

# Jatropha related publications from JatroSolutions & partners

## Peer-reviewed publications

### 2020

**Steinbrenner, J., J. Jeen, H.-J. Nägele, S. Kirchner, B. Bohlinger, A. Lemmer (2020).** Anaerobic digestion of aqueous *Jatropha* seed oil extraction residues and phorbol ester degradation. <https://doi.org/10.1016/j.biteb.2020.100601>

### 2019

**Andrianirina, Z. T., M. Martin, E. Dongmeza, E. Senger (2019).** Effects of Genotype, Direct Sowing and Plant Spacing on field Performance of *Jatropha curcas* L. *Agronomy*, 9, 465. [Doi: 10.3390/agronomy9080465](https://doi.org/10.3390/agronomy9080465).

### 2018

**Fröschle, M., H. Horn, O. Spring (2018).** Characterization of *Jatropha curcas* L. hoenys originating from the southern highlands of Madagascar. *LWT-Food Science and Technology*, 93: 525-533. [Doi: 10.1016/j.lwt.2018.04.006](https://doi.org/10.1016/j.lwt.2018.04.006).

### 2017

**Krome, C., F. Schuele, K. Jauncey, U. Focken (2017).** Influence of a sodium formate/formic acid mixture on growth of juvenile common carp (*Cyprinus carpio*) fed different fishmeal replacement levels of detoxified *Jatropha curcas* kernel meal in practical, mixed diets. *J. of Applied Aquaculture*, Vol 30, Issue 2, 137-153. [Doi: 10.1080/1045s00217-016-2814-x](https://doi.org/10.1080/1045s00217-016-2814-x).

**Senger, E., B. Bohlinger, St. Esgaib, L.C. Hernández-Cubero, J.M. Montes, K. Becker (2017).** Chuta (edible *Jatropha curcas* L.), the newcomer among underutilized crops: a rich source of vegetable oil and protein for human consumption. *Eur. Food Research and Technology*, 243: 987-997. [Doi: 10.1007/s00217-016-2814-x](https://doi.org/10.1007/s00217-016-2814-x).

**Hernández-Cubero, L.C., P. Ampofo, J.M. Montes, R.T. Voegelé (2017):** Identification of pathogenic fungi and preliminary screening for resistance in *Jatropha curcas* L. germplasm. *European Journal of Plant Pathology* 149, 325–336. [Doi: 10.1007/s10658-017-1183-z](https://doi.org/10.1007/s10658-017-1183-z).

### 2016

**Montes, J.M., M.E. Melchinger (2016).** Domestication and Breeding of *Jatropha curcas* L. - Review Article. *Trends in Plant Science*, Vol 21, Issue 12, p. 1045-1057. [Doi: 10.1016/j.tplants.2016.08.008](https://doi.org/10.1016/j.tplants.2016.08.008).

**Senger, E., M. Martin, E. Dongmeza, J.M. Montes (2016).** Genetic variation and genotype by environment interaction in *Jatropha curcas* L. germplasm evaluated in different environments of Cameroon. *Biomass and Bioenergy*, 91, p. 10-16. [Doi: 10.1016/j.biombioe.2016.04.2017](https://doi.org/10.1016/j.biombioe.2016.04.2017).

**Senger, E., M. Martin, J.M. Montes. (2016).** Parental and Heterotic in *Jatropha curcas* L. Seedlings. *Tropical Plant Biol.* [DOI 10.1007/s12042-016-9160-9](https://doi.org/10.1007/s12042-016-9160-9).

### 2015

**Senger, E., M. Martin, J.M. Montes. (2015).** Classification of *Jatropha curcas* L. genotypes into germplasm groups associated with the presence of phorbol esters by mean of seed characteristics. *Industrial Crops and Products* 78, 9-12

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**Montes, J.M., A. Bulach, M. Martin, E. Senger.** (2015). Quantitative Trait Variation in Self- and Cross-Fertilized Seeds of *Jatropha curcas* L.: Parental Effects of Genotypes and Genetic pools. *BioEnergy Research*. [Doi: 10.1007/s12155-014-9576-8](https://doi.org/10.1007/s12155-014-9576-8).

