchanger and an extremely powerful natural adsorbent and absorbens. – by using new VAM technology.

According to the producers presentation ViridisFarm-AS Ltd. introducing that way processed natural minerals in animal nutrition expects following results:
- Improving the general health of the animals;
- Reducing the cost of medicines and antibiotics;
- Reducing and neutralizing mycotoxins, heavy metals and other residues;
- Improving feed conversion;
- Reducing the number of days of fattening animals achieve the same mass;
- Increase immunity and general shape of animals;
- Improving appetite and food intake, which contributes to faster growth and stronger growth;
- Facilitating the bioavailability of food and essential trace element;
- Enhancement of muscle stimulation and improvement of innervation;
- Reduction of the concentration of ammonia in stables;
- Reduce odor in barns;
- Reducing the mortality of animals in all stages of fattening;
- Reducing damage from insects (flies, fleas, etc.).

For this purpose the farm AGRO-PROMES Ltd. (www.agro-promes.hr) will carry out the experiment using 4-activated and micronized clinoptilolite VAM technology by ViridisFarm-AS Ltd. to feed pigs.

As a starting document after this study it shall be made EXPERIMENTS METHODOLOGY for testing the influence of 4-activated and micronized clinoptilolite, which will clarify the essential elements of the experiment.

## Promemory study made by: AGRO- PROMES Ltd.

METHODOLOGY OF EXPERIMENT FOR IMPACT TESTING BY 4-ACTIVATED AND MICRONIZED ZEOLITE CLINOPTILOLITE BRAND NAME VibroSORB BY MANUFACTURERS OF VIRIDISFARM-AS Ltd. ON THE PRODUCTION RESULTS PIG FATTENING ON THE FARM AGRO-PROMES.

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## TARGET OF EXPERIMENTS

The goal of the experiment is to test the impact of using micronized and 4-activated Zeolite clinoptilolite brand name VibroSORB as a supplement for animal feed (in fattening pigs up to 110 kg) as recommended by the manufacturer (ViridisFarm-AS Ltd.), and determine the appropriateness benefits and economical justification of VibroSORB clinoptilolite use in terms of the cost of the final product (fatling to 110 kg). Experiments will be conducted in the manner of determining the difference between the control and experimental groups of animals according to the following indicators:

- The number of days of fattening
- ADG (kg / day)
- Percentage of deaths
- Percentage Cull
- The total energy of the mixture (kg)
- Consumption of the mixture for 1 kg of gain
- The effect of using clinoptilolite on reducing drug fattening
- Blood tests (will be made upon request, to the extent and cost of ViridisFarm-AS Ltd.)
- Measurement of ammonia concentration (at the expense of ViridisFarm-AS Ltd.)
- Control of residues in meat (mycotoxins, heavy metals, dioxin, nitrazin, and others) (at the expense of ViridisFarm-AS Ltd.)

Experiments will be conducted in separate facilities, as separate experiments different by:

- The date entering the fattening experiment
- According to the number of animals entering the fattening
- By country of origin feeding material
- The quantities of micronized and activated clinoptilolite in the food.

## DESCRIPTION OF EXPERIMENTS

The experiment will be carried out on the farm AGRO-PROMES on fattening material (pigs-piglets) German 4-hybrid crosses, and feeding materials (pigs-piglets) Dutch 4 - hybrid progeny. All animals aged 8-10 weeks upon entering the fattening:

- Farm AGRO-PROMES will provide information on current recipes nutritional compounds that could be the optimal type and amount of micronizedand activated clinoptilolite from manufacturers ViridisFarm-AS Ltd.
- Will form a control group of porkers
- Will form the experimental group porkers
- Each group will be marked with plastic ear tags of different colors
- The number of days of fattening shall be 90
- Control group will use a standardized mixture of food, while in the experimental group will be mixed micronized and activated clinoptilolite according to the proportions to be determined jointly.

## OTHER ELEMENTS

- Methodology of experiment will be proposed by Dr.Sadikovic and will be jointly agreed upon by both parties;
- Organization of the experiment, measurement, monitoring, and data processing will be carried out by the AGRO-PROMES farm, in the presence of representatives of ViridisFarm-AS Ltd.

## WEIGHING

Individual weighing will be done according to the following flow diagram:

- First, weighing at the entrance of the fattening
- Final weighing at culling
- All the control sample weight will be attached to

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## BEGINNING OF EXPERIMENT

The first trial will start on the February 1st 2012. at the AGRO-PROMES Ltd. farm, and timing of other entries in the fattening trial will be determined by mutual agreement, later then the end of March 2012.

## NOTE

If, because of other needs on the farm, exemption to a certain small number of pieces of piglets from groups will be necessary, this change will be recorded and for that number decreased the control and experimental groups.

## REPORT ON THE RESULTS OF EXPERIMENTS IN - 1

This report presents the results of experiments using clinoptilolite and its impact on the performance, according to the methodology of experiments defined jointly by ViridisFarm-AS Ltd. and AGRO-PROMES Ltd.

