

Ground wheat straw as a substitute for portions of oak wood chips used in shiitake (*Lentinula edodes*) substrate formulae [An article from: Bioresource Technology [HTML] (Digital) by D.J. Royse (Author), J.E. Sanchez (Author)]

Book Description

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Description:

Oak woodchips, used for production of shiitake *Lentinula edodes* (Berk) Pegler, are increasingly difficult to obtain due to dwindling supplies. We investigated the effect of adding ground wheat straw as a substitute for portions of oak woodchips in substrate formulae on mushroom yield and size. We also determined the effect of mushroom cropping on relative feed value (RFV) by chemical analysis of the substrate at spawning (AS) and after cropping (AC). Three formulae containing 0%, 8% and 16% ground wheat straw and 52%, 44% and 36% oak sawdust, respectively, were bulk pasteurized (111°C for 20min) in an autoclaving mixer, subjected to spawn run (21d), browning (28d) and a production cycle of three breaks (38d). Mean (4 crops) mushroom yields were 11% higher when 8% wheat straw was used in the medium and 19% higher when 16% wheat straw was substituted for portions of oak sawdust. There were no significant differences in mushroom sizes between any of the treatments. Relative feed values of shiitake substrates AC increased more dramatically as more wheat straw was added to the formulae. Using mature alfalfa (full bloom) as a base value of 100%, RFVs for substrate AS were 98%, 92%, and 92% for 0%, 8% and 16% straw, respectively; RFVs AC were 118%, 120% and 133%, respectively. Substrate AC containing 16% straw had a RFV comparable to corn silage (well-eared). Fat contents of the substrates decreased by 50-62% AC, whereas potassium contents decreased by 40%. Use of ground wheat straw in synthetic medium would not only increase mushroom yield by up to 19%, but may help alleviate periodic shortages of oak sawdust. In addition, growers would avoid the added expense of aging the wheat straw (for 8-12 week) as is typically done for oak sawdust in the industry. This is the first report of RFVs for spent shiitake substrate (SSS) predicting its excellent potential for use as animal feed.