#### 2014

**Becker, K., P. Lawrence.** (2014). Carbon farming: the best and safest way forward? *Carbon Management*, 5 (1), 31-33.

**Martin, M., J.M. Montes.** (2014). Quantitative genetic parameters of agronomic and quality traits in a global germplasm collection reveal excellent breeding perspectives for *Jatropha curcas* L. *GCB Bioenergy*. [Doi: 10.1111/gcbb.12227](https://doi.org/10.1111/gcbb.12227).

**Montes, J.M., F. Technow, M. Martin, K. Becker** (2014). Genetic Diversity in *Jatropha curcas* L. Assessed with SSR and SNP Markers. *Diversity*, 6, 551–566.

**Senger, E., A. Mohiley, J. Franzaring, J.M. Montes** (2014). Laboratory screening of aluminium tolerance in *Jatropha curcas* L.. *Industrial Crops and products*, 59, 248-251.

**Senger, E., A. Peyrat, M. Martin, J.M. Montes** (2014). Genetic variation in leaf chlorophyll content of *Jatropha curcas* L.. *Industrial Crops and products*, 58, 204-211.

**Wulfmeyer, V., O. Brauch, K. Warrach-Sagi, H.-S. Bauer, T. Schwitalla, K. Becker** (2014). The impact of plantation weather and climate in coastal desert regions. *Journal of Applied Meteorology and Climatology* (published online <http://journals.ametsoc.org/doi/abs/10.1175/JAMC-D-13-0208.1>).

#### 2013

**Becker, K., V. Wulfmeyer, T. Berger, J. Gebel, W. Münch** (2013). Carbon farming in hot, dry coastal areas: An option for climate change mitigation. *Earth System Dyn.* 4:237-251.

**Bosch, C., M. Zeller** (2013). The Impacts of Wage Employment on a *Jatropha* Plantation on Income and Food Security of Rural Households in Madagascar – A Panel Data Analysis, *Quarterly Journal of International Agriculture*, 52 (2), 119-140.

**Devappa, R.K., C.C. Malakar, H.P.S. Makkar, K. Becker** (2013). Pharmaceutical potential of phorbol esters from *Jatropha curcas* oil. *Natural Product Research*, 27, 1459-1462.

**Devappa, R.K., J.-P. Bingham, K.S. Khanal** (2013). High performance liquid chromatography method for rapid quantification of phorbol esters in *Jatropha curcas* seed. *Industrial Crops and Products* 49, 211-219.

**Devappa, R.K., H.P.S. Makkar, K. Becker** (2013). In vitro ocular and dermal toxicity of *Jatropha curcas* phorbol esters. *Ecotoxicology and Environmental Safety*, Volume 94, 1 August 2013, pp. 172–178.

**Devappa, R.K., H.P.S. Makkar, K. Becker** (2013). Shelf-life of isolated phorbol esters from *Jatropha curcas* oil. *Industrial Crops and Products* 49, 454-461.

**Devappa, R.K., S.K. Rajesh, H.P.S Makkar, K. Becker** (2013). Antioxidant and antimicrobial potential of *Jatropha curcas* seed hulls. *Ind. Crops and Products* (accepted).

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### Peer-reviewed publications

**Francis, G., J. Oliver, M. Sujatha** (2013). Non-toxic jatropha plants as a potential multipurpose multi-use oilseed crop. *Industrial Crops and Products* 42, 397–401.

**Kumar, V., W.K.B. Khalil, U. Weiler, K. Becker** (2013). Influences of incorporating detoxified *Jatropha curcas* kernel meal in common carp (*Cyprinus carpio* L.) diet on the expression of growth hormone- and insulin-like growth factor-1-encoding genes. *Journal of Animal Physiology and Animal Nutrition*, 97(1), pp. 97–108.

