



ASSESSMENT OF THE BREEDING PROGRAMS OF ANIMAL BREEDS

Joint meeting WG ERFP 3 June 2021

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PROGRAMA NACIONAL DE
CONSERVACIÓN, MEJORA Y FOMENTO
DE LAS RAZAS GANADERAS.



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A. Activities in MYPow 2019-2023 ERFP

B. Spanish protocols:

- Objective**
- Key points**
- Design of protocol. Timeline and participants**
- Data collection**
- Assesment of data: indicators**
- Final Report with results and conclusions**

C. Tasks/procedures ERFP to be developped and points to be decided

A. ERFP Multi-Year Programme of Work (MYPow) **for the period 2019 – 2023**



4. Improvement of documentation of AnGR in Europe

4.4. Development and improvement of AnGR indicators

Indicators will be refined or proposed by the WG (classification of endangered breeds, assessment of breeding programs)

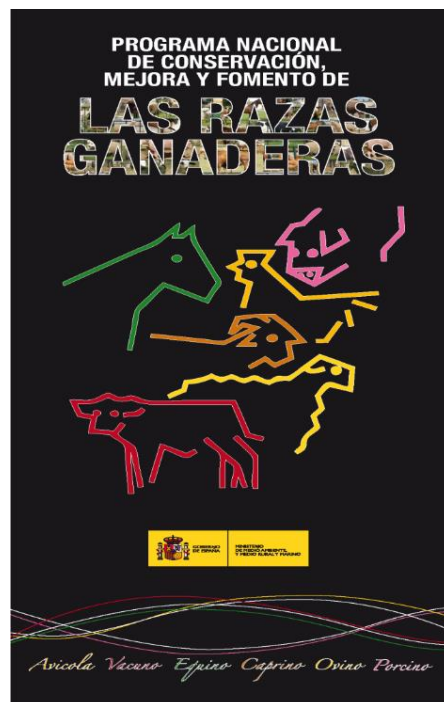
The aim of the assessment of breeding programs is to help identifying strengths and weaknesses of current breeding programs. A specific Task Force (TF) could be designed to address this issue appropriately through some indicators. This action could be done in connection with the other working groups according to the objectives of the breeding programmes and the type of indicators.

ERFP long term goal is to achieve that calculation of indicators will be automatized from the data stored in EFABIS (DAD-IS).

A close attention should be given to align proposed AnGR indicators to the United Nations Sustainable Development Goals (SDG) especially indicator 2.5.1 and 2.5.2

The GenRes Bridge project will also look further into the indicators for AnGR: Look at Key commitments proposal

B. Spanish protocol for assessment of breeding programs



OBJECTIVE

Assessment with defined criteria the evolution and results of the official breeding programs, to identify and evaluate the strengths and weaknesses, the critical points, the level of progress and needs: looking for new orientations, solution of problems, more effectiveness and efficiency

4 protocols for assesment 4 types of breeding programs:

- Dairy breeds with genetic evaluation
- Meat breeds with genetic evaluation
- Conservation programs
- Genetic Horse BP with genetic evaluation (competiton)



THAT´S THE QUESTION:

**¿ARE THE BREEDING PROGRAMS
WORKING PROPERLY?**

Impact

KEY POINTS

From government perspective: Powerful tool for the Government that has been supporting breed societies and BP for many years: POSITIVE OUTCOME

- Based on indicators: Already indicators System to give subsidies (most of them available in the National System breed Information (ARCA) for all kind of breeds)
- Aligned with EU/global policies that tend to have available indicators for assesment and implement policies looking for objetive and transparent parametres (CAP, ODS, Biodiversity...)
- It will enable the priorisation of activities of BP to be supported, orientate future subsidies and follow up the implementation of the public money given to breeding industry: Benefits for society and recover the investments made for long previous periods
- A kind of external audit mandatory for **national** breed societies and recommendable from Ministry to regional authorities for regional breed societies
- Neccesary: support of the genetic evaluation centres, confidentiality of results, flexibility and dynamism to start with (review and update of protocols in the future

KEY POINTS

There could be some problems: Some reluctance/suspicion from breed societies about the use of the outcome and the consequences on subsidies, tedious task, load of work, burden, long procedures, data collection to be analysed and processed, analysis of results and accurate conclusions

