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HAYVANSAL ÜRETİMDE ENERJİ YÖNETİMİ KİTABI

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ÖNSÖZ

Toplumlarda tarımın çevre üzerindeki olumsuz etkisine ilişkin farkındalık kısmen yakın zamanda oluşmaya başlamış olsa da, tarımdaki enerji konusu muhtemelen ilk kez 19. yüzyılda bilimsel olarak ele alınmıştır. Ancak, tarımdaki enerji konuları genel olarak 1970'lere kadar bilimsel analiz alanının dışında kalmıştır. Enerji krizi ekonominin çeşitli sektörlerinin enerji verimliliğinin dikkate alınmasını sağlamıştır. İklim değişikliğinin etkileri daha da keskinleştikçe, karbondan arındırma kapsamını genişletme ihtiyacı ortaya çıkmaktadır. Tarım sektörünün karbondan arındırılmasının kaçınılmaz olduğu konusunda giderek artan bir fikir birliği vardır. Bu süreç çeşitli şekillerde gerçekleştirilebilir. Hayvancılık işletmelerinde üretilen hayvan atıklarının hem çevresel hem de ekonomik yönleri dikkate alınarak yönetilmesi gerekir. Diğer taraftan hayvancılıktan kaynaklanan günlük emisyonları azaltma ihtiyacı başka bir sorundur. Bu sorun, sindirimi daha kolay olan işlevsel yem üreterek giderilebilir. Bu uygulama, çevreye günlük sera gazı (GHG) salımını azaltırken, aynı zamanda israf edilen yem miktarını da azaltacaktır.

Hayvansal üretim için kullanılan enerji, hem doğrudan hem de dolaylı kaynaklardan karşılanır. Bu amaçla, çiftlik kapısına kadar kullanılan tüm enerji dikkate alınır. Doğrudan enerji kullanımı, çiftlikte gerçekleşen hayvansal üretimde tüketilen tüm enerjiyi belirtir. Doğrudan enerji tüketimi, çiftlik içi tüm uygulamalar ve makine kullanımı, ürün işleme ve besleme, sağım süreçleri (sağım ve süt soğutma), gübre yönetimi ve hayvan barınağının iklimlendirilmesi (aydınlatma, ısıtma, soğutma, nem alma ve havalandırma) için kullanılan enerjiden oluşur. Dolaylı enerji kullanımı, hayvansal üretimle ilişkili ancak çiftlikten önce tüketilen enerjiyi belirtir. Dolaylı enerji tüketimi, gübre, pestisit üretimi ve hayvan yemi üretiminde kullanılan enerjileri kapsar. Yem hammaddeleri de dahil olmak üzere hayvan yemi üretmek için kullanılan tüm enerjiyi içerir. Uygulamada, hemen hemen tüm çalışmalarda hayvan yemi hakkında dolaylı enerji kaynağı olarak veri bulunmaktadır. Yapılan araştırmalarda, tarımsal binaların, ekipmanların ve makinelerin üretimiyle ilişkili enerji kullanımı dahil edilmemiştir. Bu yaklaşım, birçok çalışma bu verileri enerji kullanım verilerine dahil etmediği için seçilmiştir. Ek olarak, bu tarımsal altyapının doğru bir şekilde ölçülmesiyle ilgili önemli sorunlar vardır. Çünkü bu durum tarımsal altyapının kullanımıyla ilişkili uzun zaman çerçevesi nedeniyle, genellikle endüstri gibi diğer sektörler ile ilişkilidir.

Hayvancılık sistemlerindeki enerji kullanımında verimliliğin artırılması, ileriki yıllarda sürdürülebilirlik hedeflerine ulaşmak için müdahaleler geliştirme konusunda yardımcı olacaktır. Yaşam döngüsü değerlendirmelerinden elde edilen sonuçlar, enerji kullanımının yem, barınma ve gübre yönetiminde yoğunlaştığını göstermektedir. Çoğu sistemde hayvan yemi en önemli enerji kullanım kategorisidir. Hayvansal üretimde enerji kullanımı fosil yakıtlara bağlıdır. Bu nedenle yenilenebilir enerji kaynaklarına geçilmesi ve enerji verimliliğinin artırılması gerekmektedir. Çevresel açıdan bakıldığında, süt hayvanlarının sayısındaki artış ve buna bağlı olarak süt üretimindeki artış, süt çiftliklerinde enerji tüketimi ve ilgili GHG emisyonları ile ilgili önemli zorluklarla karşı karşıyadır. Süt üretim sürecinin enerji yoğunluğunun izlenmesi ve etkin bir şekilde azaltılması, önemli çevresel faydalar sağlayabilir.

Yirmi sekiz bölümden oluşan bu kitapta; hayvansal üretimde enerji yönetimi ve enerji verimliliğine ilişkin bilgiler derlenmiş ve temel özellikler incelenmiştir. Çalışmanın konu ile ilgilenenlere yardımcı olmasını dilerim.

Prof.Dr. Hasan Hüseyin ÖZTÜRK

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