**Latif, S., J. Pfannstiel, H.P.S. Makkar, K. Becker** (2013). Amino acid composition, antinutrients and allergens in the peanut protein fraction obtained by an aqueous enzymatic process. *Food Chem.* 136, 213-217.

**Montes, J.M., F. Technow, B. Bohlinger, K. Becker** (2013). Seed quality diversity, trait associations and grouping of accessions in *Jatropha curcas* L.. *Industrial Crops and Products*, 51, 178-185.

**Montes, J.M., F. Technow, B. Bohlinger, K. Becker** (2013). Grain quality determination by means of near infrared spectroscopy in *Jatropha curcas* L. *Industrial Crops and Products*, 43, 301-305.

**Nithiyantham, S., P. Siddhuraju, G. Francis** (2013). A promising approach to enhance the total phenolic content and antioxidant activity of raw and processed *Jatropha curcas* L. kernel meal extracts. *Industrial Crops and Products*, 43, 261-269.

**Sujatha, M., M. Tarakeswari, G. Francis** (2013). Start codon targeted (SCoT) polymorphism in toxic and non-toxic accessions of *Jatropha curcas* L and development of a codominant SCAR marker. *Plant Science*, 207, 117-127.

### 2012

**Akinleye, A.O., V. Kumar, H.P.S. Makkar, M.A. Angulo-Escalante, K. Becker** (2012). *Jatropha platyphylla* kernel meal as feed ingredient for Nile tilapia (*Oreochromis niloticus* L.): Growth, nutrient utilization and blood parameters. *Journal of Animal Physiology and Animal Nutrition*, 96 (1), pp. 119-129.

**Devappa, R.K., H.P.S. Makkar, K. Becker** (2012). Localisation of antinutrients and qualitative identification of toxic components in *Jatropha curcas* seed. *J Sci Food Agric.* 2012 May, 92(7), pp. 1519-25.

**Devappa, R.K., M.A. Angulo-Escalante, H.P.S. Makkar, K. Becker** (2012). Potential of using phorbol esters as an insecticide against Spodoptera frugiperda. *Industrial Crops and Products*, 38 (July 2012), pp. 50–53.

**Devappa, R.K., K.R. Sanjay, V. Kumar, H.P.S. Makkar, K. Becker** (2012). Activities of *Jatropha curcas* phorbol esters in various bioassays. *Ecotoxicology and Environmental Safety*, 2012 Apr, 78, pp. 57-62.

**Devappa, R.K., H.P.S. Makkar, K. Becker** (2012). Isolation, stability and bioactivity of *Jatropha curcas* phorbol esters. *Fitoterapia.* 2012 Apr, 83(3), pp. 586-92.

**Devappa, R.K., C.C. Malakar, H.P.S. Makkar, K. Becker** (2012). Pharmaceutical potential of phorbol esters from *Jatropha curcas* oil. *Nat. Prod. Res.* 2012 Aug 22, DOI:10.1080/14786419.2012.716057.

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**Francis, G.** (2012). Jatropha Seeds Oil and Products: Important Properties with Respect to Uses. In: M. Sujatha, B. Bahadur, N. Carels (eds), *Jatropha curcas*, Scientific Publishers (USA), Jatropha, Challenges for a New Energy Crop 2012, pp 343-354.

**Kumar, V., A.O. Akinleye, H.P.S. Makkar M.A. Angulo-Escalante, K. Becker** (2012). Growth performance and metabolic efficiency in Nile tilapia (*Oreochromis niloticus* L.) fed on a diet containing *Jatropha platyphylla* kernel meal as a protein source. *J Anim Physiol Anim Nutr (Berl)*. 2012 Feb; 96(1), pp. 37-46.

**Kumar, V., H.P.S. Makkar, K. Becker** (2012). Evaluations of the nutritional value of *Jatropha curcas* protein isolate in common carp (*Cyprinus carpio* L.). *Journal of Animal Physiology and Animal Nutrition*, 96 (6), pp. 1030-1043.