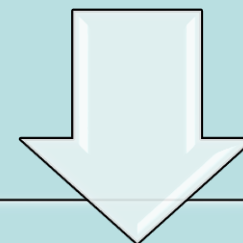
From other perspectives (research): It could be also a positive tool to technically support breed societies work on BP, but it would require:

- Engagement and agreement with breed societies: If they think this assesment can be positive for them to improve the results and make further studies/research. It would need clear rules to be developed (acces to data, use, publicity, confidentiality, etc)
- Coordination and involvement of all the BP actors (genetic and reproduction centres) and Government if possible (better a joint action)

From Breed societies perspective: It could be also interesting as autocontrol voluntarily system for their BP

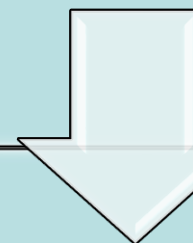
DESIGN OF PROTOCOL

First draft of protocol designed by the Ministry with the scientific support of UEECA (Union of spanish animal science entities)



Analysis and discussion with Breeder Asociations, Federations, other science entities and competent authorities

Previous tests after collecting data from few breed socities as representative samples to check the drafts and adjust the final parametres: Rehearsal



Notification of general Guidelines of protocol + Survey + instructions manual to fullfil survey + Scale

**Contract support of public Company
Tragsatec**



TIMELINE AND PARTICIPANTS

June - dec. 2017. Data of 2016

22 meat breeds participants: 11 bovine (13 associations) and 11 ovine (9 associations).

10 dairy breeds participants: 2 bovine, 5 ovine, 3 caprine.

january-june 2019. Data of 2018

16 Conservation programs: 16 endangered breeds participants (6 bovine, 4 ovine, 1 caprine, 1 porcine and 3 equine).

+ Equine genetic evaluation programs: In process for 5 breeds (Española, PSI, Trotador, árabe, Angloarabe)

DATA COLLECTION

Methods, material and steps:

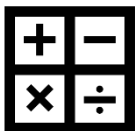
- Survey/questionnaire with data of breeding program to collect information from Breed societies
- Manual for breed societies with instructions to fulfil the survey
- Request of list of purebreed breeding animals and holdings and appearance performance sheet
- Report of Centre designated for genetic evaluation in the BP
- Genebank certificate to know data about germinal material
- Process and analysis of all information
- Request of mistakes correction and completeness of data
- Implementation of Protocol and final Report



DATA COLLECTION

BASIC INFORMATION FOR ALL BP

- REFERENCE YEAR:
- SPECIES:
- BREED:
- BREEDERS ASSOCIATION/S:
- CENSUS OF FEMALE BREEDING ANIMALS ENTERED IN THE BREEDING BOOK:
- CENSUS OF MALE BREEDING ANIMALS ENTERED IN THE BREEDING BOOK:
- CENSUS OF PARTICIPANT HOLDINGS
- YEAR OF FIRST BP APPROVAL AND WEB LINK WHERE UPDATED
- THIRD PARTY OR CENTRE DESIGNATED BY BREED SOCIETY FOR GENETIC EVALUATION
- OBJETIVES OF BP
- LIST 3 SELECTION CRITERIA ACCORDING TO BP OBJETIVES IN ORDER OF IMPORTANCE



CRITERIA FOR ASSESMENT

Indicators clasify in five main indicators with scales (meat and dairy breeds):

5 CRITERIA INDICATORS	Weighting (Max. 1000 points)
1. Participation of herds in the program and quality of the breeding book	20%
2. Selective effort	30%
3. Diffusion of the improvement	12%/ (10%)
4. Assessment of the answer to selection, maintenance of variability and sustainability	33%/ (35%)
5. Activities R+D+i	5%

TOTAL:100% 12

INDICATORS

1. Participation of farmers in the BP and quality of the breeding book

- **Proportion of females entered in main section of breeding book during reference period, in relation to total females entered in the breeding book.**
15% (meat and dairy) 10% (conservation)
- **Parentage controls based on DNA analysis. Proportion of purebreed breeding animals (females and males) with confirmed parentage in relation to total purebreed breeding animals.**
15% meat, 20% dairy, 15% conservation
- **Proportion of purebreed breeding animals in control of performances and with linear qualification in relation to total purebreed breeding animals in breeding book** 10% (meat and dairy) 2,5% (conservation)
- **Proportion of participant holdings with control of performance.**
20% meat, 25% dairy
- **Proportion of females in milk recording in relation to total females entered in breeding book (20%)**
- **Proportion of n° ended and valid lactations in relation to females in milking recording (10%)**
- **Proportion of females in which maternal traits have been performed/tested after calving (15%)**
- **Proportion of females in which birth and offspring weaning weight has been tested (15%)**
- **Proportion of dams in which progeny slaughter and carcass weight have been tested (10%)**

