

BÖLÜM 6

TARIMSAL ATIKLARIN ANAEROBİK BİRLİKTE ÇÜRÜTME ALTERNATİFLERİ

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GİRİŞ

Günümüzde fosil yakıtların kullanımından kaynaklanan çevresel etkiler sonucu gelişen iklim değişikliği, küresel bir endişe kaynağıdır. Fosil yakıtların kullanımını azaltmak amacıyla yenilenebilir enerji kaynaklarının geliştirilmesi ve kullanılması, Birleşmiş Milletler'in Sürdürülebilir Kalkınma Hedefleri'ne ulaşmada kilit bir faktör olarak kabul edilmektedir (1). 2018 yılında Avrupa Komisyonu, ülkemizin de taraf olduğu Paris İklim Anlaşması kapsamında 2050 yılına kadar iklim nötr hedefleri içeren uzun vadeli bir strateji duyurmuştur (2). Avrupa Birliği'nce güncellenen biyoekonomi stratejisi ve 2050 iklim nötr hedefleri, enerji sektörünü karbondan arındırmaya zorlamakta ve enerji konusunda yakın gelecekte fosil yakıtlara yer olmayacağı anlamını taşımaktadır (3).

Alternatif kaynaklardan enerji üretmek, iklim değişikliğinin azaltılmasına ve çevreye verilen zararların en aza indirilmesine yardımcı olacaktır (4). Enerji erişilebilirliğini arttırırken aynı zamanda dünya çapındaki sıcaklık artışını 2 °C ile sınırlamak amacıyla, enerji verimliliği teşvik edilmeli ve önemli ölçüde artırılmalıdır (5). Yenilenebilir enerji üretiminin alternatif yollarına yönelik bu artan ivme, farklı hammaddelerin dikkate alınmasını, yeni tekniklerin geliştirilmesini ve mevcut teknolojilerde iyileştirme yapılmasını gerektirmektedir (6).

Yenilenebilir enerji kaynaklarının kullanımına dönük tüm çabalara rağmen günümüzde yenilenebilir enerji kullanımının toplam enerji kullanımı içerisindeki payı ancak %13 seviyesindedir (7). Güçlü bir geçmişi ve olgunlaşmış teknolojisiyle anaerobik çürütme (AÇ), mevcut enerji ihtiyaçlarını karşılama, sera gazı emisyonlarını azaltma ve besin maddelerini biyolojik döngüye geri kazandırma potansiyeline sahiptir. Ancak gelişmiş ülkelerdeki yasal düzenlemeler

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yüklerde bazı substratların inhibitör özelliklerinin kontrol edilmesi gerekebilir (66). Aşırı/substrat oranı 1:1 şeklinde uygulanmaktadır, fakat istisnai durumlar da görülmektedir (67).

SONUÇLAR VE ÖNERİLER

Hayvansal gübrenin AÇ prosesinde mono-substrat olarak değerlendirilmesi, düşük karbon/azot oranı ve uygun olmayan azot konsantrasyonlarıyla birleştiğinde, ekonomik verim mümkün görülmemektedir. Sonuç olarak, tarımsal biyogaz tesislerinde çürütme potansiyellerini iyileştirmek ve AÇ sürecini dengeli hale getirmek için hayvansal gübrenin lignoselülozik biyokütle ile birlikte sindirilmesi tercih edilmelidir.

Yüksek AÇ teknolojilerinin kullanımıyla çiftlik düzeyinde mevcut kaynaklardan yüksek kaliteli biyogaz eldesi, birlikte çürütme ile olanaklıdır. Böylece ekonomik miktarda üretilen biyogaz, biyometan kalitesinde ek altyapı, lojistik veya özel yakıcı ve jeneratörlere ihtiyaç duyulmadan ve saflaştırılmadan kolayca kullanılabilir.

Birlikte çürütme, AÇ tesislerindeki mevcut kapasiteyi daha iyi kullanmak amacıyla daha fazla organik madde kullanımına olanak sağlayarak üretilen biyogaz enerji miktarını artırır. Böylece tarımsal biyogaz tesisleri elektrik enerjisi üretebilecek ölçeğe ulaşarak, tesislerin ekonomik fizibilitesini geliştirir. Ayrıca birlikte çürütme, biyokütlenin bir sektörden başka bir sektöre aktarılmasına imkân tanıyarak sektörler arası iş birliklerinin artırılmasını sağlar.

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