Bovine Viral Diarrhoea (BVD) Case Study Turkey

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Introduction

In Turkey, disease awareness and vaccination rate is low for BVD.

The disease is treated with both monovalent and polyvalent vaccines (40% monovalent; 60% polyvalent segment share in value market in 2017).

The only player in the monovalent market is an inactive vaccine. Polyvalent vaccines are preferred due to their economic benefits and strain varieties, yet they do not provide effective solution for BVD.

Farm Facts

Turkey BVD case is analysed from “the biggest” dairy farm in Turkey – Atasancak. Key information about the company is as follows:

- Ata Holding Group is one of the biggest local investors in Turkey in various sectors including food, finance, health, energy and construction.
- Atasancak operates in Agriculture sector as the largest dairy farm in Turkey.
- The total ground area of the facility is 2,400 hectares.
- The herd includes 11,500 total heads with 5,000 milking cows and 5,500 dry+lactating.
- Milk production per cow is 37 lt/day.
- Daily total milk production 185,000 lt.
- Total of 250 employees.
- 200 employees for animal section (6 Vets, 6 Agriculture Engineers).

Case

Farm History:

There are 5,500 cows in the herd currently.

There have been no new animals entered into the herd except for 2,500 heifers that were imported from USA in 2007. These animals were BVD negative.

The farm uses inactive vaccines, as there is no active BVD vaccine available in Turkey at the time.

Each year vaccines are being applied to the herd yet complete prevention cannot be provided due to the size of the herd and prevalence of BVD, which is reported as 68.4%.[1]

BVD antibody tests are being performed twice a year. Protective vaccine protocols of the farm are as follows:

Calf Vaccination Protocol	
days	vac name
15-21 d	IBR-BVD-PI3-BRSV
36-42 d	IBR-BVD-PI3-BRSV
180-186 d	IBR-BVD-PI3-BRSV

before breeding (12m)	IBR-BVD-PI3-BRSV-Lepto
before close up	IBR-BVD-PI3-BRSV

Lactating Cow Vaccination Protocol	
days	vac name
once yearly	IBR-BVD-PI3-BRSV

Calves are being vaccinated for BVD 5 times during the 24 month period after birth.

In other words, inactive BVD vaccines are applied once every 4 months. BVD vaccination is repeated once a year in lactating cows.

Importance of Biosecurity:

Turkey is at high risk in terms of epidemic diseases, therefore, strict biosecurity conditions need to be applied in farms.

One way to control biosecurity is not to bring new cattle into the farm and growing the heifers within the farm if possible. This is one of the most important biosecurity controls to protect herds from BVD after vaccination protocols.

Atasancak Dairy Farm implements strict biosecurity controls:

1. There are no vehicle entries into the farm except for feed and milk trucks. All trucks pass vehicle pool and disinfected against any contamination.

2. All employees need to pass disinfection tunnel every morning before entering the farm.

Fertility Management:

At Atasancak Dairy Farm, insemination is done after VWP (Voluntary Waiting Period) which is 73rd day in postpartum.

For reproductive management, Oestrus Synchronisation Program first insemination is applied using Double Ovsynch Protocol and continuing with Resynch Protocol as below:

Double Ovsynch Protocol:	GnRH	PG	GnRH	GnRH	PG	PG	GnRH	Insemination	GnRH
Days:	48-54	55-61	58-64	65-71	72-78	73-79	74-80	75-81	After 6 days

GnRH: Gonadotropin-releasing hormone PG: prostaglandins

Resynch Protocol:	Apply GnRH ➜ BRED 19-25 (GnRH 1.) ➜ BRED 26-32 (GnRH 2.)