INDICATORS

2. Selective effort.

- **Proportion of females in breeding book which genetic evaluation provided first time in reference year , in relation to total females with genetic evaluation. (30% meat and dairy)**
- **Proportion of purebreed breeding animals which genetic evaluation provided first time in reference year based on progeny performance testing with minimum reliability 0,3 (meat breeds) or 0,5 (dairy breeds) (30% meat and dairy)**
- **Holdings with genetic evaluation which are connected: Proportion nº connected holdings in relation to nº total participant holdings in breeding program. (40% meat and dairy)**

INDICATORS

3. Diffusion of the improvement

- Proportion of n° births from high value improved purebred breeding animals in relation to n° total of births. 70% meat 50% dairy
- Proportion of n° calvings from AI in relation to n° total calvings (in the same breed) 30% meat 50% dairy

4. Assessment of the response to selection, maintenance of variability and sustainability of the breed

- Trend/progress medium yearly genetic value of females. Take into account 10 years previous reference year with complete data. 80% meat and dairy
- Maintenance of genetic variability (inbreeding rate: measures when rate>1%) 10% meat and dairy, 25% conservation
- Completed Genebank (FAO 2012): 2.058 doses from 25 donors/ 5% fertility test or updated genbank samples 10% meat and dairy, 30% conservation

5. Activities R+D+i

- Incorporation of new traits in breeding program for performance control and genetic evaluation: n° traits or criteria selection evaluated in reference year.
100% meat and dairy



CRITERIA FOR ASSESSMENT

Conservation programs: 3 main indicators of criteria

INDICATORS	Weighting
1. Development of activities to reach objectives of conservation program	40%
2. Compliance with objectives of conservation program	45%
3. Other important parametres for conservation program	15%
•Quality labeling for products, 20% •New purposes (social/economic/environmental), 20% •Organization of purebreed animals competitions/fairs, 20% •Organization of breeders education/training courses, 20% •R+I+i projects, 20%	
	TOTAL:100%

INDICATORS

Activities to achieve objectives of conservation program and level of fulfilment (specific indicators)

- Proportion of females with productive and functional data in relation to females entered in breeding book 2,5%
- Holdings that incorporate genetics from other holdings 10%
- Female replacement rate 15%
- Male replacement rate 5%
- Proportion of females covered/inseminated with males of the same breed whose calfs could enter in breeding book in reference year, in relation to total females of breeding book 10%
- Existence of genbank and level of completeness
- Census trend of females: population growth rate (FAO) 50%
- Evolution of n° of holdings 25%
- Parametres related to genetic diversity maintenance, quality pedigree, inbreeding rate, coancestry



FINAL REPORT (RESULTS OF ASSESSMENT)

