GENETIC VARIATIONS IN GROWTH AND BODY COMPOSITION
OF MALE CATTLE

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ABSTRACT

The relationship of growth potential, relative growth of body components, and chemical composition of the body weight gain to genotype was studied in bulls of some French breeds. It was evident that the animals of large beef breeds such as Charolais and Maine Anjou have a birth weight and growth potential superior to those of smaller beef breeds or dairy breeds. All the beef breeds had carcass, muscle and protein yields greater, but an energy content of gain lower than the dairy breeds. They were less efficient in converting the energy intake into net energy but were more efficient in converting the energy intake into meat.
INTRODUCTION

The first studies of body composition in cattle have allowed some general principles to be made clear about the composition of body weight gain (Trowbridge et al., 1919; Callow, 1948). Later studies carried out on castrated animals have shown a genetic variability (Callow, 1961; Anon., 1966). Since then, many studies have been undertaken around the world on meat producing capacity of different genotypes and more particularly, those breeds used for that purpose. Generally, these beef breeds are used in cross-breeding for young bull production, in Europe (Colleau, 1974; Langholz and Kanning, 1975; Daenicke and Oslage, 1976; Andersen et al., 1976; Bibe et al., 1976) or steer production in Great Britain (Baker, 1975) or in the United States (Smith et al., 1976). The purpose of this work is to determine the important differences that exist between large size and/or late-maturing breeds and dairy breeds, as far as weight gain and composition of gain are concerned, as well as feed-efficiency.

VARIATIONS IN GROWTH RATE AND CARCASS COMPOSITION AT SLAUGHTER

Two experiments were carried out to study growth rate and carcass composition in beef breeds (Charolais and Limousin) or dual-purpose breeds (Maine Anjou), as well as, the range of dairy-beef variability among Holstein Friesian, Normand and Charolais. The results obtained were joined together by expressing the data graphically in relation to Charolais. The first experiment, carried out at the Experimental Station of Bourges, involved a reciprocal crossing scheme between Charolais (CH), Maine Anjou (MA) and Limousin (LI) with a purebred Hereford control (HE). In the second experiment, at the experimental farm of Le Pin au Haras, three purebreeds, Charolais, Holstein-Friesian (H) and Normand (NO) and two crossbreds (Charolais x Normand (CH x NO) and Holstein x Normand (HO x NO)) were compared (J. Colleau, 1974, 1976). The numbers of slaughtered animals are given in Table 1. In the