**Elements of the experiment:**

1. Entering the fattening: February 1st 2012.
2. Output from fattening: May 2nd 2012.
3. Number of animals in the experiment: 610 pieces
4. Country feeding material: German fourhybrids crossbreds
5. Quantity of clinoptilolite: The first two weeks of fattening: 0,5% (5 g/kg mixture)
   The rest of fattening: 0,3% (3 g/kg mixture)

The results are shown in Tables:

| Distription | Control group | Experimental group | Change (%/Kg) |
|---|---|---|---|
| Number of piglets at the entrance (pcs) | 610 | 610 | |
| Extracted piglets (pcs) | 15 | 15 | |
| Dead piglets (pcs) | 9 | 3 | |
| Number of piglets on the exit * (pcs) | 586 | 592 | |
| The average number of days on the fattening farm | 103 | - | |
| Number of days fattening experiment | 90 | 90 | - 12,63 % |
| The average weight of pigs (kg) on the farm | 102 | - | |
| The average weight of fatteners input (kg) | 28,60 kg | 28,60 kg | |
| The average weight of fatteners on the output (kg) | 90,07 kg | 97,09 kg | + 8,69% |
| Total weight of fatteners on the output (kg) | 52.721,02 kg | 57.477,28 kg | + 4.696,21kg |
| Growth fatteners per day (kg) | 0,68 kg | 0,76 kg | + 11,76% |
| Growth porkers fattening (kg) | 61,47 kg | 69,32 kg | + 12,77% |
| Conversion per pig (kg / kg) | 2,87 kg | 2,68 kg | - 6,38 % |
| Number of deaths (pcs) | 9 pcs | 3 pcs | 3 x less |
| Total consumption of fattening foods (kg) | 107.062 | 108.480 | +1.417,8 kg |
| Consumption of clinoptilolite in the experiment (kg) | 0,00 | 2.170 kg | |
| Clinoptilolite consumption per 1 kg weight | | 0,053 kg | |
| Consumption of drugs (HRK) | 16.576,00 HRK | 3.102,00 HRK | |
| The average consumption of medicines per pig (£) | 28,00£ | 5,24£ | 5.3 times smaller |

*Note: 24 pieces less in control and 18 pieces less in the experimental group at the exit of fattening are result of culling and deaths in the first stage (first 28 days). All subsequent calculations are based on the number of 586 pieces that are finished breeding in the control, and 592 in the experimental group.

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## CONCLUSION OF EXPERIMENTS 1:

Application of clinoptilolite as feed additive in pig nutrition, led to these following cumulative results:

- Growth porkers from the experimental group and **their average weight has increased by 7.80%**, which is in the experimental group of 592 pigs resulted in **a total 4.516.12 kg higher weight in the experimental group compared to control.**
- Growth fatteners per day was **higher 11.76%**
- The percentage of mortality in the experimental group was 3 animals (before starting the fattening phase II), whereas in the control group it was 9 animals, **which is three times less deaths.**
- Food consumption at a daily consumption is not reduced, but was within the same framework
- Cost of type and **amount of medication is decreased by more than 5 (five) times,** resulting in a savings of 80% compared to the control group.
- General condition of animal-spotted the vitality, improve tolerance to temperature differences in the house, a better appetite and strength during the entire time of fattening

When the physical parameters turn into a financial indicator, the cost of introducing clinoptilolite manufacturers ViridisFarm-AS Ltd. as compared to direct financial benefit in the end of the experiment related to the ratio of 1:3 In other words, the unit cost of 1Kn clinoptilolite, realizes the financial effect of the 3 kunas increases revenue. (0,13€ : 0,4€)

## REPORT ON THE RESULTS OF EXPERIMENTS IN - 1

Micronized and 4-activated clinoptilolite from manufacturers ViridisFarm-AS Ltd. used at the production results in fattening pigs on the farm AGRO-PROMES EXPERIMENT started February 1st 2012.

This report presents the results of experiments using clinoptilolite and its impact on the performance, according to the methodology of experiments defined jointly by ViridisFarm-AS Ltd. and AGRO-PROMES Ltd.

**Elements of the experiment 1:**

1. Entering the fattening: February 1st 2012.
2. Output from fattening: May 2nd 2012.
3. Number of animals in the experiment: 610 pieces
4. Country feeding material: German fourhybrids crossbreds
5. Quantity of clinoptilolite: The first two weeks of fattening – 0,5% (5 g/kg mixture)
   The rest of fattening - 0,3% (3 g/kg mixture)

## CONCLUSION OF EXPERIMENTS:

Application of micronized and 4-activated clinoptilolite as feed additive in pig nutrition this origin of speciesled to these cumulative results:

- Growth porkers from the experimental group and **their average weight has increased by 8.69%**, which is in the experimental group of 592 pigs resulted **in a total 4516.12 kg higher weight** in the experimental group compared to control;
- Growth fatteners per day **was higher 11.76%**;
- The percentage of mortality in the experimental group was 3 animals (before starting the fattening phase II), whereas in the control group it was 9 animals, **which is three times less deaths**;
- Food consumption at a daily consumption is not reduced, but was within the same framework;
- Percentage of culling was **reduced by 61%**;
- Cost of type and **amount of medication is decreased by more than 5 (five) times,** resulting in a savings of 80% compared to the control group;
- General condition of animal-spotted the vitality, improve tolerance to temperature differences in the house, a better appetite and strength during the entire time of fattening;

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Blending micronized and activated clinoptilolite is profitable manifold and it can be seen from the above parameters.

