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Overview of Holstein sperm importation in Iran

Joezy-Shekalgorabi, S.[1], Shadparvar, A. A.[2]

[1]Islamic Azad University, Shahre Qods Branch, joezy5949@gmail.com

[2]Guilan University

Abstract

Status of Holstein sperm importation to Iran has demonstrated from 1994 to 2008. Average sperm importation was 72 and 38 percent for Sire of Sire (SS) and Sire of Dam (SD) pathways, respectively. Contributions of donor countries in SS pathway were 60% from America, 33% from Canada and 1% from European countries. For SD pathway the contributions were 58, 32 and 10 percent for America, Canada and European countries, respectively. Sperm importation from America has had ascending trend from 2000. Average age of imported sperm was 12.98 years in SS pathway and 12.65 years in SD pathways. Average age of imported semen had a decreasing rate in the recent years. Use of inside proved sperm has drastically decreased especially in SS pathway in the recent years. More genetic and economic response has led to more use of imported sperms in spite of their higher price. The reason for higher use of American sperms could be more emphasis on milk production. This trait is one of the most important breeding goals in Iran. International evaluation is necessary for choosing the best sperm for importation to Iran. To have more contribution in the market, AI center of Iran has to optimize its progeny testing and sire selection program.

Introduction

A common practice in Iran is to introduce sperm from foreign countries. Ignorance of Genotype by Environment interaction is one the most important risks when semen importation. It means that the semen imported from the exporting country might not match to the environmental characteristics of the importing country (Lopez-Villalobos et al. 2001). This interaction may

leads to different ranking of semen imported to different countries. Breeding plans are designed according to economic value of traits in different countries. The most important economic traits in Iranian Holstein are milk production, fat percentage of milk and herd life (Joezy Shekalgorabi, 2005). Sire paths (Sire of Sire and Sire of Dam) make the major part of genetic improvement in a four selection pathway (Van Tassll and Van Vleck, 1990). Current study aims to demonstrate the status of Holstein sperm importation to Iran in Sire of Sire and Sire of Dam pathways during the last decade.

Material and Method

Data were collected from Animal breeding and Milk Improvement center of Iran. To find out the value of importation in Sire of Sire pathway, sire of sampled young bulls for progeny testing program were defined from 1994 to 2008. Source country of the imported sires were defined according to their special code allocated by the Animal Breeding Center of Iran. Age of sire of young bulls from different countries were also defined. Similar process were done to find out the source country and age of sires used in the Sire of Dams. Percent of imported semen and inside proved sperm in different selection pathways was calculated. Percent of import from different sources (i.e. US, Canada and Europe) were also defined in both Sire of Sire and Sire of Dam pathways. Data were analyzed using Microsoft Office- Access 2007.

Result and Discussion

Average sperm importation was 72 and 38 percent for Sire of Sire (SS) and Sire of Dam (SD) pathways, respectively.

The value of sperm consumption from different sources in Sire of Sire pathways is illustrated in figure 1. Source of sperm has changed drastically during 1994 to 2000. After 2000 sires from United State were more likely to be selected by the farmers. While European sires had the least interest to be used as Sire of future Sire. Canadian sires had a moderate value in 1994 to 2000. But insemination of their sperm has decreased by increase in American sire usage. Inside proved

sperm has lost its interest during the last decade. Average contributions of donor countries in SS pathway were 60% from America, 33% from Canada and 10% from European countries.