**Martinez-Herrera, J., C.J. Martinez, A.M. Ayaly, L.G. Siciliano, R.M. Escobedo, G. Davila-Ortiz, G.C. Cevallos, H.P.S. Makkar, G. Francis, K. Becker** (2012). Evaluation of the nutritional quality of non-toxic kernel flour from *Jatropha curcas* L. in rats. *Journal of Food Quality* 35, (2) 152–158.

**Nithyanantham, S., P. Siddhuraju, G. Francis** (2012). Potential of *Jatropha curcas* as a biofuel, animal feed and health products. *Journal of the American Oil Chemists' Society*, 89, 961-972.

### 2011

**Harter, T., F. Buhrke, V. Kumar, U. Focken, H.P.S. Makkar K. Becker** (2011). Substitution of fish meal by *Jatropha curcas* kernel meal: Effects on growth performance and body composition of white leg shrimp (*Litopenaeus vannamei*). *Aquaculture Nutrition*, 17 (5), pp. 542–548. 3

**Kumar, V., H.P.S. Makkar, K. Becker** (2011). Detoxified *Jatropha curcas* kernel meal as a dietary protein source: growth performance, nutrient utilization and digestive enzymes in common carp (*Cyprinus carpio* L.) fingerlings. *Aquaculture Nutrition*, 17 (3), pp. 313–326.

**Kumar, V., H.P.S. Makkar K. Becker** (2011). Nutritional, physiological and haematological responses in rainbow trout (*Oncorhynchus mykiss*) juveniles fed detoxified *Jatropha curcas* kernel meal. *Aquaculture Nutrition*, Volume 17, Issue 4, pages 451–467.

**Kumar, V., H.P.S. Makkar, R.K. Devappa, K. Becker** (2011). Isolation of phytate from *Jatropha curcas* kernel meal and effects of isolated phytate on growth, digestive physiology and metabolic changes in Nile tilapia (*Oreochromis niloticus* L.). *Food and Chemical Toxicology*, 49 (9), pp. 2144-2156.

**Makkar H.P.S., V. Kumar, O.O. Oyeleye, A.O. Akinleye, M.A. Angulo-Escalante, K. Becker** (2011). *Jatropha platyphylla*, a new non-toxic *Jatropha* species: Physical properties and chemical constituents including toxic and antinutritional factors of seeds. *Food Chemistry*, 125 (1), 1 March 2011, pp. 63–71.

### 2010

**Devappa, R.K., H.P.S. Makkar, K. Becker** (2010). Jatropha toxicity - A Review. *Journal of Toxicology and Environmental Health, Part B Crit Rev*, 13, pp. 476-507.

**Devappa, R.K., H.P.S. Makkar, K. Becker** (2010). Nutritional, Biochemical and Pharmaceutical potential of Proteins and Peptides from Jatropha: Review. *Journal of Agricultural and Food Chemistry*, 58, pp. 6543-6555.

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**Devappa, H.P.S. Makkar, K. Becker** (2010). Jatropha Diterpenes - A Review. J. Am oil chem., 88, pp. 301-322.

**Devappa, R.K., J. Maes, H.P.S. Makkar, W. De Greyt, K. Becker** (2010). Quality of Biodiesel Prepared from Phorbol Ester Extracted *Jatropha curcas* Oil. Journal of the American Oil Chemists' Society, 87 (6), pp 697-704.

**Devappa, R.K., H.P.S. Makkar, K. Becker** (2010). Optimization of conditions for the extraction of phorbol esters from Jatropha oil. Biomass and Bioenergy, 34 (8), pp. 1125-1133.

**Devappa, R.K., H.P.S. Makkar, K. Becker K.** (2010). Biodegradation of *Jatropha curcas* phorbol esters in soil. J Sci Food Agric. 90 (12), pp. 2090-2097.

**Grass, M. und M. Zeller** (2011): Rural employment and income effects of a Jatropha plantation in Madagascar, Quarterly Journal of International Agriculture 50 (4), 347-368.

**Kumar, V., H.P.S. Makkar, K. Becker** (2010). Dietary inclusion of detoxified *Jatropha curcas* kernel meal: effects on growth performance and metabolic efficiency in common carp, *Cyprinus carpio* L.. Fish Physiol Biochem. 2010 Dec; 36(4):1159-70.