All analyzes and indicators set out in the Methodology experiments testing the influence of micronized and activated clinoptilolite are prepared in the form of contibution to this conclusion.

## REPORT ON THE RESULTS OF EXPERIMENTS IN - 2

Micronized and activated clinoptilolite from manufacturers ViridisFarm-AS Ltd. use at THE production results in fattening pigs on the farm AGRO-PROMES EXPERIMENT started March 14th 2012.

This report presents the results of experiments using clinoptilolite and its impact on the performance, according to the methodology of experiments defined jointly by ViridisFarm-AS Ltd. and AGRO-PROMES Ltd.

**Elements of the experiment 2:**

1. 1.Entering the fattening: March 3rd 2012.
2. 2.Output from fattening: June 3rd 2012.
3. Number of animals in the experiment: 250 pieces
4. Country feeding material: Dutch hybrids crossbreds
5. Quantity of clinoptilolite: The first two weeks of fattening - 0,5% (3-5 g/kg mixture)
   The rest of fattening – 0,3% (3 g/kg mixture)

| Distription | Control group | Experimental group | Change (%/Kg) |
|---|---|---|---|
| Number of piglets at the entrance (pcs) | 250 | 250 | |
| Extracted piglets (pcs) | 9 | 9 | |
| Dead piglets (pcs) | 7 | 3 | |
| Number of piglets on the exit * (pcs) | 243 | 238 | |
| The average number of days on the fattening farm | 103 | - | |
| Number of days fattening experiment | 92 | 92 | - 11,70 % |
| The average weight of pigs (kg) on the farm | 102 | - | |
| The average weight of fatteners input (kg) | 20,66 | 20,66 | |
| The average weight of fatteners on the output (kg) | 90,07 kg | 96,47 kg | + 7,10% |
| Total weight of fatteners on the output (kg) | 21.076,38 | 22.959,86 | + 1.883,48 |
| Growth fatteners per day (kg) | 0,75 kg | 0,82 kg | + 9,33% |
| Growth porkers fattening (kg) | 69,41 kg | 75,81 kg | + 9,22% |
| Conversion per pig (kg / kg) | 2,60 kg | 2,38 kg | - 8,50 % |
| Number of deaths (pcs) | 7 pcs | 3 pcs | 2,3 x less |
| Total consumption of fattening foods (kg) | 54.810 kg | 54.810 kg | |
| Consumption of clinoptilolite in the experiment (kg) | 0,00 | 863 kg | |
| Clinoptilolite consumption per 1 kg weight | | 0,047 kg | |
| Consumption of drugs (HRK) | 6.767,28 HRK | 1.735,02 HRK | |
| The average consumption of medicines per pig (£) | 28,92£ | 7,29£ | 4 times smaller |

*Note: 16 pieces less in control and 12 pieces less in the experimental group at the exit of fattening are result of culling and deaths in the first stage (first 28 days). All subsequent calculations are based on the number of 238 pieces that are finished breeding in the control, and 234 in the experimental group.

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## CONCLUSION OF EXPERIMENTS:

Application of micronized and activated clinoptilolite as feed additive in pig nutrition this origin of speciesled to these cumulative results:

- Growth porkers from the experimental group and their **average weight has increased by 7.10%**, which is in the experimental group of 238 pigs resulted in a total **1.883.48 kg higher weight** in the experimental group compared to control;
- Growth fatteners per day was 9.33% higher;
- The percentage of mortality in the experimental group was 3 animals (before starting the fattening phase II), whereas in the control group it was 7 animals, **which is two and a half times less deaths;**
- Food consumption at a daily consumption is not reduced, but was within the same framework
- Cost of type and amount of medication is decreased 4 (four) times, resulting in a savings of 75% on the cost of the drugs;

When the physical parameters turn into a financial indicator, the cost of introducing clinoptilolite manufacturers Viridis Farm Ltd as compared to direct financial benefit in the end of the experiment related to the ratio of 1: 3 In other words, the unit cost of 1 kunas clinoptilolite, realizes the financial effect of the three kunas increases revenue.

**Group II**
Input 24 kg / Output 107.71 kg / for 98 days;

Another 426 were in the barn, averaged 100.2 severe, and food consumption is 2.84 for 1kg of food growth;

0.8469 kg / day increments, which is 23.6% higher growth;

## END OF STUDY

| *Agro promes d.o.o.* | *ViridisFarm-AS d.o.o.* |
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