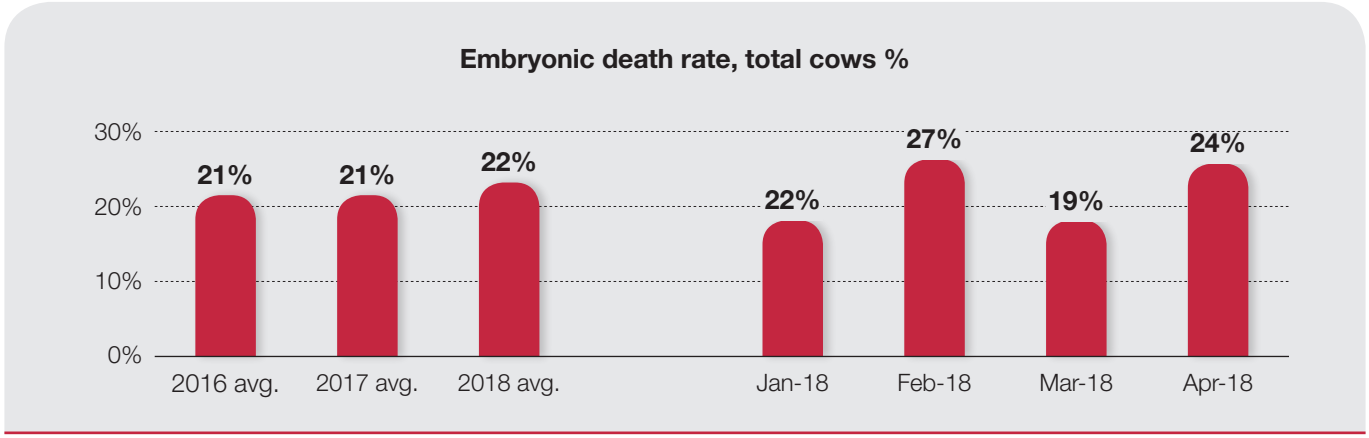
Embryonic Death:

Pregnancy inspection is performed in cows in BRED 33-39 status by ultrasound examination. (PD1: positive day 1)
Second ultrasonic inspection is performed in cows in PREG 60-66 status. (PD2)
The cases where PD1 is positive but PD2 result is negative are accepted as **"Embryonic Death"**.
PD1 data is taken from the Herd Management Office on Tuesdays and primaparus & multiparus pregnancy status is inspected.
All data are stored in Delpro Farm Manager Software and Repro-Performance is tracked.

2018 Repro Performance Results are as follows:

						Ovsynch	Resynch	Double Ovsynch	1st Ins	2nd Ins	3rd Ins	EMB LOSSES	Calving Interval
	1st Lactation	2nd Lactation	Cow-Total									Cow	
MONTHS			AI	PD+									
Jan-18	32%	27%	1,323	380	29%	21%	26%	36%	36%	28%	24%	**18%**	13.7
Feb-18	36%	29%	1,378	430	31%	33%	31%	32%	32%	35%	29%	**27%**	13.8
Mar-18	31%	28%	1,514	444	29%	33%	30%	33%	32%	34%	25%	**19%**	13.8
Apr-18	34%	27%	1,400	415	30%	24%	27%	35%	35%	29%	26%	**24%**	13.9

In 2016, overall calving rate was 25% and it has increased to 30% in 2018. Yet, Embryonic Death rates are not at an acceptable level, 22%. This means, **in Turkey we have more than 2 times more Embryonic Deaths vs. USA where Embryonic Death rate is 10-15% in farms with similar size.**



BVD Status – Lab Test Results:

BVD Antigen Screening Test is conducted in cows which had Embryonic Death.

Blood samples are taken from these cows monthly and investigated in pools with 5 samples for BVD Antigen Test. Samples are collected from 87 cows with above criteria and made pools with 5 samples. 17 pool samples are examined in lab.

Result of the analysis:

4 positive results were demonstrated among 17 pool sample.

As these cows were under record, 20 animals which have a positive result were identified and a blood test performed. As a result; **10 cows out of 20 were BVD Antigen Positive.**

Overall test results revealed that 12% of the cows (10/87) which had Embryonic Death were BVD Positive.

Conclusion

BVD has significant consequences in dairy farms:

- Low fertility - early embryonic deaths.
- Increased calving interval.
- Abortion and stillbirth.
- Congenital anomalies.
- PI calves.
- Increased calf death rates.
- Weak, slow growing calves.
- Reduced milk production and quality.
- Other health problems (High Somatic Cell Counts, Mastitis etc.).

In Turkey, the major problem identified in association with BVD is high Embryonic Death Cases which is more than 2 times higher than USA.

Monthly 12% of the 400-430 PD1 Positive pregnant cows have Embryonic Death. This means on average 52 cows are taken back to OPEN status and are exposed to insemination protocol again.