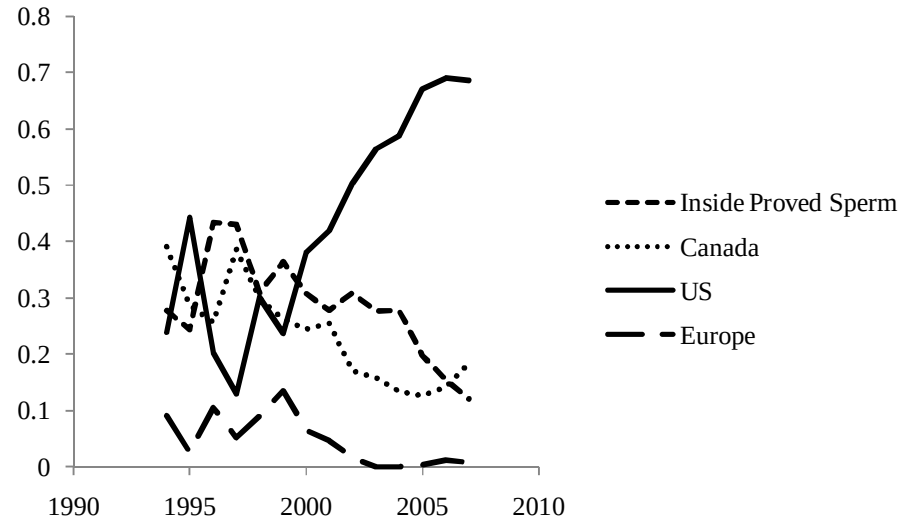

Figure 1. Holstein sperm source in Iran from 1994 to 2008 in SS pathway

In Sire of Dam pathway similar trend were found for American sires (Figure 2). On this path inside proved sperm were the major source for producing daughters before 2003. After 2003 the major part of the sires were American sires. European and Canadian sires had the least contribution on this path. For SD pathway the contributions were 58, 32 and 10 percent for America, Canada and European countries, respectively.

Average age of imported sperm was 12.98 years in SS pathway and 12.65 years in SD pathways. Average age of imported semen had a decreasing rate in the recent years. High age of imported sperm leads to higher generation interval in sire pathways. This will decrease genetic improvement per year. Lower genetic improvement will lead to lower efficiency of semen importation.

More genetic and economic response has led to more use of imported sperms in spite of their higher price. Higher use of American sperms could be because of more emphasis on production

traits in US selection goal comparing European countries (Shook, 2006). This trait is also one of the most important breeding goals in Iran.

Mpofu (1993) found that sperm importation was one of the most economic strategies in dairy cattle breeding in developing countries. However efficiency of sperm importation depends highly on genetic correlation of different traits between importing and exporting countries and the sperm price. Because of Genotype by environmental interaction between sires in different country, it is necessary to implement International evaluation for choosing the best sperm for importation to Iran. To have more contribution in the market, AI center of Iran has to optimize its progeny testing and sire selection program.

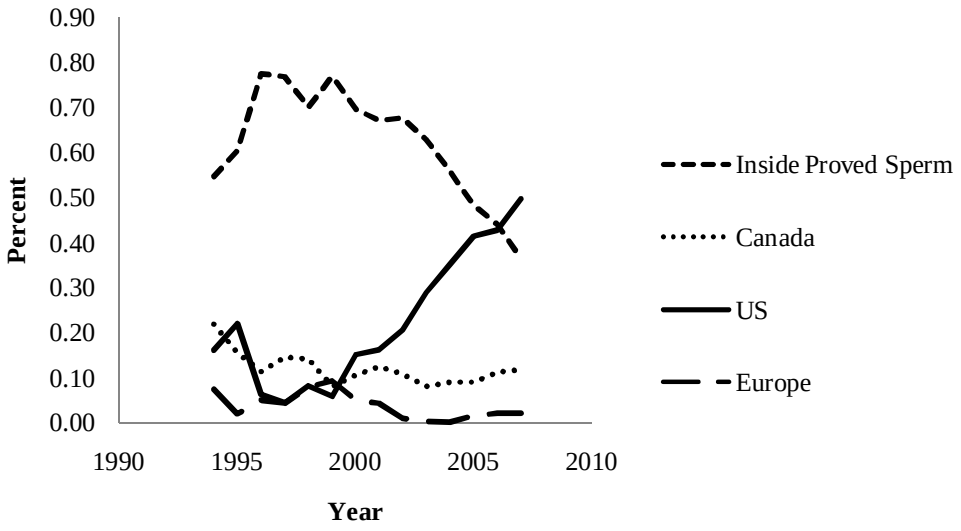

Figure 2. Holstein sperm source in Iran from 1994 to 2008 in SD pathway

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