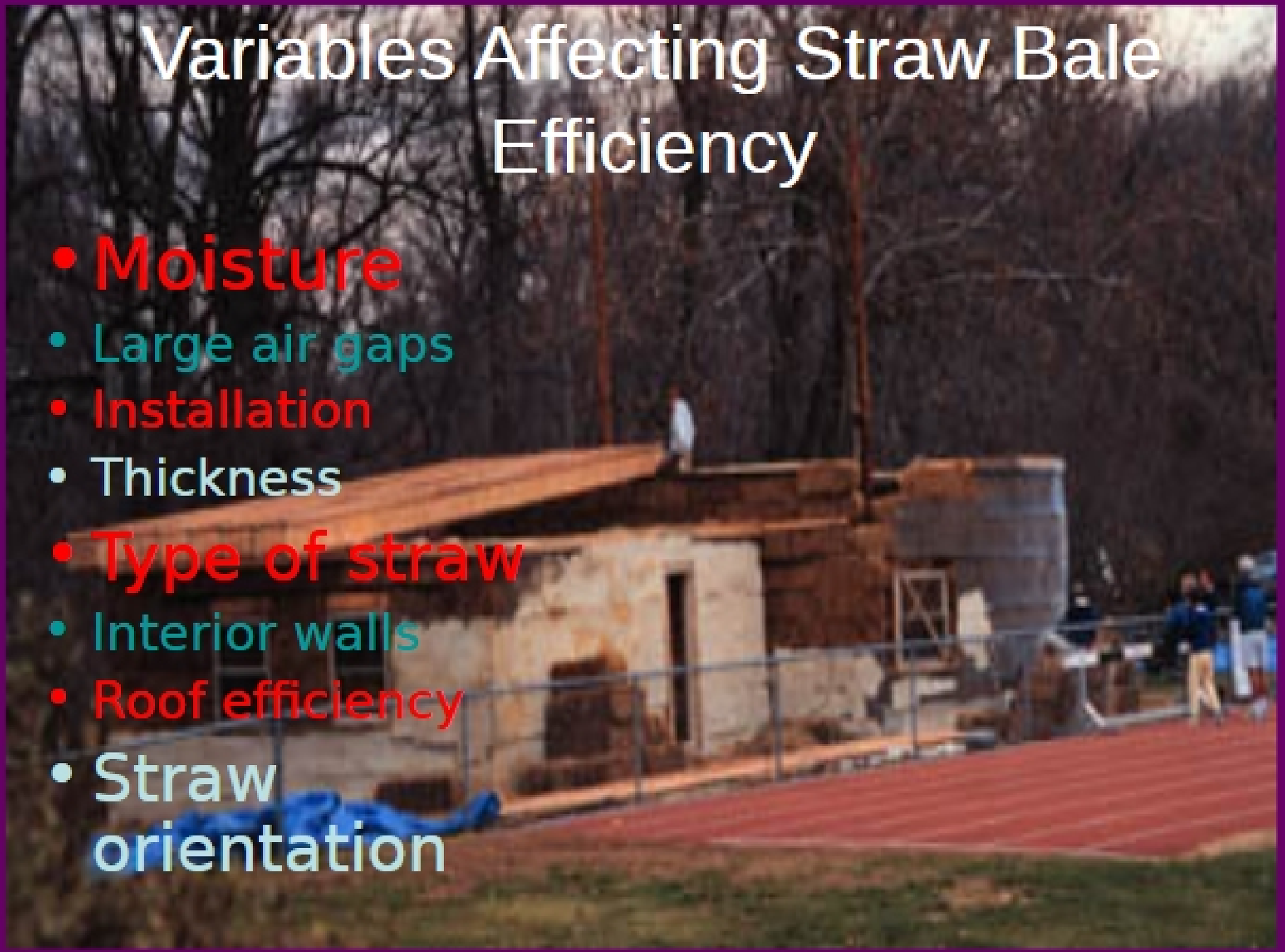

Insulative Values for
Straw Bale Construction
Emily Hartz and
Michael McDonald


Variables Affecting Straw Bale Efficiency
Moisture
Large air gaps
Installation
Thickness
Type of straw
Interior walls
Roof efficiency
Straw orientation

Graphical Comparison of R-Values

Table 1. Straw Bale R-values

	Joe McCabe	Sandia Lab	ORNL	CEC	CEC	ORNL
Test procedure	Hot plate, single bale	Thermal probe, single bale	Hot box, full wall	Approved values	Hot box, full wall	Hot box, full wall
Test date	1993	1994	Oct. 1996	Dec. 1996	May-97	Feb. 1998
Type of straw	Wheat	Not listed	Wheat	Any	Rice	Wheat
Type of bale	3-string, 23 in	2-string, 18 in	2-string, 18 in	3-string, 23 in	3-string, 23 in	2-string, 19 in
Moisture content	8.40%	Not listed	Not listed	20%	11%	13%
Density lb/ft³	8.3	5.2	Not listed	7	6.7	8
R-value/ in	2.38	2.67	0.94	.56-.91	1.13	1.45

Source: Commins and Stone, "Tested R-value for Straw Bale Walls and Performance Modeling for Straw Bale Homes," 1998 ACEEE Summer Study on Energy Efficiency in Buildings Proceedings.

http://hem.dis.anl.gov/eehem/99/990306.html