



# Project plan

EFFECT OF DIFFERENT PARTICLE SIZE OF RAW MATERIALS IN  
PIG FEED, TESTED IN MEAL AND PELLETED DIETS ON  
PERFORMANCE RESULTS IN WEANED PIGLETS

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## 1. Introduction

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In 2017/2018 8 FDL-partners executed a project together titled: “Effect of particle size of corn, wheat and soy bean meal on the performance of broilers”.

Differences in particle size in the raw materials were having an effect in the pelleted feed: broilers showed difference in performance results. In pigs it is known that feed with a low rate of coarse particles the risk of ulcers (stomach necrosis) increases ( Makkink, 2017). What the optimum level of coarse feed particles is for pig feeds, and how to create that during grinding of raw materials and processing in the case of pellets, is the research question.

Outside the Netherlands meal feed is often used for pigs. Making differences in between fine and coarse particles in meal diets is not very difficult to perform. In pelleted feed the coarse particles will be reduced by the pelleting process, making diets with considerable difference in particle size after pelleting is much more difficult.

De knowledge from this project should be directly applicable for partners involved. Agreements will be made about sharing of this confidential knowledge and the partners will share the costs of this project.

### 1.1 Doel

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To the partners of Feed Design Lab a project is proposed with the goal:

Develop practical applicable knowledge how to grind or minimize raw materials to have the optimal distribution of particle size in feed for pigs ( feeding as meal or as a pellet) that leads to optimal performance.

## 2. Materials and Methods

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This project consists of 4 phases.

1. Phase 1: FDL organises a kick-off meeting, where the goals will be set. Assessment of the choices will be made on the level of the research of the project ( practical / scientific), what type of pig feed.
2. Phase 2: FDL will make a project plan and will ask for quotes, to have different options for the project partners.
3. Phase 3: After approval of the project plan FDL will grind/ minimize the raw materials and produce the experimental diets. Analyses to check the differences will be performed. After approval of the feeds the animal experiment will be started.
4. Phase 4: Calculation of the results of the animal experiment and making the report. All data of different phases will be reported in the project report.

### 2.1 Phase 1: Assessment

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In the first phase of this project FDL will organize a kick-off meeting. interested partners of FDL will share their ideas and will together decide which goals need to be defined.

Choices to be made for subjects:

1. Level of the project: practical until scientific
2. Focus op weaned piglets, fattening pigs or sows
3. Difference in distribution of particle size in the feeds
4. Treatments
5. Which raw materials, which methods of analysis
6. Which equipment to use: hammer mill, roller mill, multi cracker?
7. Which parameters to use in the animal trial: is performance most important of health?

## 2.2 Phase 2: Project plan and investment

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In phase 2 depending on the goals and choices made in phase 1 the project plan will be made. Quotes will be asked and the investment for different options will be calculated. In the start meeting options will be discussed and a choice made. The partners of FDL will then decide if they will be a project member. Het definitive project plan will be sent.

## 2.3 Phase 3: Execution

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To have a better view an option is filled for different parameters

### A: Production of raw materials and experimental feeds

Raw materials: wheat, barley and soy bean meal

Analysis in these raw materials: Weende-components, digested starch

Minimizing/grinding of the raw materials: hammer mill, multi cracker

Analysis to determine the particle size of the raw materials: Retsch sieve with sieves 3.55, 2.8, 2.0, 1.4, 1.0, 0.8, 0.5, 0.425, 0.2 mm

GO/NO GO: raw materials approved

Production of the experimental feeds

Analysis of the meals before and after pelleting: wet sieve analysis : sieves 2.0, 1.4, 1.0, 0.5, 0.25, 0.1 mm method as described in project Optimisation wet sieve analysis (in Dutch) ; Weende-components, minerals, AW-level

GO/NO GO: experimental feeds approved: start of the animal trial

### B. Execution of the animal trial

#### Treatments:

	Name	Form	SBM	Wheat and barley
1	MFF	Meal	Fine	Fine
2	MFC	Meal	Fine	Course
3	MCC	Meal	Course	Course
4	PFF	Pellet	Fine	Fine
5	PFC	Pellet	Fine	Course
6	PCC	Pellet	Course	Course

#### Experimental feeds

The experimental feeds will be produced at FDL and analysed before delivery. The feeds can be stored in small bags or big bags. In de phase before the experimental feeds are fed, all animals will be fed on the same commercial feed with the same feed form.

#### Animals

...weaned piglets will be used. At weaning (.. days of age) the experimental phase starts. The amount of piglets per pen is equal for all .. pens in the room, the average start weight of the pen is also equal per room. There will be .. replicates that will be randomized in the available rooms.

#### Method

The weaning phase will be from day 0 until day 10/14, the rearing phase from day 10/14 until day 35. At start of the experiment the treatments will be randomized to the pens.

Animals will be weighed individually at start of the experiment. Weighing per pen will be performed at day 10/14 when feeds are changed and at day 35. Lost animals will be weighed individually.

Fecal scores will be performed 2 times a week per pen.

Feed intake, gain/animal/day and Feed Conversion Ratio will be calculated on pen level per phase and statistically checked.

## 2.4 Phase 4: Reporting

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## 3. Time and planning

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This project has a preliminary planning with the goal to start in June 2020.

Month	mar	apr	may	jun	jul	aug	sept	oct	nov	dec
<b>Activity</b>										
project plan										
performing test pilot plant										
analysis										
producing experimental diets										
animal trial										
reporting										
presentation results										

## 4. Communication

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In the kick-off meeting of **May ..** interested partners have given their input for making a project plan. This draft project plan will be sent to all FDL partners, so all partners of FDL have the opportunity to join the project.

During this project Ageeth van der Lee will be coordinating the project, executing the project plan set by the joining partners. Contact information is given in the table below:

Table 3 Contact information

Naam	E-mail address	Phone
Ageeth van der Lee	<a href="mailto:ageethvanderlee@feeddesignlab.nl">ageethvanderlee@feeddesignlab.nl</a>	++31 (0)6 30 43 67 43

Communication in the project group will be coordinated by FDL.

The information and data from this project are exclusively for project members.

## 5. Investment

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Partners of Feed Design Lab only have the opportunity joining this project, becoming owner of the data and the report of this project. The participants decide together about the IP generated in this project

The investment for this project will be shared by dividing the total sum by the amount of participants.

The preliminary quote is at € .... The split up in costs between raw materials and feeds, production of the experimental feeds, animal facilities, analysis and hours for project coordination and reporting will be presented in phase 2.

We invite companies to make clear what contributions to the project (animal trial facilities, statistics, analysis) can be made by contacting Ageeth van der Lee.