

Animal Disease Spread Model (ADSM)

Text Support Document for Training

The slide-based training was designed to optimize visual interest. This format does not always create a slide bank that is printer-friendly. In some sections, there are many images and little text. This text support document is intended to be a printer-friendly version of the slides that can be used as a reference. This document is not intended to take the place of main training slides.

Training 2 Population and Production Type

Slide	Image	Text
1	Laying Hens	Animal Disease Spread Model Population and Production Types
2	ADSM Application Sample Scenario with Outputs	Table of Contents What is a Population? What is a Production Type? Assembling a Population Sample Scenario What's Next
3	Gear Section Break	What is a Population? (orange bar header)
4	Cattle grazing	The population is the collection of farm units that will be used in the model. A little later we will cover the details needed to make a complete population.
5	Gear Section Break	What is a Production Type? (brown bar header)
6	Cattle contact at fence/image of ADSM production type panel	A key concept in the population is the use of Production Types. A production type describes both the species and the management practice of the farms to be included in the simulation. The Sample Scenario includes very simple production types.
7	Assorted livestock images	The production types that go into the population depend on a number of factors, such as the disease that is being simulated.
8	Assorted livestock images	The production types will also depend on the area (location) that you want to represent and the animal management practices that are commonly used in that area.
9	Piglets nursing	A limitation in building a population may be the information you are able to find about the real farms in the area you want to represent. In the United States, the National Agricultural Statistics Service, Census of Agriculture provides an estimate of farm populations and farm types. www.nass.usda.gov/AgCensus/
10	Cattle up close	Many of the parameters in the model are assigned by production type. For example, disease spread parameters for swine production types might be different for cattle production types, even though you are modeling the same disease. Similarly, direct and indirect movements might be very

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		different between production types for the same species (e.g. swine move from a nursery to a feeder operation, but not from a feeder operation to a nursery). The disease control parameters are also assigned by production type, giving the user flexibility in how control strategies are modeled (e.g. vaccinate large dairy and large and small swine nursery operations only).
11	Gear Section Break	Assembling a Population (yellow bar header)
12	Calves in barn	Assembling the Population Depending on the source of your units, assembling the population file may be a quick process or a long complicated process. The final file is expected to follow some rules for ADSM to recognize the parts of the file that are necessary for the simulation to complete.
13	Spreadsheet showing population file example	File Type ADSM expects the file type to be a comma-separate value, or .csv file. It is possible to make a .csv file with Excel and other programs. The examples that are pictured will be in Excel as it is familiar to most users.
14	Table of definitions	Required and Optional fields in the Population File Field Name, Data Type Description The following fields are required: UnitID, Text, User-defined Identifier of a unit. It is suggested that this identifier be unique. ProductionType, Text, User-defined name of Production Type UnitSize, Integer, Number of animals in the unit, noted in application as Initial Size. Lat, Real (floating point) number, Latitude of the unit, between -90 and 90 inclusive Lon, Real (floating point) number, Longitude of the unit, between -180 and 180 inclusive Initial_State, Text, Disease state at the beginning of the simulation, see valid list on the following slide. The following fields are optional if needed to adjust the disease state: Daysinstate, Integer, Number of days the unit has been in the disease state, null or -1 indicate no days Daysleftinstate, Integer, Number of days the unit has left in the disease state, null or -1 indicate no days
15	Table of valid disease states	Disease State Options for the Required Population File Field: Initial_State Disease State, Single Character Code Susceptible, S Latent, L Subclinical B Clinical C Naturally Immune N Vaccine Immune V Destroyed D
16	Google Map Image	Some critical notes about the population file... Field Names must match exactly as shown, with no spaces Latitude and Longitude (Lat and Lon) must be valid within the accepted world boundaries An error message will appear if the population file import fails to meet the expected guidelines The online version of population requirements has a slightly more flexibility interpretation. A single version is presented here to simplify the process.
17	Cow with ear tag noted as 120.0760.9749.9	Unit ID is reflected in the Supplemental File outputs. It is not necessary to be unique for the application. Therefore, the application is not performing a verification of uniqueness. However, if you wish to perform herd-level follow-up analysis, a unique identifier could be helpful. The thought behind the text identifier is that you may acquire your population from a source that uses a herd-level identifier that has a

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		meaning and needs to be conserved and used for analysis (e.g. CH_120.0760).
18	Gear Section Break	Sample Scenario (green bar header)
19	Horses and pigs on pasture in Hawaii	We will address how to import a population file in the “Getting Started” training section as we start working with the application. The Sample Scenario will allow you to look at a synthetic population and how parameters have been created around the production types.
20	ADSM showing Sample Scenario	The Sample Scenario installed with ADSM
21	Gear Section Break	What’s Next (blue bar header)
22	Flock of Sheep	Join the flock! Learn more about ADSM or try an example ADSM is currently available at https://github.com/NAVADMC/ADSM/releases/latest Try the sample scenario https://github.com/NAVADMC/ADSM/wiki/A-Quick-Start-Guide:-Running-the-sample-scenario Read the wiki pages link https://github.com/NAVADMC/ADSM/wiki
23	Goat on with green foliage	Addition training materials will be posted at http://navadmc.github.io/ADSM/
24	Cattle image Logo, University of Tennessee, Animal Science	This work was funded in whole through Cooperative Agreement AP18VSCEAH00C005 by the Animal and Plant Health Inspection Service, an agency of the United States Department of Agriculture. Photo credits Canva.com Mariposa Ranch Watusi Ken Rager Photography Ali Seamans, Dubois Holler Farms Barton Farm Roksolana Zasiadko unsplash Pinecroft Farms, Woodstock CT, Mariah Chapman