Cost of days open is 6.5 $/day in Atasancak Dairy Farm. *(Cost of open day was defined by Victor Cabrera – Associate Professor Management during his visit to farm in Oct'2017 -* http://dairymgt.uwex.edu/).

As a result; cost of 50 cows with 21 days of extra OPEN status is 1050 days and 6,825 $ / month.

Annual cost of BVD disease is 81,900 $ for the farm.

Recommendation

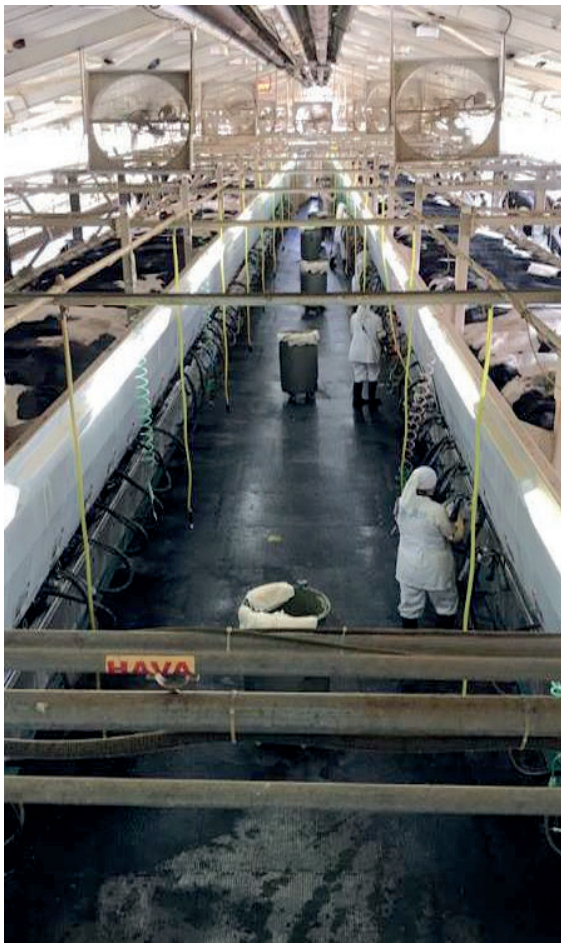
In Turkey, there is no BVD eradication programme or live vaccine currently available; therefore, farms need to bear the economic losses. The cost of BVD is much more devastating when unidentified PI animals are taken into account, which spread infection consistently among the herd. It can be concluded that BVD is one of the most important factors that affect profitability on the farm. **Therefore, our primary need is to have a live vaccine solution for BVD.**

References

1. Huseyin Yilmaz, Eda Altan, Julia Ridpath, Nuri Turan (2012). Genetic diversity and frequency of bovine viral diarrhea virus (BVDV) detected in cattle in Turkey. Comparative Immunology, Microbiology and Infectious Diseases (412-413).

Photos & Videos

Atasancak Farm:



Photos about BVD:

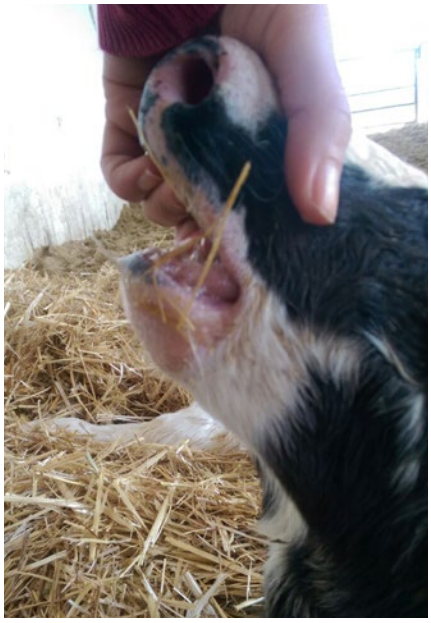
- Anomaly – double anus:

- Mummified foetus abortion:

- Calf with Anomaly (maxillary oedema):

Photos about BVD:

- Calf with Anomaly (short submaxilla):



- PI calf (white, weak, cachectic animal)

- Calf with Anomaly (undeveloped hind legs):

- Early embriyonic death:

Photos about BVD:

- Calf with anomaly:

- Calf with anomaly: