Brazil: BioAktiv Cuts Ammonia Emissions of Open-air Diary Cow Sheds

BioAktiv Brasil conducted a study on using BioAktiv products to reduce ammonia emissions at a dairy cow farm in the municipality of Fazenda Vilanova, while they were conducting a similar study at a dairy goat farm in Barão[1], another municipality in the same state of Rio Grande do Sul in Brazil. Both studies used the same methodology. The dairy farm had two open-air sheds. Shed 1 was the main shed which housed 75 dairy cows in two separate wings. Each wing had a 140 m^3 manure tank. Shed 2 housed 29 heifers and had a 100 m^3 manure tank.

Figure 1: Shed 1 with two wings

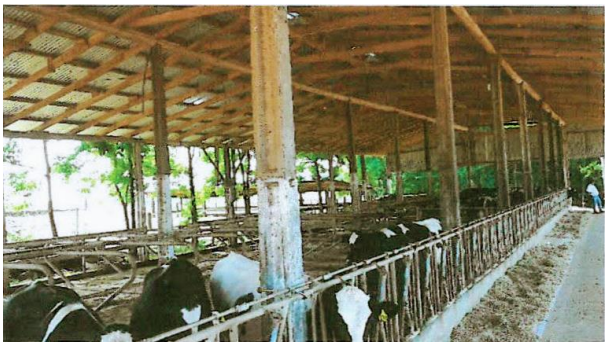

Figure 2: Shed 2 housing the heifers

[1] See article *Brazil: BioAktiv Halves Ammonia Emissions in a Dairy Goat Farm.*

For measuring ammonia concentration in the two sheds, 11 and 6 measurement points were evenly positioned in shed 1 and shed 2 respectively as shown in Figure 3.

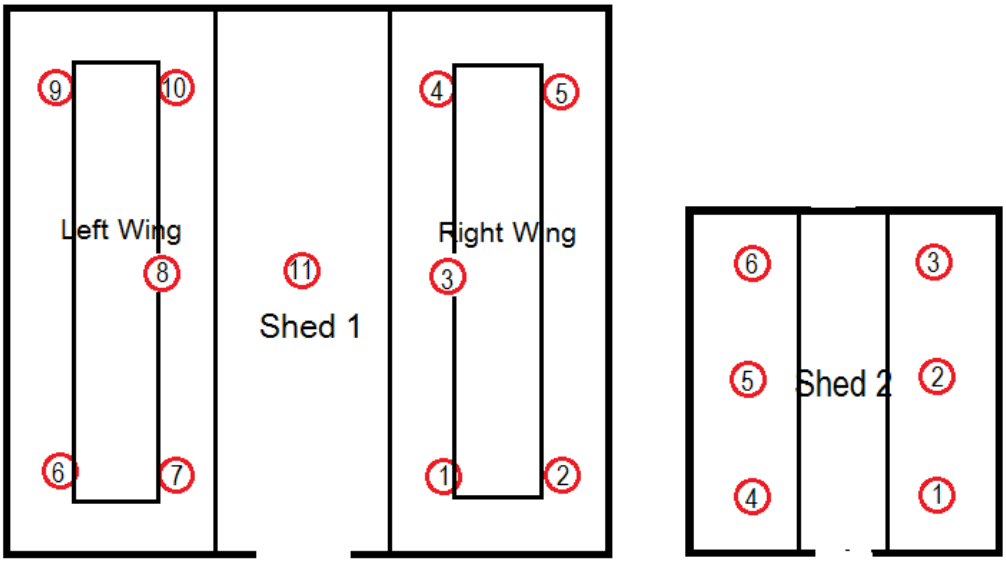

Figure 3: Ammonia measurement points

On 25 October 2014, all three manure tanks were treated with 1 kg BioAktiv for Liquid Manure (stired in 200 litres of water). In addition, BioAKtiv for Animal Feed was added to the cattle feed at 1.5 g per animal per day. The three manure tanks were treated again on 24 November 2014. Ammonia concentration measurements (both open- and still-air measurements as in the study in Barão dairy goat farm) were taken weekly from 4 October 2014 to 28 November 2014. The measurements are as shown in Table 1.

Figure 4: BioAktiv for Liquid Manure at the site

Still-air Ammonia Concentration Measurements

Date	Shed 1												Shed 2						
	Measurement Point											Shed	Measurement Point						Shed
	1	2	3	4	5	6	7	8	9	10	11	Average	1	2	3	4	5	6	Average
04-Oct-14	4	0	28	11	0	0	8	11	87	5	5	**14.45**	5	3	0	*	*	*	**9.82**
10-Oct-14	12	3	4	19	1	12	23	4	86	10	0	**15.82**	0	0	0	*	*	*	**10.21**
17-Oct-14	0	0	16	30	11	1	14	4	83	12	0	**15.55**	0	1	0	3	0	0	**0.67**
25-Oct-14	28	8	15	22	10	10	9	32	92	13	0	**21.73**	0	0	5	1	5	7	**3.00**
01-Nov-14	0	0	1	8	9	0	11	25	79	6	0	**12.64**	0	0	0	0	0	0	**0.00**
15-Nov-14	5	4	8	14	7	7	4	3	75	9	0	**12.36**	5	8	0	0	8	0	**3.50**
22-Nov-14	15	0	22	10	5	8	2	4	20	6	0	**8.36**	9	5	0	0	10	7	**5.17**
28-Nov-14	6	0	23	22	2	5	0	6	23	6	0	**8.45**	14	6	0	0	3	0	**3.83**

