

Production and processing of small seeds for birds



Contents

Acknowledgements	vi
Abbreviations and units of measurements	vii
1. Introduction	1
2. General overview of the market	3
Introduction	3
Market segments	3
Ingredients of bird food	3
Origin	4
Substitution	4
Trends	5
Major players	6
Brokers	6
Packers/wholesalers	6
Retail	6
3. Major grains used in bird seed	7
Wild bird mixtures	7
Caged and companion birds	8
Nutritional needs	8
Bird classification	8
Basic mixtures	8
Treats	9
Sprouted seeds	9
Pigeon food	9
Introduction	9
Typical composition of pigeon food	9
Cover crops for hunting and wildlife habitat creation	10
4. Bird food grains with potential for the tropics and semi-tropics	11
Niger seed (<i>Guizotia abyssinica</i> (L.f.) Cass.)	11
Description and agronomy	11
Varietal development	12
Production and trade	12
Opportunities	12
Canary seed (<i>Phalaris canariensis</i> L.)	13
Description and agronomy	13
Processing and storage	14
Varietal development	14
Production and trade	14
Marketing	14
Opportunities	15

Millets	15
Proso millet (<i>Panicum miliaceum</i> L.)	15
Spray millet (<i>Setaria italica</i> (L.) Beauv and <i>Eleusine coracana</i> (L.) Gaertn.)	17
Japanese millet (<i>Echinochloa crusgalli</i> var. <i>frumentacea</i>)	17
Other millets used in bird food	18
Sunflower (<i>Helianthus annuus</i> L.)	18
Opportunities	18
Sorghum (<i>Sorghum bicolor</i> (L.) Moench)	19
Opportunities	19
Groundnuts (<i>Arachis hypogaea</i> L.)	19
Opportunities	19
Minor crops used in bird food	19
Safflower (<i>Carthamus tinctorius</i> L.)	19
Quinoa (<i>Chenopodium quinoa</i> Willd.)	20
New crops	21
5. Processing, quality and trading standards	23
Processing and storage	23
General guidelines for quality bird food	23
Packaging	23
Packaging for transport and export	24
Packaging for storage	24
Packaging for retail	24
Non-GMO certification	24
Traceability, HACCP and GMP	24
6. Possible entry strategies for farmers and entrepreneurs in developing countries	27
Introductory remarks	27
Production of commodity grain	27
Non-grain ingredients	28
Manufacturing and selling of prepared bird food	28
7. Conclusions and recommendations	29
Conclusions	29
Recommendations	29
References and selected bibliography	31
Appendixes	33
1. Useful references and sources of information	33
2. Major brokerage and packing firms in bird seed	35
3. Genetic resources	41
4. Typical composition of some bird foods	45
5. Typical retail prices for selected bird food (ingredients)	47