The score was obtained for each indicator

EVALUACIÓN DE PROGRAMAS DE MEJORA DE APTITUD LÁCTEA



March- 2019

EVALUACIÓN DE PROGRAMAS DE MEJORA DE APTITUD CÁRNICA



Dec-2019

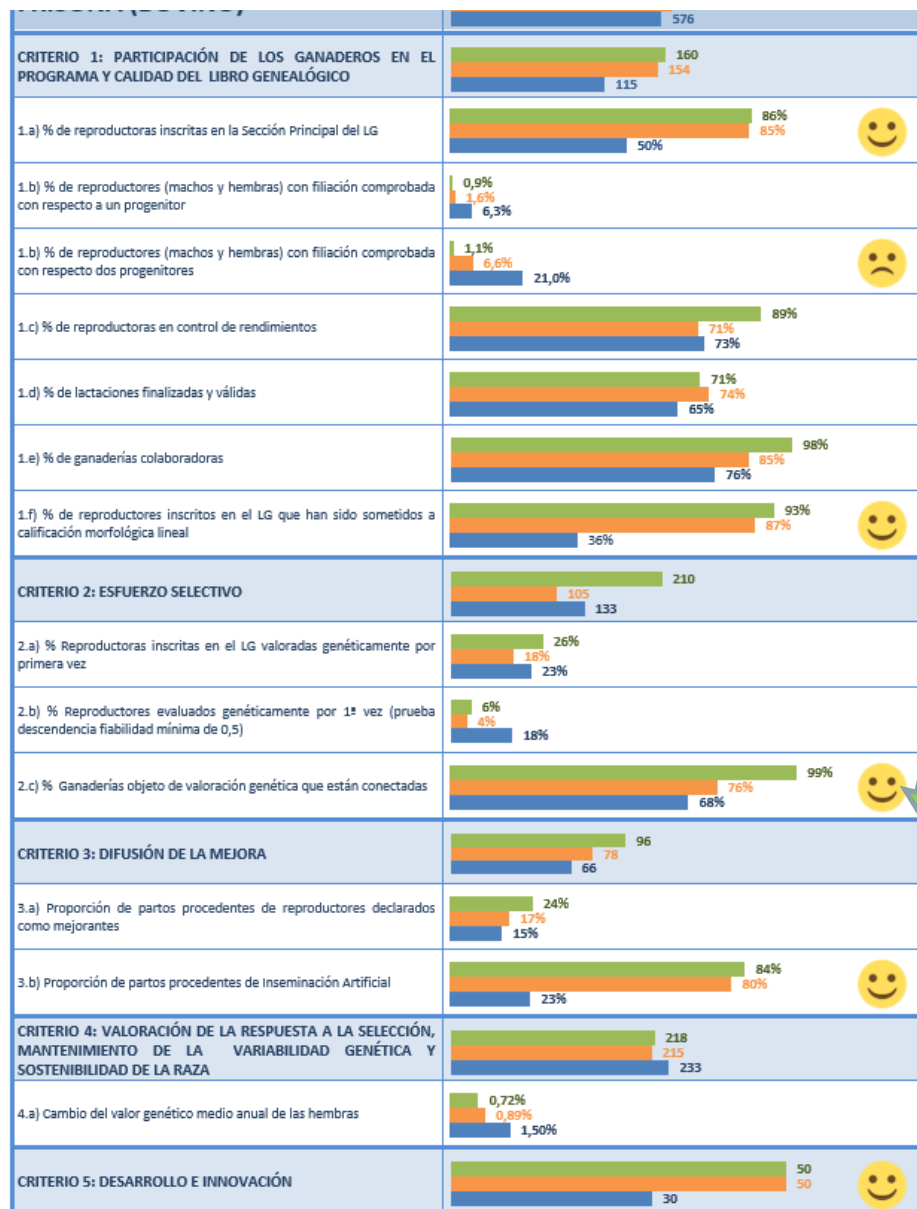
EVALUACIÓN DE PROGRAMAS DE CONSERVACIÓN



Dec-2020

- CONCLUSIONS
- WEAKNESS/STRENGTHS
- STRATEGIES

FINAL REPORT (SPECIFIC SHEET FOR EACH BREED)



Value of the breed for that criteria

Average value of the specie for that criteria

Average value for all evaluated breeds



Valor obtenido en el criterio por la raza evaluada
Valor medio obtenido en el criterio por la especie de la raza evaluada
Valor medio obtenido en el criterio para todas las razas evaluadas



Mejor valor de todas las razas de aptitud láctea
Peor valor de todas las razas de aptitud láctea

C. ERFP TASKS AND PROCEDURES FOR BP ASSESMENTS

POINTS TO BE DECIDED

- Interesting task to work further on it?
- Cross-cutting activity/horizontal task linked to the 3 WG
- Objective: proposal of indicators for assesment BP but It could be difficult to agree with homogeneity, consensus, standarised protocols and overcome drawbacks (technnnically and practically)
- Different possibilities for scoring, scales, weigh of parametres, etc: provide recommendations with flexibility and room of maneuver to fit particularities for breeds/countries
- TF/ ADA?
- Composition: Spanish focal point team (and external technical support UEECA/Tragsatec/other entities?) + 2/3 representatives from WG? Any experiences?
- Animal production traits and priorities?: Genetic evaluation BP for milk, meat, conservation programs, ~~genetic evaluation horses?~~
- Timeline: +2022
- First steps: Translations? Budget?

¡THANK YOU FOR YOUR ATENTION!

Any question?

