

16. Colonized wheat straw can be used to inoculate the next batch, up to the sixth batch

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White rot fungi can selectively degrade lignin and, thereby, improve the fermentability and nutritional value of (highly) lignified biomass. The aim of this study was to determine if treated wheat straw, i.e. colonized with a fungus, can be used successively as inoculum for next batches, and to examine how many times the process could be repeated before detrimental effects to fermentability improvement. Organic wheat straw was treated by a first incubation for 7 weeks with spawn of *Ceriporiopsis subvermispota* or *Lentinula edodes*, after which 10% of colonized batches were used to inoculate the next batch. In total 6 successive batches were produced. *In vitro* gas production (IVGP) and chemical composition were determined after 0, 2, 4, 6, 7, and 8 weeks of incubation for the first and second batch, and after 0 and 7 weeks for the third to sixth batch. Incubation with both fungi increased the IVGP, except the *L. edodes* treatment just showed a trend to improve the IVGP at the second batch. The dry matter loss when using spawn was higher than in the following treatments using the colonized wheat straw as inoculum. Both fungi increased the cellulose content in general and decreased the lignin and hemicellulose content in all six batches, but all lignin, cellulose, and hemicellulose were decreased when expressed as absolute amount. In summary, *C. subvermispota*, and *L. edodes* treated wheat straw can be effectively used to inoculated a next batch and this process can be repeated at least six times.