**Kumar, V., H.P.S. Makkar, W. Amselgruber, K. Becker** (2010). Physiological, haematological and histopathological responses in common carp (*Cyprinus carpio* L.) fingerlings fed with differently detoxified *Jatropha curcas* kernel meal. Food and Chemical Toxicology, Volume 48, Issues 8-9, August-September 2010, Pages 2063-2072. 4

**Li, C.Y., R.K. Devappa, J.X. Liu, H.P.S. Makkar, K. Becker** (2010). Toxicity of *Jatropha curcas* phorbol esters in mice. Food and Chemical Toxicology, 48 (2), pp. 620-625.

**Makkar H.P.S., V. Kumar, O.O. Oyeleye, A.O. Akinleye, M.A. Angulo-Escalante, K. Becker** (2010). Traditional wisdom confirmed by scientific research: Jatropha species from Mexico is non-toxic. Nature Proceedings, posted January 13, 2010, 1-21.

**Makkar H.P.S., K. Becker** (2010). Are *Jatropha curcas* phorbol esters degraded by rumen microbes? Journal of the Science of Food and Agriculture, 90, 1562-1565.

**Martinez-Herrera, J., A.L. Martinez-Ayalla, H.P.S. Makkar, G. Francis, K. Becker** (2010). Agroclimatic conditions, chemical and nutritional characterization of different provenances of *Jatropha curcas* L. from Mexico. European Journal of Scientific Research, 39, 396-407.

### 2009

**Basha, S.D., G. Francis, H.P.S. Makkar, K. Becker, M. Sujatha** (2009). A comparative study of biochemical traits and molecular markers for assessment of genetic relationships between *Jatropha curcas* L. germplasm from different countries. Plant Sci. 176, 812-823.

**Makkar, H.P.S., K. Becker** (2009). *Jatropha curcas*, a promising crop for the generation of biodiesel and value-added coproducts. European Journal of Lipid Science and Technology, 111, 773-787.

**Makkar, H.P.S., K. Becker** (2009). *Jatropha curcas* an exciting future crop for generation of biofuel and value-added products with a focus on comparison between toxic and non-toxic genotypes. European Journal of Lipid Science and Technology, 111, 773-787.

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**Makkar, H.P.S., K. Becker** (2009). Removal and degradation of phorbol esters during pre-treatment and transesterification of *Jatropha curcas* oil. *Journal of the American Oil Chemists*, 86, 173-181.

**Ye Meng, Li Caiyan., Francis, G. Makkar, H.P.S.** (2009). Current situation and prospects of *Jatropha curcas* as a multipurpose tree in China. *Agroforestry Systems* 76, 2, 487-497.

### 2008

**Kumar, V., H.P.S. Makkar, K. Becker (2008)**. Detoxification of *Jatropha curcas* seed meal and its utilization as a protein source in fish diet. *Comparative Biochemistry and Physiology* 151 A(1), 13-14.

**Makkar, H.P.S., Becker, K.** (2008). *Jatropha curcas*: A potential source for tomorrow's oil and biodiesel. *Lipid Technology*, 20, 104-107.

**Makkar, H.P.S., G. Francis, K. Becker** (2008). Protein concentrate from *Jatropha curcas* screw-pressed seed cake and toxic and antinutritional factors in protein concentrate. *Journal of the Science of Food and Agriculture*, 88, 1542-1548.

**Makkar, H.P.S., J. Martinez-Herrera, K. Becker** (2008). Variations in seed number per fruit, seed physical parameters and contents of oil, protein and phorbol ester in toxic and non-toxic genotypes of *Jatropha curcas*. *Journal of Plant Science*, 3, 260-265.

**Wang H., Y. Zhao, H. Liu, J. Liu, H.P.S. Makkar, K. Becker.** (2011). Effects of replacing soybean meal by detoxified *Jatropha curcas* kernel meal in the diet of growing pigs on their growth, serum biochemical parameters and visceral organs. *Animal Feed Science and Technology*, 170, 141-146.

