

## FUNGAL POLLUTION IN POULTRY HOUSES ENVIRONMENT OF BATNA REGION

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### Introduction

The frequency of pathogenic fungal flora capable to provoke diseases by direct or indirect action in animals (Land, 1991 ; Kluszek, 2000) and humans (Katja, 2002) must incite veterinarians to institute a sanitary prophylaxis especially based on the improvement on raising and hygiene conditions to avoid microbes proliferation. For it an optimization of environment parameters (temperature, humidity and ventilation) is indispensable (Kolbuszewski and al 1980) but also a rigorous decontamination of buildings after each end of raising (Drouin 2000). The objective of this survey is the quantitative and qualitative assessment of fungal flora in the poultry houses environment in Batna region (Algeria).

### Material and Methods

The survey has been realized on 20 poultry houses with different systems of ventilation (static or dynamic) in summer. The flock population was in buildings between 5000 and 10.000 birds (broiler and started hens), either a density of 10 to 15 birds by m<sup>2</sup>. Birds were in all cases raised on soil on organized litter of straw of 20 to 30 cm of thickness. The rearing period is between 56 to 70 days for broilers and 17-18 weeks for the started hens.

The practical work consisted in making the microbiological samples of the ambient air of buildings, the litters and feeds after the sixth week of raising. 240 samples are achieved in 20 chosen buildings at random according to the technique described by Hamet and al (1986). After incubation to 37°C during 3 days, the identification of fungal flora is made according to the conventional method (Larone, 1987) and (Teeuw and al. 1993).

### Results

Tab.1 Composition of the fungal flora in the 20 poultry houses environment (%)<sup>A</sup>

Fungi species	Air (n=120)	Feed (n=60)	Litter (n=60)
<i>Aspergillus spp</i>	27.00	32.50	35.00
<i>Candida spp</i>	14.50	23.70	14.00
<i>Penicillium spp</i>	10.50	4.00	12.00
<i>Fusarium spp</i>	13.50	12.80	08.00
<i>Cryptococcus</i>	06.50	16.50	10.50
<i>Trichosporon spp</i>	05.60	10.50	-
<i>Fonseceae spp</i>	05.40	-	12.00
<i>Curvularia spp</i>	04.30	-	05.00
<i>Rhodotorula</i>	03.60	-	-
<i>Muccor spp</i>	03.20	-	04.00
<i>Rhizopus spp</i>	02.90	-	-
<i>Alternaria spp</i>	02.00	-	-
Cfu × 10 <sup>4</sup>	0.21/ m <sup>3</sup>	1.7/g	1.9/g

<sup>A</sup> Microclimate : 28-38°C ; 40-65 % RH

Among the most frequent species, *Aspergillus flavus* and *Candida guilliermondii* species are present in all poultry houses with static and dynamic ventilation. *Aspergillus niger*, *Aspergillus fumigatus*, *Aspergillus nidulans* and

*Candida famata*, have been observed only in buildings with dynamic ventilation. *Fusarium spp*, *Cryptococcus neoformans* and *Penicillium spp* are met with a variable frequency in the two different systems of ventilation.

### Dicussion

The major part of fungi species develops themselves when conditions of temperature and humidity are not optimized, especially in the hot and humid regions (Le Menec 1989, Le Bars 1989). The buildings without an adequate ventilation system are the most contaminated, following an increase of the internal temperature and the relative humidity. The pollution of litters is more important than the one of feeds and the ambient air (Tab.1). This doesn't correspond to results found by Lacroix (1990) and Kluszek (1997). It is obvious to note that the microclimate in which are these poultry houses is different than the one described by these two authors. Indeed microclimatic parameters have a big influence on the composition of the fungal flora in poultry houses environment (Land 1991, Rokicki 1996). The proliferation of fungi in feed and litter depend partly on the relative humidity and the temperature in the buildings. It has been demonstrated that some fungi as for example *Aspergillus* and *Fusarium* develop themselves in poultry feed when conditions of storage are bad (absence of ventilation, temperature and elevated humidity). Some isolated fungi in the poultry houses environment can cause some respiratory diseases in poultry (*A. fumigatus*) and man (Katja, 2002); and others risk to drag mycotoxicosis (*A. flavus*) in birds (Rajeswari 1991).

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