[Article from *Professione Suinicoltore*]

Vaccination against *Lawsonia intracellularis*

Let the numbers do the talking

This pig-fattening farm in Volta Mantovana tested the Lawsonia vaccine. Over a complete fattening cycle the results for 220 vaccinated pigs were evaluated and compared with those for 220 unvaccinated pigs. The animals belonged to a single lot of weaners obtained from the same sow herd and bred under identical conditions. The results? Unequivocal.

The numbers speak clearly: vaccination pays. Beyond all the talk of the loss of earnings that can be caused by a pathogen such as Lawsonia intracellularis and the benefits of curbing its effect, the clearest demonstration is provided by the figures themselves. Specifically, the figures resulting from the trial undertaken by this breeder with fattening pigs in which one lot of vaccinated pigs were compared with an equivalent number of unvaccinated control pigs, are difficult to argue with: improved feed conversion index, increased quantity of meat per pig, fewer rejects, lower mortality, better uniformity within the group. With gross profit pig - i.e. minus the additional costs for the vaccine - of more than 2 euros per vaccinated pig. And this was the result observed in the "Il Fienile" farm in Cereta di Volta Mantovana, a fattening farm with approx. 20 thousand pigs. A breeding operation that has, in the past, conducted various trials and investigations involving vaccines or new drugs for a wide range of swine diseases, in collaboration with various pharmaceutical companies. The breeder pays particular attention not only to the sanitary conditions, but also to the management and the buildings, as confirmed by a tour of the premises. All of which does not exclude the risk of lawsonia: in fact, it is in the better managed breeding operations that the introduction of the pathogen can cause the most damage, a fact that doesn't prevent the accumulation of other intestinal pathogens of varying aggressiveness originating from poorly-managed breeding operations, and causing the breeder severe problems in the form of reduced income, increased rejects and reduced uniformity. To sum up: Keeping lawsonia at bay is in everyone's interest.

The trial

Dr. Gianluca Previdi, a graduate in the science of animal production and in charge of breeding, already has experience of trials with this new product. These have convinced him of its ability to improve the sanitary conditions of the breeding operation. Given the specific features of the site, the struggle against pathogenic organisms is constant and unrelenting, since the farm receives weaners weighing approx. 30-35 kg from four or five different suppliers with the associated microbial burden. The trial involved one lot of less than 500 pigs originating from a single supplier. After serological screening, a sow herd with late seroconversion to Lawsonia intracellularis - at 24 weeks - was chosen for greater reliability safety in respect of the most suitable time for vaccination. The pigs were divided into two groups of 220, which were housed in two adjacent piglet fattening sheds.
Between their arrival and the end of vaccination there was a period of four days without antibiotic treatment in order to exclude any possible interference, including interference from any unreported antibiotic treatments administered to the originating herd. This was also facilitated by the farm practice of not administering antibiotic treatments in the first few days and limiting treatment to deworming with a medicated feed.

An electronic dispenser for the solution containing the vaccine was chosen for the vaccination. Since the product is soluble in water, it can be administered in various ways: via a drinker, in the trough, via a drench or, as in this case, with a dispensing pump that supplies the precise quantity of the mixture (water, milk and vaccine) to the drinkers. A choice that was, to some extent, forced on the farm since, during the first few days of piglet fattening, the piglets are given a dry feed and, in view of the number of animals and their weights of approx. 30-35 kg it would have been difficult to treat them individually by drenching.
As Dr. Previdi explained, no problems were encountered at the operational level: the choice of the window without antibiotics coincided with a period in which treatment is not normally administered.

The difference is both visible and weighable

As recalled by Gianluca Previdi, the fattening cycle proceeded uneventfully with no unusual events in either the vaccinated or control groups. "Simple observation of the animals showed no major differences between one or other group. The two groups developed at the same pace, without any apparent differences, although a slight reduction in rejects and deaths was already observable at this point. The effects of the vaccination became apparent however at the end of the trial, once all the relevant livestock data were available, including the slaughter data."
One fact that was particularly striking at the time of loading, however, was the homogeneity of the pigs. Dr. Previdi recalls: "I noted this as soon I saw the pigs climbing on to the truck. The greater homogeneity of the vaccinated lot was very obvious at the time of loading. This had not been very noticeable when they were in the pens, but became very clear when I observed them being loaded as they moved up the loading ramp with precise spatial references." This visual impression was subsequently confirmed definitively by the weight data. The vaccinated pigs provided an average of 6 kg more meat per pig, as well as showing better batch homogeneity.

From the practical management point of view as well, the slight initial concerns proved groundless. The veterinarian-breeder continues: "The vaccine proved to be very easy to use since it can be administered in the drinking water. This ease of administration also contributed to the regularity of administration: the easier a vaccine is to administer, the more likely it is that the process will be implemented correctly. Nor is it a problem to set aside a period of seven days without antibiotic for the vaccination procedure (three days before the vaccination, the day of vaccination and the following three days). I had initially been slightly concerned by this, but in practice it proved to be fairly straightforward to organise and integrate this vaccination in the breeding routine."
The satisfaction at the end of the trial was confirmed by the intention to repeat the process in the near future with a much larger number of pigs. "We shall repeat the experiment with a trial involving three thousand pigs", explained Dr. Previdi. "We intend to take the historical grid data forwarded to the slaughterhouse and compare it with the grid data relating to the three thousand vaccinated pigs. This comparison will provide even more significant findings than the positive findings obtained from this individual trial."

Livestock data obtained from the trial

	Vaccinated	**Unvaccinated**	**Difference**
Initial number	220	220	0.00
Final number	213	200	13
% rejects / mortality	3.18	9.09	-5.91
Days of breeding	200	200	0.00
Total initial weight (kg)	8360.00	9160.00	-800.00
Average initial weight (kg)	38.00	41.64	-3.64
Total final weight (kg)	35904.00	33810.00	2094.00
Average final weight (kg)	168.56	169.05	-0.49
Meat produced (kg)	27544.00	24650.00	2894.0
Meat produced per pig (kg)	129.31	123.25	6.06
DWG (g)	646.57	616.25	30.32
Feed consumption 70-160 days (kg)	77081.60	69987.00	7094.60
Estimated feed consumption 40-70 days (kg)	21780.00	19800.00	1980.00*
Total consumption (kg)	98861.60	89787.00	9074.60
Feed conversion index	3.59	3.64	-0.05
**Estimated consumption of 1.8 kg per 50 days; with addition of 10% for the vaccinated pigs*			
Costs	**Vaccinated**	**Unvaccinated**	**Difference**
Total pig costs* (euro)	15048	16488	-1440
Average pig costs (euro)	68.40	74.95	-6.545
Vaccination (euro)	314.60	0.00	314.6
Vaccination per head** (euro)	1.43	0.00	1.43
Total feed cost*** (euro)	13840.62	12570.18	1270.444
Average feed cost (euro)	64.98	62.85	2.128
**Pig costs of 1.8 euro/kg, incl. VAT* ***Vaccine costs of 1.3 euro/kg + 10%. VAT* ****Feed costs/kg 0.14 euro, incl. VAT*			
Revenue	**Vaccinated**	**Unvaccinated**	**Difference**
Total slaughterhouse sales (euro)	54143.23	50985.48	3157.75*
Slaughterhouse sales/pig (euro)	254.19	254.93	-0.73
**Sales price 1.371 euro + 10% vat*			
Gross profit*	**Vaccinated**	**Unvaccinated**	**Difference**
Gross profit per batch (euro)	24940.01	21927.30	3012.71
Gross profit per pig (euro)	119.38	117.13	2.25
**Vaccination already included in the costs*			

DWG: daily weight gain

[Translation of picture captions]

This breeding farm conducted a trial to compare the performance of a lot of vaccinated pigs exposed to Lawsonia intracellularis with a similar unvaccinated lot. On the right: Dr. Gianluca Previdi, who conducted the trial.

Each piglet fattening shed was divided into four independent sectors, each housing up to 500 pigs, who remain here from day 30 to day 45, when they then proceed to the next pig fattening stage. The floor is flat and inclined towards the external slatted floor.
To enable a gradual acclimatisation of the different lots from differing sources, the pigs are not mixed during the piglet fattening stage and each lot is housed in a specific piglet fattening area. The pigs are mixed only when they proceed to the next pig fattening area.
Dr. Previdi explains: "Next year we shall have a building for receiving piglets weighing 6 kg and combining the arrivals from the various sow herds, and in which the whole conditioning process can take place, including the vaccination series. After this phase the weaners proceed to the fattening stage. Otherwise it would not be possible to eliminate the diversity between weaners arriving from different suppliers. This platform will become the crucial factor in the whole breeding operation."

Outside, a roof has been installed that does not completely cover the sow yard. On one side the pigs are almost completely protected from the rain, while the gap in the roof ensures better ventilation.

There is no shortage of interesting solutions in this breeding farm, where the aim is to ensure a breeding environment more in line with the animals' needs. In the fattening sheds, the spacious canopy combined with the large side windows ensures a high air change rate, producing a light and airy environment throughout the year. Each shed includes a series of sprayers used for wetting the animals during periods of hot weather and also for administering uniform sprays of hygienic substances and enzyme pools, thereby facilitating the disposal of rejects.