



## **Recycling of Agriculture and Animal Farm Wastes into Compost Using Compost Activator in Saudi Arabia**

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**Abstract:** Saudi Arabia, as well as other countries in the Near East region, is characterized by erratic weather conditions, limited area of fertile arable lands, and with acute water shortage. Although agricultural residues (AGR) production in the region is huge (more than 440 million tons), most of these residues are either burned in the field or utilized in an inefficient way. Utilization of AGR as compost may contribute to expansion of arable lands through its use for reclamation of soil and reduce irrigation requirements. This study was conducted at Al Khalidiah farm, Riyadh, Saudi Arabia to assess compost production at large commercial scale using several types of agricultural and animal by-products with addition of a BZT®Compost Activator (based mainly on microorganism, enzymes and yeast). In this study, two types of compost piles were made at the farm. The first pile of compost was made of different agriculture residues, namely: animal wastes (quail, goat and sheep manure), brownian agricultural wastes (windbreaks residues, date trees, citrus and olive trees pruning) and green landscape grasses (50%, 25% and 25%, respectively) and was treated with a tested compost activator. The same agriculture residues combination was also made for the second pile as traditional compost (control or untreated compost) without the activator. The two piles were turned every 5 days; then moisture, temperature was checked and values were recorded every five days. Composite samples were collected regularly for testing chemical and biological parameters such as: nitrogen, potassium, organic matter, organic carbon, C/N ratio, heavy metals, total viable bacterial counts, yeast and molds, total coliform, fecal coliform and salmonella detection. The results showed a specific decrease in C/N ratio of compost activator treated pile to 15:1, combined with production of compost free of *Salmonella*, total coliform, fecal coliform, mycotoxins and heavy metals. The tested Compost Activator stimulates the composting process with concentrated bacteria and enzymes, the same bacteria and enzymes that occur in nature. This accelerated method provides good quality compost product in shortest time, as little as 35 days in comparison with 68-180 days for the traditional compost without activator materials (the traditional method). It could be concluded that the commercial compost product made from agriculture residues and treated with the tested compost activator is a safe alternative to chemical fertilizers and the best soil amendment that nature provides. These agricultural residues, when fully exploited could have an important role in bridging the food gap in Saudi Arabia.

**Key words:** *agricultural residues, organic wastes, recycling, animal wastes, BZT® Compost Activator*

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