

Introduction

Citizens of the United States are increasingly aware of dust and odor from confined animal production. In contrast to air quality impairment from most swine and poultry facilities (which are under roof), air quality impairment from the open lot systems characteristic of beef and dairy production tends to be driven principally by short-term weather patterns. Although it is not the only predictor, the most obvious predictor of dust and odor emissions is the moisture content of the open lot or corral surface. Figure 42-1 is a conceptual diagram of the qualitative relationship between dust potential and odor potential for open lot systems.

Clearly and intuitively, dust predominates at low moisture content and odor at high moisture content, so minimizing both dust and odor by moisture management alone is impossible. However, Sweeten and Lott (1994) and other researchers found that when the moisture content of the open lot surface is between 25% and 40%, both dust and odor potential are at manageable levels. Researchers studying swine odor (Hoff et al. 1997) have found that a significant component of odor results from odorous compounds that are bound to dust particles, so odor potential never completely drops to zero. In the optimum moisture range of 25% to 40% (wet basis), other manure properties such as depth, bulk density, and texture become the more important determinants of dust and odor potential. To better understand the odor risks associated with your own open lot animal housing, an Animal Housing self-assessment tool (see Appendix A) is provided to assist you in a review.

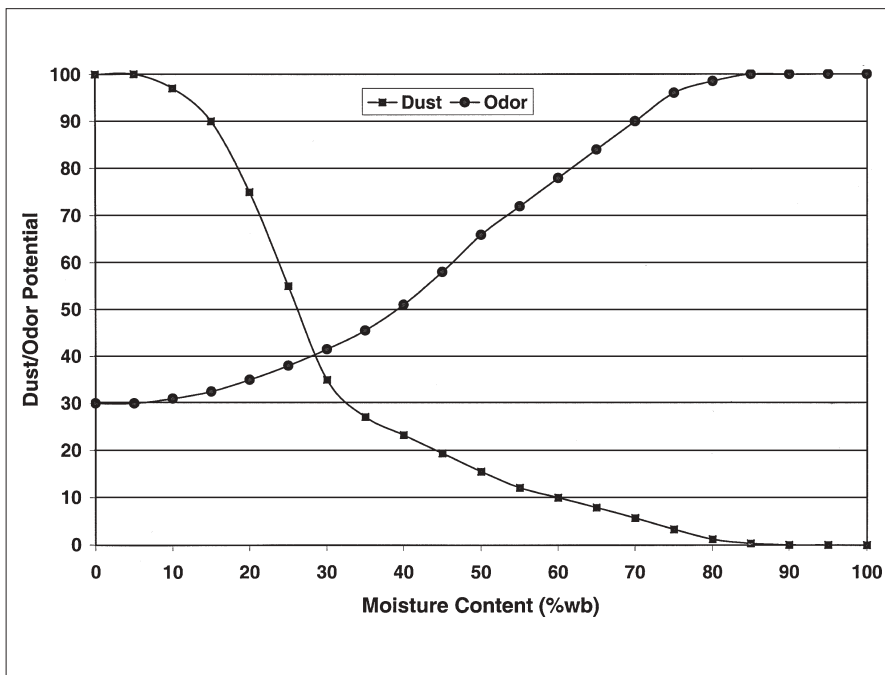


Figure 42-1. Conceptual, qualitative relationship between dust potential and odor potential as a function of the moisture content of an open lot corral surface. (Readers should infer no quantitative significance from the values on the vertical axis.)

...air quality impairment from the open lot systems characteristic of beef and dairy production tends to be driven principally by short-term weather patterns. Although it is not the only predictor, the primary predictor of dust and odor emissions is the moisture content of the open lot or corral surface.