

### 第三章

## 畜牧业遗传多样性变化的意义

在以土地为基础的家畜生产系统中，畜禽物种和品种是经过广泛标准选择的结果，包括与各种环境挑战相关的适应特性。通过消除环境应激，产业化生产系统允许在较狭窄的范围内集中选择标准。产业化生产系统的特点是生产的标准化以及高度控制的生产条件。这些系统也十分专业化：它们使用单一产出量或产出减少的数量来使生产参数最优化。产业化生产系统动物遗传要求的特点如下：

- 物种和品种适应当地环境的要求较低；
- 由于动物在封闭系统中饲养，对疾病的抗性和忍耐力要求较低，农民依赖高强度地使用兽医投入；
- 对效益要求较高，特别是饲料转换率，要使每头动物的效益最大化（在产业化生产系统中，饲料成本实际上占生产总成本的60%~80%）；
- 由于消费者需求，以及与标准化、体型、脂肪含量、颜色、味道等相关的技术要求，对质量特性要求更高。

畜牧生产的产业化在养猪业和养禽业最为先进。特别在欧洲、北美和澳大利亚，养猪生产实现了高度产业化，少数跨国育种公司主宰了整个生产链。而禽业是畜牧生产所有形式中产业化程度最高的，目前禽业产业化生产正向许多发展中国家普及。乳牛生产也日益依赖于少数乳牛品种。这种趋势在发达国家进步最快。在发展中世界的大部分地区，小型生产者主宰了乳牛业，但是，在城镇周边地区越来越多地使用外来品种或杂交品种以满足城镇日益增长的市场需求。受需求的驱动，也可以通过改善动物卫生服务和其他服务以及提高技术来促进这样的变化，改善的动物卫生服务和其他服务，以及提高的技术允许饲养不太适应本地生产条件的动物。产业化生产系统和相关的民营育种公司拥有培育符合要求的品种的资源。他们已经培育出了高度专有化的品种，在当前消费者要求和资源成本条件下该品种的生产力最大化。这些发展在家禽和养猪生产中特别明显，在乳牛业也出现。其结果是，在畜牧生产产业化已经实现了30~40年时间的发达国家已经发生了品种的大量侵蚀（参阅第一部分第二章）。

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但是,从中远或长远来看,产业化系统中的品种选择标准需要进行修正。目前,产业化生产的发生具有以下特点:低投入物价格(例如谷物、能量和水)、在当地缺乏环境和公共卫生政策;以及在发展中国家,公共一般很少关注动物饲养的条件。只有当公共政策到位,以调节反映资源社会成本的资源价格,消费者更加关注动物生产的农业生态和福利方面,经济环境才会改变。

与产业化生产系统的发展一起,低至中等外部投入物的生产系统继续存在,特别是经济增长不太快的地区或产业化所需的资源和支持服务缺乏的地区。这些情况可以在较粗放环境条件的地区(例如干旱地、山区和寒冷地区)或与城市需求中心联系较差的农村地区发现。在这些情况下,生产系统继续向当地社区提供各种产出,且畜禽通常有多种用途(参见第一部分第四章)。畜禽养殖常常与传统的生活和文化方式密切联系,特别是在牧场系统中。因此,低等至中等外部投入物生产系统对动物遗传资源有着特殊的要求。它们依赖于本地品种,或在某些情况下,依赖于杂交品种或含有本地品种遗传材料的复合品种。

除了动物遗传资源对生产环境的适应性以外,与放牧和混合耕作系统相关的动物遗传资源也受到了威胁。问题常常由不适宜的畜禽培育政策所引起。而且,在人口增长和气候变化的情况下,基于小型草地的混合生产系统正面临日益增长的资源压力,这可以威胁到相关的动物遗传

资源。例如,饲料资源短缺可导致转向饲养绵羊和山羊,而不饲养大型反刍动物,或转向饲养驴而不是牛作为畜力。为了使生产系统可持续,需要提高系统的效率,特别在土地和水资源的利用方面。而且,还需要努力提高作为收入来源的可销售畜产品的生产,这样可以获得提高系统生产力和可持续性所需的投资(例如土壤保持措施)。

如果要获得较广范围的市场准入,这些系统生产的肉品和乳品将不得不满足消费者所需的质量标准。在改善生产力特性和维持对当地环境的多种功能和适应性的同时,要实现这些目标是一项巨大的挑战。在这种情况下,当地家畜的遗传多样性看来是要利用的主要资源。评估个体动物的生产性能应包括以下标准:生命周期的生产力(例如每头母畜后代的数量)、畜群或禽群的经济回报(与个体生产性能相比)和生物效率(产出/投入比率)。实质上,如果不考虑期望动物生产的特殊环境,品种发展的推荐方法的价值将很低。一方面,这种特殊环境是气候、饲料资源的可获得性和疾病挑战的组合;另一方面,是这些条件的管理控制的程度。所产生的各种各样的情况使得我们需要许多种类的品种。而且,社会、经济和文化因素也影响物种、品种、产品和产品质量的选择。

甚至在发达国家或经济迅速增长和基础设施发展良好的发展中国家,传统、粗放的生产继续形成非正式市场和利基市场

(niche market), 例如当地的土特产品, 高质量产品和有机食品。在泰国就有一个本地非正式市场持续存在, 据估计泰国20%的家禽生产将不依赖大型业主。在欧洲和世界其他地区的有机农场的特点是作物和家畜的高度综合化, 使用有限的化学投入物, 且常常使用典型的本地品种。在一般情况下, 生产的哲学不允许规模扩大, 这也受到低生产量的限制, 在2003年, 有机牛奶和鸡蛋分别仅占欧盟总生产量的1.5%和1.3%。

在以草地为基础的生产系统中, 环境服务的提供日益成为发达国家国家政策的重点。在这种情况下, 生产者不得不调整生产实践, 使服务的提供最大化而不是常规畜产品的生产量。品种选育标准不得不适应这些新目标。所选择的特性将与不同来源的生物质的消费(草、灌木和树)和其功能效应相关, 例如风景保护、生物多样性保护、碳截存、土壤保护和养分循环。

品种培育总是高度动态性的, 并由特殊环境和人类需求之间的强烈互作所驱动。一个更依赖于物种内差异(品种多样性)而不是依赖于额外物种驯化的大量遗传多样性是经过长时间的培育而形成的。近来, 产业化生产过程导致了遗传资源库的缩小。但是, 无论现在还是将来, 正是遗传多样性向养畜者提供了寻找与生产系统的特殊要求相匹配的遗传资源的机遇。同时, 生产系统现存的多样性保证了高度多样性的家畜遗传资源的利用。要做到这一点的一个先决条件是, 需要提供与品种相关的必要信息, 且保证遗传材料的索取和交换畅通无阻。

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