Open-air Ammonia Concentration Measurements

Date	Shed 1												Shed 2						
	Measurement Point											Shed	Measurement Point						Shed
	1	2	3	4	5	6	7	8	9	10	11	Average	1	2	3	4	5	6	Average
04-Oct-14	0	0	1	0	0	2	3	0	12	2	5	**2.27**	1	0	0	*	*	*	**1.53**
10-Oct-14	3	0	0	4	0	2	5	4	19	6	0	**3.91**	0	0	0	*	*	*	**2.53**
17-Oct-14	0	0	14	6	6	1	5	4	11	10	0	**5.18**	0	0	0	0	0	0	**0.00**
25-Oct-14	7	4	3	6	6	5	5	16	18	9	0	**7.18**	0	0	0	0	0	7	**1.17**
01-Nov-14	0	0	0	0	0	0	3	3	36	1	0	**3.91**	0	0	0	0	0	0	**0.00**
15-Nov-14	1	4	3	1	4	2	1	0	9	5	0	**2.73**	4	6	0	0	0	0	**1.67**
22-Nov-14	10	0	6	8	3	8	0	0	14	5	0	**4.91**	5	2	0	0	8	7	**3.67**
28-Nov-14	2	0	6	11	0	0	0	3	13	5	0	**3.64**	6	5	0	0	2	0	**2.17**

** Errors in the report*

Table 1: Ammonia concentration measurements

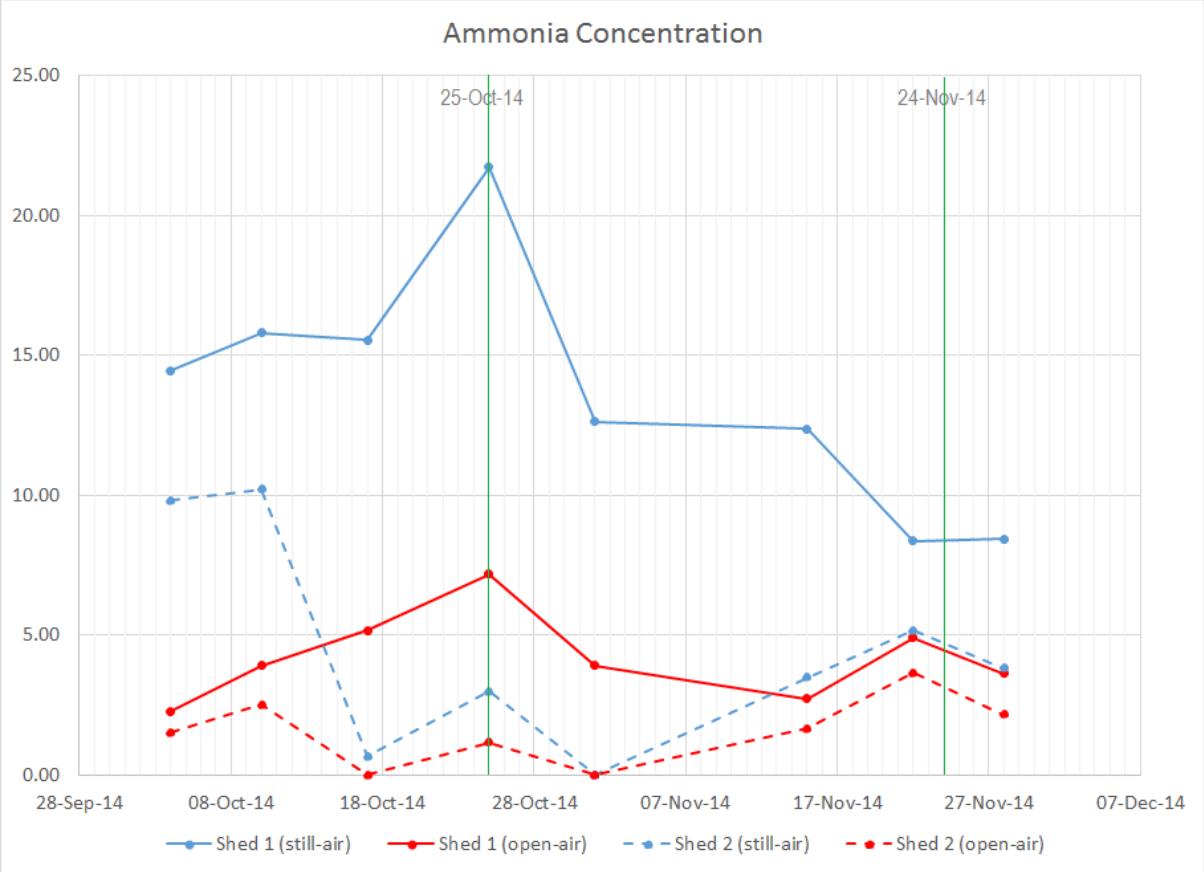

Figure 5: Average values of measurements of both sheds

Figure 5 shows the daily average values of the measurements of both sheds. We note that the ammonia concentration in the air of shed 1 dropped about 20%[2] after the treatments by BioAktiv on 25 October 2014. The four values after the treatments were clearly in a downward trend. There was no similar trend for the values of shed 2, but the final value was lower than the initial value[3].

- Original report

[2] This appears to be an error the value should be (21.73 – 8.45) ÷ 21.73 = 61%.
[3] This observation should be disregarded. The first two open- and still-air shed average values are not consistent with other values.