### 2007

**Goel, G., H.P.S. Makkar, G. Francis, K. Becker** (2007). Phorbol esters: Structure, biological activity and toxicity in animals. *International Journal of Toxicology*, 26, 279-288.

**Makkar, H.P.S., G. Francis, K. Becker** (2007). Bioactivity of phytochemicals in some lesser-known plants and their effects and potential applications in livestock and aquaculture production systems. *Animal*, 1, 1371-1391.

**Selje, N., E.M. Hoffmann, S. Muetzel, R. Ningart, J. Wallace, K. Becker** (2007). Results of a screening programme to identify plants or plant extracts that inhibit ruminal protein degradation. *British Journal of Nutrition*, 98, 45-53.

### 2006

**Francis, G., K. Becker** (2006). *Jatropha* biodiesel for tropical countries. *Nachwachsende Rohstoffe*, 39, 8.

**Martinez-Herrera, J., P. Siddhuraju, G. Francis, G. Davila-Ortiz, K. Becker** (2006). Chemical composition, toxic/antimetabolic constituents and effects of different treatments on their levels, in four provenances of *Jatropha curcas* L. from Mexico. *Food Chemistry*, 96, 80-89.

**Muetzel, S., K. Becker** (2006). Extractability and biological activity of tannins from various tree leaves determined by chemical and biological assays as affected by drying procedure. *Animal Feed Science and Technology*, 125, 139-149.



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#### 2005

**Francis, G., R. Edinger, K. Becker** (2005). A concept for simultaneous wasteland reclamation, fuel production, and socio-economic development in degraded areas in India. Need, potential and perspectives of *Jatropha* plantations. *Natural Resources Forum*, 29, 12-24.

**Sujatha, M., H.P.S. Makkar, K. Becker** (2005). Shoot bud proliferation from axillary nodes and leaf sections of non-toxic *Jatropha curcas* L. *Plant Growth Regulation*, 47, 83-90.

#### 1999

**Makkar, H.P.S., K. Becker** (1999). Nutritional studies on rats and fish (carp *Cyprinus carpio*) fed diets containing unheated and heated *Jatropha curcas* meal of a non-toxic provenance. *Plant Foods for Human Nutrition*, 53, 183-192.

#### 1998

**Aderibigbe, A.O., H.P.S. Makkar, K. Becker** (1998). Comparative evaluation of non-toxic and toxic varieties of *Jatropha curcas* for chemical composition, digestibility, protein degradability and toxic factors. *Food Chemistry*, 62(2), pp. 207-215.

**Argheore, E.M., H.P.S. Makkar, K. Becker** (1998). Assessment of Lectin Activity in a Toxic and a Non-toxic Variety of *Jatropha curcas* using Latex Agglutination and Haemagglutination Methods and Inactivation of Lectin by Heat Treatments. *Journal of the Science in Food and Agriculture*, 77, 349-352.

**Becker, K., H.P.S. Makkar** (1998). Effects of phorbol esters in carp (*Cyprinus carpio* L.). *Veterinary and Human Toxicology* 40, 82-86.

**Makkar, H.P.S., K. Becker, K., B. Schmook** (1998). Edible provenances of *Jatropha curcas* from Quintana Roo state of Mexico and effect of roasting on antinutrient and toxic factors in seeds. *Plant Food for Human Nutrition*, 52, 31-36.

#### 1997

**Makkar, H.P.S., K. Becker, F. Sporer, M. Wink** (1997). Studies on nutritive potential and toxic constituents of different Provenances of *Jatropha curcas*. *Journal of Agriculture and Food Chemistry*, 45, 3152-3157.

#### 1996

**Aderibigbe, A.O., C.O.L.E. Johnson, H.P.S Makkar, K. Becker, N. Foidl** (1996). Chemical composition and effect of heat on organic matter- and nitrogen-degradability and some antinutritional components of *Jatropha* meal. *Animal Feed Science Technology*, 67, 223-243